

"A MONTHLY MAGAZINE FOR UPSC CIVIL SERVICES EXAMINATION"

E-WASTE in India

India's employment scenario Elections in India: Key issues Resolution 2462 & Global Counter Terrorism Efforts



Current Affairs

May, 2019

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Message to the Readers

The **May 2019** Issue of the Next IAS Current Affairs Magazine covers news events from **26th March 2019 to 25th April, 2019**. The Magazine has comprehensive coverage of all the topics from current affairs, neatly categorized into major sections like Economy, International Issues, Polity & Governance and so on.

The May issue of the magazine has **in-depth** analysis of three issues from the coverage period viz. **'E-waste - an environment and public health hazard', 'India's employment scenario: Understanding the true picture'** and **'Recent issues related to elections'**.

While computers and electronic equipments have taken humanity to new pedestals of growth, the issues associated with their safe disposal and recyclability are steadily gaining currency. In Indian context, the Solar Power Industry is accelerating at a rapid rate, which calls for a strategic plan for safe disposal of the resultant end-of-life products. Such issues become extremely relevant for Civil Services Examination which has an increasing tilt towards sustainable and environment friendly growth.

India is aiming to reap the demographic dividend, which mandates that majority of the working age population is put to useful work. In this scenario, it is pertinent to understand the bigger picture related to the employment scenario in the country. This story will be most relatable to the young readers of this magazine striving to boost their careers via dedicated hard work.

The 2019 Lok Sabha Elections have again brought certain election related issues to the forefront. Understanding these issues is important not only from the perspective of UPSC Civil Services Examination but also for being an informed voter in the Indian Democracy. Multiple issues like EVM and VVPAT, Electoral Bonds, Model Code of Conduct, NRI Voting and others have been covered giving a comprehensive picture.

Due to consistent positive feedback from readers on the Guest Column, this month Issue has also been enriched with guest column. **K.P. Shashidharan** (IAAS, Former Director General, CAG Office) has contributed a valuable article **SEBI & Corporate Governance in India.** The guest column by such notable author will surely help readers to get better insight into the topic.

Besides this, other important topics for Civil Services Examination are covered separately in the magazine.

The Magazine works on the principle of **learning by doing** and testing the readers' understanding and retention via model questions papers included in the magazine. These questions are based on the lines of Preliminary and Main stages of the Union Public Service Commission (UPSC) Civil Services Examination.

The National and International events are covered in **easy to understand manner** using simple but **effective language**, headings & sub-headings, **engaging infographics**, charts, tables and eye-catching diagrams. The Magazine is designed for the needs of the students who are preparing for UPSC Civil Services Examinations. However, it is also helpful for Engineering Services Examinations, Banking Examinations and other Government or Public Sector Enterprises examinations.

Any feedback or suggestions for the Magazine are welcome and may be e-mailed to currentaffairs@nextias.com

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E-WASTE: AN ENVIRONMENT AND PUBLIC HEALTH HAZARD

A recent study pointed out the grave fact that by 2050 India will likely stare at a pile of a new category of electronic waste, namely solar e-waste.

About:

- The report stated that currently, India's e-waste rules have no laws mandating solar cell manufacturers to recycle or dispose waste from this sector.
- This is despite the fact that India is among the leading markets for solar cells in the world, which is expected as India has committed to install 100 GW of solar power by 2022.
- The report further stated that even the basic recycling facilities for laminated glass and e-waste are unavailable.
- On a similar line, International Renewable Energy Agency (IRENA) in 2016 estimated there was about 250,000 metric tonnes of solar panel waste in the world, which was slated to multiply to 78 million by 2050.
- The problem of solar cell waste is stated to become enormous as majority of solar panels being installed presently will exhaust their designed life term in coming years.

What is Solar e-waste?

- Solar e-waste are the discarded components of the solar power plants once they have served their purpose or have exhausted their usable life.
- Solar cell modules are 80% glass and aluminium, and nonhazardous. However, other materials used, including polymers, metals, metallic compounds and alloys, and are classified as potentially hazardous.
- E-waste in general comprises a whole range of electrical and electronic items such as refrigerators, washing machines, computers and printers, televisions, mobiles, i-pods, etc., many of which contain toxic materials.
- Let us analyse the bigger picture related to the problem of electronic waste.

Components of e-waste

- The composition of e-waste is diverse and falls under 'hazardous' and 'non-hazardous' categories.
- Non-Hazardous: These are mainly Iron and steel, which constitute about 50% of the waste, followed by plastics, non-ferrous metals and other constituents.
 - Non-ferrous metals consist of metals like copper, aluminium and precious metals like silver, gold, platinum, palladium and so on.

- Hazardous: Elements like lead, mercury, arsenic, cadmium, selenium, hexavalent chromium, and flame retardants beyond threshold quantities make e-waste hazardous in nature.
- Solar cell in particular contains lead, cadmium, and other toxic elements that cannot be removed without breaking apart the entire panel.
 - It is also reported that the toxic cadmium can be washed out of the solar panels during their lifetime by rainwater, hail storms, tornadoes and hurricanes. This poses severe threat to the local environment in that area.

Causes of exponential growth of e-waste generation

- The rapid growth of technology, upgradation of technical innovations and a high rate of obsolescence (i.e. old technology becomes obsolete fast) in the electronics industry.
- A shift in the governance systems with e-governance initiatives adopted by the Central and the State Governments, the telecom, banking and education sectors, Small and Medium Enterprises (SMEs) and IT enabled services have been a major factor leading to the vibrancy of consumption in the information technology market.
- Moreover, increasing disposable income and the price decline of electronics items has been fuelling the growth in this segment.

E-waste generation in India

- There are 10 States that contribute to 70 per cent of the total e-waste generated in the country, while 65 cities generate more than 60 per cent of the total e-waste in India.
 - Among the 10 largest e-waste generating States, Maharashtra ranks first followed by Tamil Nadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab.
 - Among the top ten cities generating e-waste, Mumbai ranks first followed by Delhi, Bengaluru, Chennai, Kolkata, Ahmadabad, Hyderabad, Pune, Surat and Nagpur.
- The main sources of electronic waste in India are the government, public and private (industrial) sectors, which account for almost 70 per cent of total waste generation. The **contribution of individual households** is relatively small at about 15 per cent; the rest being contributed by manufacturers.

 Despite the e-waste regulation being in place for over seven years, only less than 4% of estimated e-waste is recycled in the organised sector as per the latest estimates from the Central Pollution Control Board.

Enforcement Agencies in India

- Ministry of Environment, Forests and Climate Change (MoEFCC) is responsible in identification of hazardous wastes and provides permission to exporters and importers under the Environment (protection) Act, 1986.
- Central Pollution Control Board (CPCB) was constituted under the Water (Prevention and Control of Pollution) Act, 1974.
- CPCB coordinates activities with the State Pollution Control Boards.
- Directorate General of Foreign Trade constituted under the Foreign Trade (Development & regulation) Act 1992 to grant/ refuse licence for hazardous wastes prohibited for imports under the Environment (protection) Act, 1986.
 - Port Authorities and Customs Authorities under the Customs Act, 1962 verify the documents and inform the MoEFCC of illegal traffic.

E-Waste Management Rules, 2018

- These are the **amended version of the E-waste Management Rules, 2016** (which replaced the earlier E-Waste (Management & Handling) Rules, 2011).
- The 2018 amendment has been done with the objective of channelizing the E-waste generated in the country towards authorized dismantlers and recyclers in order to formalize the e-waste recycling.

Salient Features of E-waste management rules:

- Manufacturer, dealer, refurbisher and Producer Responsibility Organization (PRO) have been introduced as additional stakeholders in the rules.
- The main idea of the E-waste (management) rules is to bring the producers of electronic items under Extended Producer Responsibility (EPR).
- The EPR collection target has been set at 10% of the quantity of E-waste generation during 2017-18, with a 10% increase every year until 2023 and 70% from 2023 onwards.
- **Deposit Refund Scheme** has been introduced as an additional economic instrument wherein the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer along with interest when the end of life electrical and electronic equipment is returned.
- The new E-waste rules include Compact Fluorescent Lamp (CFL) and other mercury containing lamps.

- These rules also empower the **Central Pollution Control Board (CPCB)** to levy fines for non-compliance of the rules on All-India basis.
- There is provision of exemption for micro enterprises.
 - However small enterprises, have been included in the rules for **responsibility as manufacturer**,
 - The manufacturer is also responsible to collect e waste generated during the manufacture of any electrical and electronic equipment and **channelise it for recycling or disposal** and seek authorization from SPCB.
- Unlike earlier Rules, collection of waste is now **exclusively** Producer's responsibility.
- Deposit Refund Scheme has been introduced as an additional economic instrument.
 - Under it the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer along with interest when the end-of-life electrical and electronic equipment is returned.
- Health care facilities which have turnover of more than one crore or have more than twenty employees have been included.
- Separate e-waste collection targets have been drafted for new producers, i.e. those producers whose number of years of sales operation is less than the average lives of their products (as defined by the CPCB).
- Producer Responsibility Organizations (PROs) shall apply to the CPCB for registration to undertake activities prescribed in the Rules.
- Under the **Reduction of Hazardous Substances (RoHS) provisions**, cost for sampling and testing shall be borne by the government for conducting the RoHS test.
 - If the product does not comply with RoHS provisions, then the cost of the test will be borne by the Producers.
- Urban Local Bodies (Municipal Committee/Council/ Corporation) has been assign the duty to collect and channelized the orphan products to authorized dismantler or recycler.

Dealing with E-waste

There are basically **four ways** in which e-waste has been treated till date. But none has been found to be fully satisfactory.

- The most common one has been **storing E-wastes in landfills**, but it is replete with all the dangers of leaching.
- Another method commonly used has been to incinerate or burn the goods concerned, but incinerators have been some of the largest point sources for dioxins in the environment and of heavy metal contamination of the atmosphere.

- **Reusing and recycling** are the other ways of dealing with e-wastes. They have been preferable because they increase the lifespan of the products and therefore imply less waste over time.
 - However, reused electronic materials end up as waste eventually as they have limited life span.
 - The reuse of second-hand electronic goods in the developing world imported from developed countries is further contributing to the problem of waste generation in the former, as there is no adequate facility and competence to deal with them appropriately.
 - While recycling appears to be a safe method to utilize or dispose e-wastes, it can be consist of a lot of dismantling, shredding, burning, exporting, etc. which are mostly unregulated and often create additional hazards itself.
 - "Recycling" of hazardous wastes, even under the best of circumstances, has little environment benefit as it simply moves the hazards into secondary products that eventually have to be disposed off.
 - Unless the goal is to redesign the product to use nonhazardous materials, recycling may be a false solution.
- Reduction of waste at source: The ultimate answer is to minimize the generation of hazardous waste, not recycle them. Reducing waste at source can clearly promote economic and industrial competitiveness.

Other means to handling the e-waste problem

- Awareness programme: The awareness among the consumers regarding hazardous constituents of e-waste can be created through active propaganda in print & electronic media and strong extension programmes both by the producers as well as by agencies like Municipal Bodies/State Pollution Control Boards/Central Pollution Control Board.
 - The **State of Tamil Nadu** has made the first move to come up with a **separate e-waste policy** in the country and the policy of collection of electronic waste by communitybased organizations (CBOs).
- Choosing safer technologies and cleaner substitutes: For instance, mercury substitutes are being used in batteries and medical equipments in the developed countries. Digital thermometers, digital thermostats or other devices using mercury substitutes are becoming widely popular. The largest consumer of mercury is the chloralkali industry (production of chlorine and sodium hydroxide) which can switch to the membrane cell process.
- Incentives and Taxes: Green design products and grant of incentives can be encouraged. Government may also consider imposing a cess on Electrical & Electronic products to meet the cost of common e-waste recycling units to be set up either in the Government sector or in private sector with Government assistance.

- Quantification and Characterization: For effective e-waste management, it is necessary to quantify and characterize this waste stream, identify major waste generators and assess the risks involved. It is, therefore, pertinent for the Government to keep an inventory of all e-waste and also the stock of hazardous metals like mercury so that their trade and use can be regulated.
- Upgradation of the unorganised sector: It is the unorganized sector which is currently handling more than 90 per cent of the e-waste generated in the country. Upgradation and formalization of this sector would enable to bring the unorganised sector in the mainstream of activities while ensuring environmental compliances.
- Extended Producers Responsibility (EPR): The concept of EPR aims to place full responsibility of collection of end-of-life electronic products and their safe disposal on to the producers.

Some international conventions

BRS Conventions – Brief Background

• The **Basel, Rotterdam and Stockholm (BRS)** Conventions are multilateral environmental agreements, which share the common objective of protecting human health and the environment from hazardous chemicals and wastes.

Basel Convention

•

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, usually known as the Basel Convention, is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs).
- It does not, however, address the movement of radioactive waste.
 - The Convention is also intended to:
 - · minimize the amount and toxicity of wastes generated,
 - to ensure their environmentally sound management as closely as possible to the source of generation, and
 - to assist LDCs in environmentally sound management of the hazardous and other wastes they generate.
- As of October 2018, 186 states and the European Union are parties to the Convention.
 - Haiti and the United States have signed the Convention but not ratified it.
 - India ratified the Convention in June 1992.
- Its scope of application covers a wide range of wastes defined as "hazardous wastes" based on their origin and/or composition and their characteristics, as well as two types of wastes defined as "other wastes" - household waste and incinerator ash.
- Currently, electronic waste, mobile phones, Polychlorinated Biphenyls (PCBs) and compounds used in industry as heat exchange fluids, in electric transformers and capacitors are among the wastes regulated by the Basel Convention.

Rotterdam Convention

- The Rotterdam Convention is a multilateral environmental agreement which prescribes obligations on the importers and exporters of certain hazardous chemicals.
- As of now, a total of 47 chemicals are listed in Annex III of the Convention. Out of these, 33 are pesticides and 14 industrial chemicals, which are subject to Prior Informed Consent (PIC) procedure.
- India ratified the Convention in May 2005.
- Among the chemical substances covered under the Convention, mercury compounds, polybrominated biphenyls (PBB), polychlorinated biphenyls (PCB) are also substances that are found in e-waste.

Stockholm Convention

- The Stockholm Convention is a global treaty to protect human health and the environment from a class of chemicals known as **Persistent Organic Pollutants (POPs).**
- These remain intact in the environment for long periods (persistent), become widely distributed geographically (long range transport), accumulate in the fatty tissue of humans and wildlife (bioaccumulation), and have a harmful impact on human health, or on environment (toxic).
- Till date, 26 chemicals are listed as POPs under the Stockholm Convention. As of now, India has ratified only the 12 initially listed POPs.
- India ratified the Convention in January 2006.

Case Study: Sanshodhan

- E-Waste Management Rules, 2016, Government of India, defined E-Waste Exchange as "an independent market instrument offering assistance... for sale and purchase of e-waste between agencies/organizations authorized under E-Waste (Management) Rules 2016.
- Thus, Sanshodhan: An E-Waste Exchange (EWX) emerged from E-Waste (Management) Rules, 2016, Gol. EWX is working with Ministry of Electronics &IT. EWX is the winner of Swacch Bharat Grand Challenge by DIPP, Ministry of Commerce and Industry and is associated with Startup India.
- Sanshodhan: An E-Waste Exchange is also recognized The Circulars 2019 by World Economic Forum, Davos for its innovation i.e. one and only 'Circular Economy Model for E-Waste Management'.
- This EWX is being incubated at T-Hub, India's leading incubator by Telangana Government, Hyderabad, India
- EWX is the part of the World Resource Institute (WRI) The CityFix Accelerator programme, supported by Citi Foundation.

Way ahead

• Extended Producers Responsibility (EPR) can help get this recycling sector organized as almost all major electronic

brands have service centres all across the country and these can be used as collection points for used electronics items.

- It is also important to keep a reasonable incentive for the people so that they get incentivise to return the used items to the collection stores.
- Recover rare metals using Green Technology: On the positive side, E-Waste contains many valuable materials like rare metals, which are well worth recovering, provided one uses green technologies. This has been demonstrated by companies like Attero.
- E-waste Micro factory: It was launched in Australia by Indian origin engineer to transform components from electronic waste items into valuable materials for re-use using green manufacturing technologies Establishment of such factories in India can do wonders.
- The waste recycling if properly organized can lead to other social and economic benefits such as job creation, skills development and reduced clean-up and public health costs.
- Moreover, unorganised dismantlers need to be organized and have to enter into tie-ups with the organized recyclers for carrying out precious metal recovery.
- **Subsidize Machinery:** The machineries deployed for recycling are expensive, if subsidies are offered; it will help in promoting the sector. For example: Gujarat Government provides subsidies for machineries.
- Developing countries are not dumping ground: It has to be accepted that the most toxic and polluting segments of the electronics industry, namely, the manufacturing and the disposal have mostly migrated to the developing countries. Therefore, it needs to be ensured that the producer responsibility or take-back programme is not used to justify the transboundary movements of wastes.



9

INDIA'S EMPLOYMENT SCENARIO: UNDERSTANDING THE TRUE PICTURE

India needs meaningful, remunerative jobs that align with the aspirations of the youth and skills demanded by the industry.

About:

- India is witnessing an intensive **debate over the question of jobs** created in the economy, both in terms of **quantity and quality**.
- Higher growth has **raised the youth's aspirations** for more meaningful jobs, thereby leading to a **mismatch** between jobs offered and jobs sought by the educated youth.
- Moreover, in today's era of the **fourth Industrial Revolution**, young people need to be equipped with necessary skills to work with new technologies.
- Employment has also emerged as one of the **biggest electoral issue** in the upcoming Lok Sabha elections, as highlighted by a survey conducted by **Association for Democratic Reforms** in Madhya Pradesh.

Status of employment in India

- Of India's total workforce of about 52 crores, **agriculture** employed nearly 49 per cent while contributing only around 15 per cent of the GVA.
- **Industry** accounted for 13.7 per cent of employment while making up for 23 per cent of GVA.
- Services accounted for 37.5 per cent of employment while contributing 62 per cent of GVA.
- The Indian economy will need to generate nearly 70 lakh jobs annually to absorb the net addition to the workforce.
- As per the National Sample Survey (NSS) 73rd round, for the period 2015-16, Micro, small and medium enterprises (**MSMEs**) in the country provided employment to 11.10 crore workers.
- India's **informal sector** employs approximately 85 per cent of all workers, according to NITI Aayog.
- The **labour force participating rate (LFPR)** the portion of the population working or seeking job declined from 36.9 per cent in 2017-18 as against 39.5 per cent in 2011-12.
- The Female Labour Force Participation (FLFPR) in India has fallen to 26% in 2018 from 36.7% in 2005, with 95% (195 million) women employed in the unorganised sector or in unpaid word.

Factors affecting employment in India

I. Changing nature of employment

• The adoption of new technologies like artificial intelligence, data analytics, machine-to-machine communications,

robotics and related technologies, collectively called "Industry 4.0", is emerging as a big challenge for employment.

- A recent report by the International Labour Organization (ILO) titled "Changing Business and Opportunities for Employer and Business Organizations" held that 51.8% of activities can be automated in India.
- Automation will likely impact most jobs involving highly structured physical activity in predictable environments, such as manufacturing and retail, alongside data collection and processing.

II. Dominance of Unorganized sectors in employment

- A large number of workers that are engaged in the informal sector where **wages can be one twentieth** of those in firms producing the same goods or services but in the formal sector.
- According to the survey conducted by the **National Sample Survey Organization (NSSO)** in 2011-12, about 83 per cent or 39.14 crore persons out of total 47.41 crore employed persons were employed in unorganised sector.
- This means a majority of Indians are without social security provisions such as pension, insurance etc.

III. Complex and large number of Labour laws

- One of the reasons for high prevalence of unorganized sector is due to **presence of complex and large number of labour laws** that make compliance very costly.
- In 2016, there were **44 labour laws under the statute of the central government**. More than 100 laws fall under the jurisdiction of state governments.
- The multiplicity and complexity of laws makes compliance and enforcement difficult.
- Moreover, there also exists huge **opposition from trade unions** against any move to reform labour laws.

IV. Inadequate Skill Development

- Less than 5 percent of Indian workers are skilled as per a Labour Bureau report. As a result, productivity is severely limited and hence well-paying jobs are difficult to come by.
- According to the India Skill Report 2018, only 47 per cent of those coming out of higher educational institutions are employable.
- Skill Development initiatives of government are marred by inefficiencies and corruption as highlighted by the Sharda Prasad committee report.

• At a time when world is moving towards fourth industrial revolution, poor skill development in India remains a major concern.

V. Issues with Employment data

- Multiple sources of employment data exist such as the Employment Unemployment Survey (EUS) of the National Sample Survey Office (NSSO), Labour Bureau's Quarterly Employment Survey and so on.
- However, Indian employment data has been available only at long-term intervals, often over five years.
- This lack of timely and periodic data prevents government from rigorously monitoring the employment situation and assessing the impact of various interventions to create jobs.
- · Varied sets of data have also led to confusion in India.

VI. Poor female labour force participation rate

- Women's labour force participation in India is one of the lowest in the world.
- Women comprise half of the Indian population but make up less than a quarter of the labour force. Three in four Indian women do not work in the country.
- The gender pay gap is 34 per cent in India, according to an Oxfam report. The wage difference is lesser for more skilled workers and more for semi-skilled or unskilled workers.
- Also, automation threatens to impact women more than men, suggests a recent ILO report. This is primarily because automation threatens sectors such as retail, business processing outsourcing and textiles/clothing/footwear where women form a major part of the workforce.

VII. Feminisation of Agriculture

- The Oxfam report 'Mind the Gap: The State of Employment in India' held that feminisation of agriculture in India should not be celebrated.
- While both men and women are diversifying out of agriculture, almost 75 per cent of rural women are still engaged in it.
- A **patriarchal ideology** and **local socio-cultural traditions** confine women to the village where agriculture continues to be their most important source of food and income.
- Male outmigration has also pushed women into taking on more responsibility of own cultivation and to perform wage labour to ensure households' daily survival.

VIII. Fewer jobs in manufacturing sector

- A large job creator in the country is the manufacturing sector. However, with this sector trailing, job additions have been impacted.
- A CRISIL report said that GDP in construction has trailed overall growth, while manufacturing has not shown any notable improvement.

Initiatives to boost employment in India: EMPLOYMENT (INCLUDING SELF-EMPLOYMENT) GENERATED UNDER VARIOUS FLAGSHIP SCHEMES

Ministry	Scheme	Estimated Jobs#
Skill Development & Entrepreneurship	Prime Minster Kaushal Vikas Yojana	10.65
MSME	Prime Minister's Employment Generation Program	14.75
Housing & Urban Affairs	Deendayal Antyodaya Yojna- National Urban Livelihoods Mission	4.59
Rural Development	Deen Dayal Upadhyaya Grameen Kaushalya Yojana	4.73
Textiles	Special package for employ ment generation in the leather and footwear sector*	0.96
Railways	Empanelment to fill vacancies and recruitment of new employees **	3.41
Electronics, I-T		8.73
Financial Services	MUDRA (first time borrowers starting new business enterprises)	400
Tourism	Schemes under tourism sector	146.2
Labour & Employment	Employment exchanges	7.3
Total jobs created since 2014-15	\mathbf{P}	601.32

#: An lakhs from 2014-15 till date.

I. Emphasis on Entrepreneurship and Innovation

- With an objective to create an environment for entrepreneurship and innovation, government launched the 'Start Up India' initiative.
- Through this initiative, government has reduced the regulatory burden on Startups and has **promoted self-certification**.

II. Skill Development Initiatives

 Government has launched various initiatives on skill development such as Pradhan Mantri Kaushal Vikas Yojana (PKKVY) and National Skill Development Mission to create better trained workforce and in turn, well-paying jobs.

III. Reform of labour laws

 The government is working on rationalizing 38 central labour laws into four codes, namely wages, safety and working conditions, industrial relations, and social security and welfare.

IV. Improving Female Labour Force Participation

- The government has brought about important legislations like Maternity Benefit (Amendment) Act, 2017 and Sexual Harassment of Women at Work Place (Prevention, Prohibition and Redressal) Act.
- Support to Training and Employment Program for Women (STEP) to ensure sustainable employment and income generation for marginalised and asset-less rural and urban poor women across the country.

• Stand Up India Program: It aims to provide credit, up to 1 crore rupees, to Scheduled Cast (SC), Scheduled Tribes (ST), and women entrepreneurs.

V. Sector Specific Initiatives

- Initiatives to leverage the potential of employment intensive sectors such as **textile and leather** have been undertaken by the government.
- Scheme for Capacity Development in Textile Sector (SCBTS) in textile sector and Placement Linked Skill Development Training in Leather sector were among several measures taken by the government for skill development of workers in these sectors.

VI. Encouraging MSME Sector

- To encourage the sector, government launched **Pradhan Mantri Mudra Yojana** for development and refinancing activities relating to the micro industrial units.
- **Prime Minister's Employment Generation Programme (PMEGP)** seeks to generate self-employment opportunities through establishment of micro-enterprises in the non-farm sector.

VII. Improving data collection

- The Periodic Labour Force Survey (PLFS) was initiated by the NSSO beginning April 2017. This initiative followed the recommendations of the Task Force on Improving Employment Data.
- The PLFS is a continuous survey for generating estimates of labour force indicators on a quarterly basis for urban areas and on an annual basis for both rural and urban areas.

VIII. Blueprint for Social Security and High-Paying Jobs

- The draft social security code, prepared by the Ministry of Labour & Employment, **aims for universal coverage** that includes those who are outside the ambit of formal employment.
- The scheme envisages mandatory pension, insurance against disability and death, and maternity coverage, alongside optional medical and unemployment coverage.
- It is also readying a blueprint for creating high-Incentives to employers in the form of wage subsidies, contribution to EPFO and ESIC etc.

Way Forward

I. Industry 4.0

- The government should launch a major initiative to push industry to adopt Industry 4.0.
- It will significantly impact sectors like automobile, pharmaceuticals, chemicals and financial services and will result in operational efficiencies, cost control and revenue growth.
- This would generate **employment which aligns with the aspirations of the youth** and requirements of the industry.

 Incentives could be focused on MSMEs that manufacture products including sensors, actuators, drives, synchronous motors, communication systems, computer displays, and auxiliary electromechanical systems.

II. Enhance skills and apprenticeships

- The Indian Institute of Science, a few select Indian Institutes of Technology (IITs), National Institutes of Technology (NITs) and other premier engineering colleges should create specialized training programmes on 'Smart Manufacturing' to address the shortage of high-tech human resources.
- The Department of Science & Technology should spearhead industry-academia R&D projects on cyber physical systems.
- The Labour Market Information System (LMIS) is important for identifying skill shortages training needs and employment created. The LMIS should be made functional urgently.
- Ensure the wider use of **apprenticeship programmes** by all enterprises.

III. Promote Entrepreneurship and Self-employment

- This in one of the core solutions of solving the problem of unemployment. Only **new start-ups** and businesses will be able to absorb the unemployed youth, as the capacity of government and established business in limited in terms of generating new employment opportunities.
- For this government should take further measures to **improve** India's ease of doing business.

IV. Labour law reforms

- Complete the codification of labour laws at the earliest is the way ahead.
- Simplify and modify labour laws applicable to the formal sector to introduce an optimum combination of flexibility and security.
- Make the compliance of working conditions regulations more effective and transparent.
- The **National Policy for Domestic Workers** needs to be brought in at the earliest to recognize their rights and promote better working conditions.

V. Enhance Female Labour Force Participation

- Ensure the implementation of and employers' adherence to the recently passed Maternity Benefit (Amendment) Act, 2017, and the Sexual Harassment of Women at Work Place (Prevention, Prohibition and Redressal) Act.
- It is also important to ensure implementation of these legislations in the informal sector.
- Ensure that skills training programmes and apprenticeships include women.

VI. Improve Data Collection on Employment

• Conduct an annual enterprise survey using the Goods and Service Tax Network (GSTN) as the sample frame.

 Increase the use of administrative data viz. EPFO, ESIC and the NPS to track regularly the state of employment while adjusting for the formalization of the workforce.

VII. Ease Industrial Relations to Encourage Formalization

- Increase severance pay, in line with global best practices.
- Overhaul the labour dispute resolution system to resolve disputes quickly, efficiently, fairly and at low cost.
- Strengthen labour courts/tribunals for timely dispute resolution and set a time frame for different disputes.

VIII. Wages

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- Make compliance with the national floor level minimum wage mandatory.
- Expand the Minimum Wages Act, 1948, to cover all jobs.
- Enforce the payment of wages through cheque or Aadhaar enabled payments for all.

IX. Working Conditions and Social Security

- Enact a comprehensive occupational health and safety legislation.
- Enhance occupational safety and health (OSH) in the informal sector through capacity building and targeted programmes.
- Enhance transparency in the labour inspection system by allowing online complaints and putting in place a standardized and clear mechanism.

X. Urban employment guarantee programme

- In the context of the present employment crises, it is worthwhile considering to introduce an employment guarantee programme in urban areas.
- Such a programme can bring in **much-needed public** investment in towns to improve the quality of urban infrastructure and services, restoring urban commons, skilling urban youth and increasing the capacity of ULBs.



RECENT ISSUES RELATED TO ELECTIONS

With the upcoming general elections 2019, some issues related to Elections in India become important.

I. EVM AND VVPAT

About:

- Supreme Court dismissed the review petition filed by 21 opposition parties for verification of 50% EVMs using voter-verified paper audit trail (VVPAT) slips.
- The apex court, earlier, passed an order and directed the election commission to raise the VVPAT-EVM verification from one to five in each assembly segment of a parliamentary constituency, thereby raising the percentage of such EVM verification from 0.44% to 2%.
- Implication of 50% VVPAT slips: If 50% VVPAT slip verification is carried out, it will delay counting by six days.

What is a review petition?

- Article 137 of the Constitution provides that the Supreme Court of India has the power to review any judgement pronounced (or order made) by it.
- Under Supreme Court Rules, 1966 such a petition needs to be filed within 30 days from the date of judgement or order.
- Even after dismissal of a review petition, the SC may consider a **curative petition** in order to prevent abuse of its process and to cure gross miscarriage of justice.

Current practice for VVPAT verification:

- In the current Lok Sabha Elections of 2019, five VVPATs in each assembly segment of a parliamentary constituency will be physically verified by the Election Commission. This is as per the SC order.
- Earlier, VVPAT slips in one randomly chosen polling station per constituency are tallied with EVM results.
- Before the actual polls, three mock polls are conducted as a safeguard.
 - During the first level check, each and every EVM and VVPAT is checked once by slip verification
 - Thereafter, 5% of the EVMs are selected at random and subjected to higher scrutiny through a **mock poll** along with slip verification of 1,200 votes for 1%, 1000 votes for 2% and 500 votes for 2% percent of the EVMs. These checks are done the representatives of political parties and candidates.

- EVMs and VVPATs are subjected to a **second mock poll** along with verification of slips during the setting of candidates on the EVMs in the presence of candidates or their representatives.
- A **third mock poll** is undertaken with slips verification of at least 50 votes on EVMs and VVPATs on the day of election in the presence of polling agents.

Efforts by ECI regarding VVPAT

- For the ECI, the key technical issue with EVMs and VVPATs is not really in regard to tampering but to machine glitches.
- The ECI has made technical fixes to the VVPAT to make them more resilient during use across the country.
- The EC is ensuring availability of replacement machines and the ability to deploy them quickly in case of a failure of VVPATs to avoid disruptions.
- Before the actual use of EVMs and VVPATs at polling stations, mock polls are conducted by EC on the machines in three stages.
- As the political parties and other stakeholders raised the issue of counting more VVPAT slips, the Commission appointed a **high-powered committee** from the **Indian Statistical Institute** to look into the issue.

ECI's arguments against Sample size of 50%:

- ECI's sample verification for the upcoming Lok Sabha polls would cover 4,125 EVMs and VVPATs which is 8.6 times the sample size recommended in the Indian Statistical Institute report.
 - Given that fact that the Indian Statistical Institute (ISI) is of the view that "5%" match would be sufficient to enhance voters' faith in the EVMs.
 - ISI has also reported that if we do a sample verification of 479 EVMs and VVPATs (out of a total 10.35 lakh machines), it would lift the confidence in the EVM to 99.9936%.
- The ECI has submitted that any increase in the sample size of verification of VVPAT slips would only lead to a "very negligible gain in the confidence level.
- Increased VVPAT slips counting would require extensive training and capacity building of election officials in the field
- ECI has said that it will also **delay the declaration of poll results by 6 days.**

Indian Statistical Institute

- A unique institution devoted to the research, teaching and application of statistics, natural sciences and social sciences.
- It was founded by Professor **P.C. Mahalanobis** in Kolkata in **1931.** It gained the status of an Institution of National Importance by an act of the Parliament in 1959.
- With **Headquarters at Kolkata**, it has four centres located at Delhi, Bengaluru, Chennai and Tezpur.

What is the VVPAT and how does it function?

- The Voter Verifiable Paper Audit Trail device is an add-on connected to the Electronic Voting Machine.
- It allows voters to verify if their vote has indeed gone to the intended candidate by leaving a paper trail of the vote cast.
- After the voter casts his vote on the ballot machine, the VVPAT connected to it prints a slip containing the **serial number**, **poll symbol and the name of the candidate**.
- The slip is visible to the voter from a glass case in the VVPAT for a **total of seven seconds** and the voter can verify if his vote has been registered correctly.
- After this time, it is cut and dropped into the drop box in the VVPAT (creating a paper trail) and a beep is heard, indicating the vote has been recorded.

History of VVPAT

- It was **first** used in India in **2013** in Noksen assembly constituency in **Nagaland.**
- They were deployed in 8 Lok Sabha constituencies during 2014 election.
- In **2017** assembly elections in **Goa**, VVPAT fitted EVMs were for the first time used in an **entire state**.

Advantages of using VVPATs:

- Enables to verify vote: Instant feedback to voter that vote polled has been allocated to the intended candidate.
- **Cross checking votes polled:** Enables authorities to count the votes manually if there is a dispute in the electronically polled votes.
- Operates under a Direct Recording Election system (DRE) which detects fraud and existent malfunctions in EVMs.
- It will ensure greater transparency in voting process.
- Gives both the voters and political parties an assurance.

II. ELECTORAL BONDS

The Election Commission of India (ECI) has told the Supreme Court that electoral bonds, contrary to government claims, wreck transparency in political funding.

What are Electoral Bonds?

- An electoral bond is a **bearer instrument** like a Promissory Note. In effect, it will be similar to a bank note that is payable to the bearer on demand and free of interest.
- It can be purchased by any citizen of India or a body incorporated in India. They can be bought by the donor with a KYC-compliant account.
- The bonds are issued in multiples of ₹1,000 and are available at specified branches of State Bank of India.
- Donors can donate the bonds to their party of choice which can then be cashed in via the party's verified account within 15 days (life of Electoral Bonds is 15 days).
- Condition for Electoral bonds: Every party that is registered under section 29A of the Representation of the Peoples Act, 1951 and has secured at least one per cent of the votes polled in the most recent Lok Sabha or State election will be allotted a verified account by the Election Commission of India. Electoral bond transactions can be made only via this account.

Benefits of Electoral Bonds

- The Electoral Bonds aim to end unregulated political funding wherein a large amount of black money seeps into the electoral process.
- More Transparency: As per the government, it will allow clear documentation of how much funding comes, what kind of fund it is, the source of funding and where it will be spent.
- More freedom to donate: The non-disclosure nature of the scheme will ensure people are free to donate to any political party of their choice.
- Also, there is 15 days' gap between buying and selling of the bonds that will ensure they don't turn into a parallel economy.

Concerns with Electoral bonds:

- Companies no longer need to declare the names of the parties to which they have donated so shareholders won't know where their money has gone.
- Electoral bonds eliminate the 7.5% cap on company donations which means even loss-making companies can make unlimited donations.
- It has a potential to load the dice heavily in favour of the ruling party as the donor bank and the receiver bank know the identity of the person. But both the banks report to the RBI which, in turn, is subject to the Central government's will to know.

III. COMMUNITY RADIOS

Under SVEEP programme, ECI has reached out to over 150 Community Radio stations from across the country to help educate and inform the voters.

NEXT IRS Current Affairs

About:

 Community Radio can play an important role in strengthening democracy by developing content in their local dialects and deepening the process of voter education and awareness upto the grass root levels.

Systematic Voters Education and Electoral Participation

 SVEEP is a programme of multi interventions through different modes and media designed to educate citizens, electors and voters about the electoral process in order to increase their awareness and participation in the electoral processes.

Community Radio

- Community radio is a type of radio service that caters to the interests of a certain area, broadcasting content that is popular to a local audience.
- Community radio is confined to a small geographical area. It serves a community which uses common resources for livelihood, has common development issues and concerns, which are relatively localized, nevertheless connected to national and regional development goals.
- There are more than 180 community radio stations across India, broadcasting in languages like Bundelkhandi, Garhwali, Awadhi and Santhali — tongues that typically find little or no space on television.

IV. BRAILLE ENABLED BALLOT PAPERS

Meghalaya, in a first, will witness Braille-enabled ballot papers at all polling booths.

About:

- The ballot papers pasted on the EVMs will have the names and symbols of candidates in Braille alphabet. There are more than 800 visually impaired electorate in Meghalaya State.
- Further to ensure a more inclusive election, the Chief Electoral Officer has mapped over 4,500 persons with disabilities to make sure that they get a priority at polling booths.
- **Rights of Persons with Disabilities Act, 2016** states that Election Commission shall ensure that all polling stations are accessible to persons with disabilities and all materials related to the electoral process are easily understandable by and accessible to them.

V. MODEL CODE OF CONDUCT VIOLATIONS

About:

 The Election Campaign banned several star campaigners from campaigning for giving "provocative speeches" and transgressing the model code of conduct. • Article 324 of the Constitution gives the commission the powers of "superintendence, direction and control" of elections.

What is Model Code of Conduct?

- MCC are the set of guidelines to conduct free and fair election which give the overview to the political parties and candidates about "do's and don'ts" before and during the election.
- The MCC intends to provide a level playing field for all political parties, keep the campaign fair and healthy, avoid clashes and conflicts between parties, and ensure peace and order.
- It aims to ensure that the ruling party, either at the Centre or in the states, does not misuse its official position to gain an unfair advantage in an election.
- Origin: The Model Code of Conduct evolved from a draft code voluntarily approved by representatives of leading political parties in Kerala in Feb. 1960. It has been in place since 1962.
- Duration: MCC has got the judicial recognition of the highest court of land. The apex court has given the ruling that the Code of Conduct would come into force the moment the Commission issues the press release, which precedes the election notification by a good two weeks. Thus the MCC remains in force from the date of announcement of elections till the completion of elections.
- **Status:** The code does not have any statutory basis. It has only a persuasive effect. But the Code has come to acquire significance in the past decade, because of its strict enforcement by the EC.

Evolution of Model Code of Conduct

- MCC was first proposed by Kerala in 1960 assembly elections.
- It was later adopted by the Election Commission of India (EC) during mid-term elections in 1968 and 1969.

VI. NRI VOTING

About:

• Social media is abuzz with fake posts that non-resident Indians can exercise their franchise in this year's general election.

Voting in India:

- Voting in an Indian election can be done in three ways:
 - In person, by Post, and through a proxy
- Under proxy voting, a registered elector can delegate his voting power to a representative. This was introduced in 2003 for elections to Lok Sabha and the Assemblies.
- Proxy voting is allowed on a limited scale. The option of proxy voting is available only for armed forces, police, and government officials posted outside India. The person can authorise another residing in the same polling booth area to cast a vote on his/her behalf. This option is currently available for wives of the above mentioned personnel, but not for the husbands.

 Postal ballots, in which a voter exercises his/her franchise through post is available only for people on election duty, armed forces personnel, and electors subject to preventive detention.

Status of NRI voting through proxies:

- According to the provisions of the Representation of the People (Amendment) Act, 2010, a Non Resident Indian, who is a citizen of India and who has not acquired the citizenship of any other country is eligible to be registered as a voter in the constituency in which his place of residence is mentioned in his passport.
- However, an NRI voter had to be present physically in his/her constituency to cast the vote. There is no provision of postal ballet or any other method of proxy voting.
- The **Representation of the People (Amendment) Bill 2017 that extends the proxy voting to NRIs** was passed in the Lok Sabha during the monsoon session last year, but didn't see the light of day in the Rajya Sabha and hence got lapsed.

VII. SERVICE VOTERS

In cases of close contests, service voters play crucial and decisive role.

About:

- As per the Election Commission of India, this year a total of 16,62,993 service voters are enrolled in the country, in comparison to the figure of 13,27,627 in 2014.
- The increase in number of service voters has been due to **Election Commission's all out efforts** to maximise the registration of service electors during summary revision 2019.
- There has also been an active cooperation of the services/ departments concerned and greater participation of service personnel.

Who are service voters?

- Voters having service qualification are known as Service Voters. They are:
 - member of the Armed Forces of the Union,
 - member of a force to which provision of the Army Act 1950 have been made applicable,
 - member of an Armed Police Force of a State, and serving outside that state; or
 - a person employed under the Government of India, serving outside India.
 - As per existing arrangements, members of India Army, Navy and Air force, Boarder Road Organisation, BSF, ITBP, Assam Rifles, NSG, CRPF, CISF and SSB are eligible to be registered as service voters.

• Key Points to remember:

• While wife can be enrolled as Service Voter, a son / daughter cannot be enrolled as Service Voter.

• No person can be enrolled on more than one electoral roll i.e. a service voter has to submit a declaration that they are not enrolled as a general elector in any constituency.

Use of Proxy

- A Service Voter can cast his/her vote by proxy also.
- Proxy should be any ordinary resident of that constituency; need not be a registered voter but must not be disqualified to be registered as a voter.
- Once appointed, the proxy will continue until his/her appointment is revoked by the service voter.
- The Proxy shall vote physically at the Polling Station of the constituency of the service voter.

VIII. RULES ON POLITICAL MANIFESTO

EC bars parties from releasing manifesto in last 48 hrs. before voting.

About:

• The commission has made the release of election manifestos a part of the Model Code of Conduct (MCC), which is a set of rules to be followed by parties after elections are announced.

Background:

- As of now there was no rule on timing of release of manifestos.
- The amended model code now states, manifesto shall not be released during the prohibitory period, as prescribed under Section 126 of the Representation of the People Act 1951.
 Section 126 of the act embodies "election silence", which prohibits any form of election campaign in the last 48 hours leading up to voting.

IX. VOTING FOR UNDERTRIALS & CONVICTS

About:

• The Supreme Court is hearing a plea questioning an electoral law which denies undertrials and convicts their right to vote.

Status of voting for undertrials:

- Section 62(5) of the Representation of People Act of 1951 mandates that "no person shall vote at any election if he is confined in a prison, whether under a sentence of imprisonment or transportation or otherwise, or is in the lawful custody of the police".
- Flaw with the law:
 - The Section sees both an undertrial and a convicted person equally.
 - The former's guilt is yet to be proved in a court. A person is innocent until proven guilty by law.
 - It denies an undertrial the right to vote but allows the same to a detainee who is out on bail.
 - The Section violates the rights to equality and right to vote (Article 326) and is arbitrary.

GUEST COLUMN



SEBI & CORPORATE GOVERNANCE IN INDIA

What is SEBI?

The Securities and Exchange Board of India (SEBI) was established in 1988 as a non-statutory body to regulate the securities market in India under a resolution of the Government of India. SEBI was given statutory powers by the enactment of the **SEBI Act, 1992.** SEBI has its headquarters at Mumbai, regional offices in New Delhi, Kolkata, Chennai and Ahmedabad and local offices in other major cities in India. Before SEBI came into existence, the capital markets were regulated by the Controller of Capital Issues formed under the Capital Issues (Control) Act, 1947.

The SEBI of India Act, 1992 was amended from time to time. The act was last amended by the **Securities Laws (Amendment) Act, 2014**. The Preamble of SEBI states the basic objective as to protect the interests of the investors in securities and to regulate the securities market. SEBI has quasi-legislative, quasi-judicial and quasi-executive functions.

What is the constitution of the SEBI Board?

The SEBI Board consists of a Chairman; two members from amongst the officials of the ministries of the central government dealing with Finance and administration of the Companies Act, 2013; one member from amongst the officials of the Reserve Bank; and five other members of whom at least three shall be the whole-time members, to be appointed by the Central Government. The Board exercises all powers as per the SEBI (Amendment) Act, 2002. The Chairman and the other members shall be persons of ability, integrity and capacity to deal with problems relating to securities market or have special knowledge or experience of law, finance, economics, accountancy, administration or in any other discipline which shall be useful to the Board. In 2017, Mr Ajay Tyagi was appointed the chairman. The members can be removed if they are insolvent, of unsound mind, convicted of an offence involving moral turpitude or they have abused their official position detrimental to the public interest. They will be given a reasonable opportunity of being heard in the matter before their removal. Any member, who is a director of a company and who has any conflict of interest must disclose and shall not take part in the deliberation of the Board relating to that issue. Securities Appellate Tribunal is a three-member body with the second appeal lies directly to the Supreme Court.

What are SEBI's objectives, powers and functions?

The SEBI board is statutorily bound to protect the interests of investors in securities. It regulates the securities market, stock

exchanges, stock brokers, sub-brokers, and share transfer agents, bankers to an issue, trustees of trust deeds, registrars to an issue, merchant bankers, underwriters, portfolio managers, investment advisers and other intermediaries associated with securities markets. SEBI regulates the depositories, participants, custodians of securities, foreign institutional investors, credit rating agencies and other intermediaries. It regulates venture capital funds and collective investment schemes, including mutual funds.

SEBI is required to **prohibit fraudulent and unfair trade practices**, insider trading in securities; substantial acquisition and takeover of companies. It undertakes inspection and audits of the stock exchanges, mutual funds, and those associated with the securities market, intermediaries and self-regulatory organisations. The Investigating Authority is empowered to call for any document and summon any individual under investigation to appear before the Investigating Authority personally and answer any question. SEBI can punish the guilty with imprisonment for a term extending to one year or with fine extending to one crore rupees, or with both, and also with a further fine which may extend to five lakh rupees for every day. In the course of the investigation, the Investigating Authority can order for the seizure of books, registers, other documents and conduct search those places it considers necessary for the purposes of the investigation.

The **Supreme Court of India heard a Public Interest Litigation (PIL)** filed by India Rejuvenation Initiative alleging that "The constitution of the search-cum-selection committee for recommending the name of the chairman and every whole-time members of SEBI for an appointment has been altered, which directly impacted its balance and **could compromise the role of the SEBI as a watchdog**.

What is corporate governance?

Corporate governance shows the system of governance in corporate encompassing rules, practices and processes by which a firm is directed, governed and controlled. Corporate governance balances the conflicting interests of a company's multiple key stakeholders, such as shareholders, management, customers, creditors, suppliers, financiers, government and the community. It provides a framework for achieving a company's objectives, covering every sphere of management, including action plans, internal controls, key performance indicators and the state of corporate disclosures.

Corporate governance refers to organization structure, the board of directors, rules, control framework, policies, procedures 18

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and resolutions of a company to regulate its activities. Proxy advisors and shareholders are included as stakeholders as they indirectly affect governance. **The role of the board of directors is the pivotal in governance**. Communication is a key component. For example, to understand Apple's corporate governance, the company outlines its leadership and governance, including its executive team, the board of directors the firm's committee charters and governance documents, bylaws, stock ownership guidelines and Apple's articles of incorporation.

The board of directors is the most important direct stakeholder influencing corporate governance. Directors are elected by shareholders or appointed by other board members. They represent the shareholders of the company. The board takes important decisions relating to appointments, executive compensation and dividend policy. Boards consist of executive and nonexecutive or independent directors. Major shareholders, founders and executives are insiders. Independent Directors (ID) are chosen because of their experience. IDs help align shareholder interest with those of the insiders. Bad corporate governance is reflected on a company's reliability, integrity or obligation to shareholders. Volkswagen AG in 2015 revealed that the firm rigged engine emissions tests in America and Europe.

Companies that do not cooperate with auditors and may publish noncompliant financial results. Bad executive compensation packages, poorly structured boards reflect bad corporate governance. In 2002 the USA introduced the Sarbanes-Oxley Act after accounting fraud bankrupted companies such as Enron and WorldCom. Good corporate governance adopts best practices, transparent rules and controls, environmental awareness and ethical behaviour and governance practices.

To rate corporate governance, all important aspects of governance such as the shareholder rights, public disclosure activities, relationship with stakeholders and the overall credibility of the board of directors are evaluated. A rating process includes macro and microanalysis and key data on general shareholders' meetings, publicly disclosed information and documents, minutes of board meetings, court cases filed, the rated institution's core business etc. Saha Corporate Governance and Credit Rating Services, Inc. has published on its web site (www.saharating.com) the IOSCO (International Organization of Securities Commissions) Code of Conduct for Credit Rating Agencies. It operates on the basis of independence, objectivity, transparency, and analytic accuracy.

Kotak Committee Report on Corporate Governance

The Kotak Committee Report submitted to SEBI in October 2017 contained 81 recommendations to improve the standards of corporate governance of listed companies in India. SEBI accepted 42 recommendations. Out of them, 14 recommendations were accepted with modifications. SEBI decided to refer eight recommendations to various agencies including government, professional bodies, and other regulators. Remaining 31

recommendations were not accepted. SEBI issued a circular in May 2018 for implementation of certain recommendations.

Some significant recommendations for Improving the role, composition and effectiveness of the board and its committees, including evaluation practices are:

- Ensuring independence in the spirit of Independent Directors and their active participation in the functioning of the company.
- Improving safeguards and disclosures pertaining to Related Party Transactions.
- Improving transparency in accounting and auditing practices by the listed companies.
- Addressing issues faced by investors on voting and participation in general meetings.
- Enhanced monitoring of group entities.
- Disclosure and transparency related issues.

Of the Indian listed corporate entities, a sizeable number are promoter-led companies. These amendments introduce some of the best practices followed globally for improved corporate governance encompassing better organization structure, rigorous checks and balances and greater independence of key gate-keepers including boards and auditors.

SEBI intends to put into effect the **accepted amendments from 1** April 2019 to 1 April 2020. These amendments aim at creating long-term value and protection of shareholders' interest. The amendments propose to increase the minimum number of directors on the Board to six against three under the Companies Act, 2013 in a phased manner from 1 April 2019 for top 1,000 listed entities and from 1 April 2020 for top 2,000 listed entities.

The amendments require at least one independent woman director who may be either an independent or a non-independent director on the board of the top 500 listed entities by 1 April 2019 and for the top 1000 listed entities by 1 April 2020.

The amendment insist for all listed entities the following:

- Disclosure of expertise/skills overall of the board
- Approval by special resolution for non-executive directors on attaining the age of 75
- Person must not be a director in more than eight listed entities, and;
- Disclosure of expertise/skills along with the name of each board member.

These amendments shall come into effect from 1 April 2020 for top 500 listed entities. However, this requirement is not applicable to the listed entities, which do not have any identifiable promoters as per the shareholding pattern filed with stock exchanges.

Role of Independent Directors in Corporate Governance

Independent directors play a critical role in voicing on the actions of the board. They flag non-promoter group issues and assess related party transactions. The independent directors balance the powers of the board. Separation of the roles of non-

executive chairperson and MD/CEO will enhance the quality of governance. Multiple directorships beyond a reasonable limit is restricted as it may dilute their ability to play an effective role.

SEBI's circular specifies that every listed entity may consider the following as a part of its disclosures on-board evaluation:

- Observations of the board evaluation carried out for the year
- · Previous year's observations and actions taken
- Proposed actions based on current year observations

The institution of Independent Directors is vital for an efficient and effective functioning of the corporate governance framework in any company. The amendments introduce for the listed entities to disclose to the stock exchanges and also as a part of the Corporate Governance Report, the detailed reasons for resignation of the Independent Directors before the expiry of their tenure. Independent Directors also function as an effective deterrent to fraud and mismanagement, inefficient use of resources, inequality and unaccountability of decisions and as a harbinger for striking the right balance between individual, economic and social interests. The Audit committee is required to review of utilization of loans/advances/ investments. The amendments introduce to have the Stakeholders Relationship Committee (SRC) and SRC to meet at least once in a year. The board of directors are expected to act in the interest of the stakeholders.

Impact of globalization

The operations of globalized companies add legal, financial and structural complexities with creation of holding and subsidiaries, associates and joint ventures. The board of a listed entity must review all significant transactions. It is important for the boards to ensure that good governance trickles down to the entire structure. These amendments provide for better transparency on the governance, strong monitoring mechanism, an effective governance program in place. With the increased complexity of transactions, the entity's board must focus on strong governance framework that can prevent costly financial and reputational damage. The listed entity may monitor its governance through the Governance Committee. SEBI is required to prescribe the form of the secretarial audit report. The definition of "related party" has been modified to include any person or entity belonging to the promoter or promoter group of the listed entity and holding 20% or more shareholding in the listed entity.

Amendments in SEBI's Listing Regulations

On 9 and 10 May 2018, SEBI issued certain amendments to the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 (Listing Regulations). These amendments are a follow up to the decisions taken at the SEBI Board meeting held in March 2018, wherein it had **accepted a number of recommendations of the Committee on Corporate Governance** constituted by SEBI under the chairmanship of Uday Kotak (the Kotak Committee). The Kotak Committee was formed on 2 June 2017 with the aim to improve standards of corporate governance.

SEBI Listing Regulations were amended pursuant to Kotak Committee recommendations in a staggered manner to enable the listed companies' time to implement the required changes such as composition and role of the board, institution of independent directors, board committees, monitoring group entities and related parties, accounting and audit related matters, disclosures and transparency, investor participation.

Shareholders' Rights

The main objective of SEBI is the protection of investors' interest. The Kotak Committee recommendations include inter alia, a copy of the annual report, details of board/committee composition, code of conduct, policies. Annual reports will have to be e-mailed to shareholders. It must include disclosures in relation to utilisation of funds, transactions with promoter/promoter groups, details of changes in key financial ratios, details of other directorships, a competence matrix of the board, credit ratings, and auditor fees. The amendments help the shareholders to have a deeper insight into the workings of their investee companies. The Kotak Committee introduced some amendments including mandatory submission of quarterly results, limited review of consolidated entities, amended definition of a material subsidiary and half yearly statement of cash flows, audit and costs. Several changes are recommended in respect of top 100, 500 and 2,000 listed companies.

Promoter owned companies

In India, there are many promoter-run and promoter-owned listed and unlisted companies. By placing persons belong to the promoter group and holding a minimum stake within the definition of **'related parties**', the amendments have subjected the companies and their related entities and affiliates to additional scrutiny at board and shareholder levels. The amendments mandate that no related party shall vote on any related party transactions. The board is required to formulate a policy for dealing with material related party transactions, and make bi-annual disclosures of related party transactions to the stock exchanges. The amendments limit on fees/remuneration payable to executive directors who are part of a promoter group, and to obtain shareholders' approval in case such thresholds are breached.

The Asian Corporate Governance Association, in its 2018 report on corporate governance gave 54% score to the Indian corporate governance regime, ranking it seventh amongst 12 Asian countries. SAHA Ratings, in its 2018 World Corporate Governance Index of 150 countries, placed India in Group 2, comprising countries eligible to enter Group 1, requiring further steps in the field of corporate governance. These rankings predate the Kotak Committee recommendations and the amendments directed to better fairness, transparency, responsibility and accountability. The Indian corporates, boards and promoters may have to implement the amendments to ensure better corporate governance so that the shareholders find more transparency, accountability and better corporate governance.

FLOOD MANAGEMENT IN THE AGE OF GLOBAL WARMING

The amicus curiae appointed by the Kerala High Court to assist it in flood-related cases has submitted its report.

About:

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 Widespread floods were caused in Kerala last year in the Monsoon season due to very heavy rainfall in a very short span of time which had not happened in at least hundred years before that incidence.



 However, the amicus curiae appointed by the Kerala High Court to assist it in flood-related cases submitted its report to the HC stating that the flood situation was aggravated due to the mismanagement of the dams located in the State.

Why this statement by the amicus curiae?

- For dams to truly tame floods, dam reservoirs need to be relatively empty before the onset of rains, this was not the case in Kerala.
- Authorities always looked to store the maximum amount of water in reservoirs during the monsoon season, which can be used for irrigation and generation of electricity during the summer months.
- None of the 79 dams in the State were operated or used for the purpose of flood control and moderation, despite the obligation to utilise them for flood control as per the stipulations under the National Water Policy, the National Disaster Management Authority guidelines on flood and real time integrated operation.
- Most of the major reservoirs were almost full before the extreme rainfall and they did not have the capacity to accommodate the additional flow, compelling the authorities to release substantial amount of water from reservoirs in a short span of time at the peak of the rainfall.
- The sudden release of water simultaneously from different reservoirs during heavy rain had aggravated the damage during the floods in August last year.
- Some other reasons cited by the amicus curiae are: no effective flood control zone is maintained; reduced reservoir storage capacity due to siltation; no integrated operation of dams based on scientifically identified Rule Curves and absence of proper Flood Warning.

Beyond Dam Mismanagement

• The extreme rainfall, and hence floods, in Kerala can also be attributed to a certain degree to **climate change**, but the disaster caused by the floods was **exacerbated by destruction of the ecology, particularly in the Western Ghats** and other ecologically sensitive areas like the **nilam** (wetlands).

The Climate Factor and extreme weather events

- Over the past 15 years, many parts of the country have been battered by extreme rainfall events. The Mumbai flood in 2005 was caused by extreme rainfall of 994 mm in 24 hours. Similar extreme rainfalls devastated Leh in 2010, Uttarakhand in 2013, J&K in 2014, Chennai in 2015 and Saurashtra in 2017.
- Kerala, too, experienced unusually high rainfall. The average rainfall in the month of August was 2.5 times the normal.
- There is now clear evidence that extreme rainfall events are increasing. Short-duration extreme rainfall events will further intensify as the global mean temperature rises beyond 1.5OC.



Destruction of Ecology in Kerala

- The destruction of Kerala's ecology over the past 60 years has been unprecedented. Three major transformations can be clearly identified.
- **One,** Kerala has lost a massive amount of natural forests (estimated to be in excess of 4 lakh hectares) and wetland (in excess of 2.5 lakh hectares) to agriculture, plantation and infrastructure development.

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- **Two**, land used for non-agricultural purposes (mostly for housing and infrastructure) has more than doubled in the last 50 years. In the last 10 years itself, Kerala has diverted 70,000 hectares of land for housing and infrastructure.
- **Three,** traditional crops like rice and tapioca have been replaced with plantations of rubber and other commercial crops.
- These drastic changes in land use have destroyed the watershed, impeded the flow of rainwater and reduced the ability of the land to soak water. All these factors aggravated the floods.
- These changes are despite the recommendations of the Western Ghats ecology expert panel (Madhav Gadgil Committee report) which had labelled areas of the state as extremely ecologically-sensitive where no developmental activities should take place.

The Way Forward

- The world over, dams are constructed mainly for the purposes of irrigation, power generation, and flood control. While the first two roles are acknowledged, the role of dams in flood control has always been underestimated.
- The tendency to hold the maximum amount of water in our reservoirs while ignoring the high risk involved in doing so can be attributed to our over-dependence on hydel projects to produce electricity. Therefore, it is **time to think of non-conventional sources for electricity generation such as solar, wind and tidal power.**
 - The practice of solar power generation in Kochi airport can be copied in similar large-scale projects by other government agencies. The public too should be encouraged to adopt the practice of solar power generation.
- It is also crucial to follow good reservoir water management policies. At present, the task of dam and water management is vested with the Public Works Department, the Electricity Board, and the Irrigation Department. Even in normal conditions, given contradictory opinions from various departments, it is difficult to implement decisions. Hence, the State Dam Security Authorities should be entrusted with the task of water management in reservoirs and with taking decisions in emergency situations.
- The flood forecasting infrastructure should be properly maintained and a regular inspection should be done especially before the rainy season.
 - The 2017 CAG report submitted in Parliament presented an insight on what is wrong with India's flood management plan.
 - The report said that out of the 219 proposed new telemetry stations, used to forecast floods, only a quarter were setup till August 2016.

- Of the 375 existing stations, almost 60% were nonfunctional after installation.
- Experts say the flooding in downstream areas can be better managed if the India Meteorological Department's 72-hour forecast is used to create simulation models for water release.
 - Gujarat and Odisha governments use the IMD's forecast to release water slowing from the dams on Tapi and Mahanadi rivers respectively, helping the two states manage floods.
 - Despite Gujarat receiving substantial rainfall in 2017, Surat city on the Tapi river was not flooded.
- State Flood Commissions can be set up to evolve a comprehensive approach to manage extreme rainfall in the state. This commission should examine the impact of major land use changes on the hydrology of the state. It should also look at the dam management systems.
 - Besides this, district-level sub-commissions should be set up to identify the areas where roads, railways, hydropower, embankments and other infrastructure projects aggravated flood problems and suggest mitigation measures.
- Specifically, Kerala should relook the Gadgil committee and the Kasturirangan committee reports. It has put forth objections to both reports and tried to reduce the area under ecologically sensitive zones (ESZs). It is time for it to re-evaluate its position regarding ESZs. Similarly, Kerala should also develop an action plan to conserve and enhance its wetlands.

Conclusion

- In view of all these problems, besides ensuring that the flood control purpose of dams is met, as a country, we need to improve our environmental governance while working with other countries to halt global warming.
- To minimise the impacts, we must start adapting to climate change. This will require putting adaptation at the centre of our development policies and processes.

Do You Know?

• Like many dams in India, **the Mullaperiyar** is located in one state (Kerala), but operated by another (Tamil Nadu).

About the Periyar River

- It flows into the Arabian Sea.
- It is one of the few **perennial rivers** in the region.
- The Periyar river is the **longest river** of Kerala.
- It flows through Periyar National Park into Periyar Lake, a 55 km² artificial reservoir created in 1895 by the construction of a dam across the river. Water is diverted from the lake into the Vaigai River in Tamil Nadu via a tunnel through the Western Ghats.

IMD PREDICTS NORMAL MONSOON THIS YEAR

The IMD's optimism stems from global climate models projecting a weakening El Nino.

About:

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 Prediction of El Niño has become more important as it is impacting the Indian monsoon more than before. Since 1991, six of the nine times that El Niño occurred, the Indian monsoon was affected.

Indian Monsoon: Some Facts

- The monsoon in India is called 'normal' if percentage departure of realised rainfall is within ± 10% of the Long Period Average.
- The long period average is calculated on the basis of mean rainfall in the four months of the southwest monsoon from 1951 to 2000, and works out to an average of **89 cm** for the country as a whole.

El Nino

- El Niño is an abnormal warming of water in the central and eastern tropical Pacific Ocean every three to five years and can last up to 18 months.
- Climate records of El Niño go back millions of years, with evidence of the cycle found in ice cores, deep sea muds, coral, caves and tree rings.

El Nino and Indian Monsoon

 An analysis of rainfall records of the past 132 years has revealed that severe droughts in the country have always been accompanied by El Nino events, but not all such weather conditions have led to the failure of monsoons.

Monsoon Forecasts#						
Year	Skymet	IMD	Actual	Pacific state		
2013	103	98	106	Moderate La Nina		
2014	102	88	88	Weak El Nino		
2015	102	106	86	Very strong El Nino		
2016	105	106	97	Very strong El Nino		
2017	95	96	95	Weak El Nino		
2018	100	97	91	Weak El Nino		
2019	93	96	-	Weak El Nino		

Source: Skymet IMD; * April or earlier in last six years in % of Long-period average (LPA) is average of rainfall between 1951 and 2000, which is 89 cm normal monsoon-rainfall between 96% and 104% of LPA; Above normal-rainfall between 104% and 110% of LPA; Excess monsoon-rainfall more than 110% of LPA.

- The El Nino events in 1965, 1972, 1982 and 1987 were bad for India but the 1997 El Nino, despite being the strongest in the century, did not affect monsoons.
- This led many experts to conclude that the link between monsoons and global weather event was wearing off. But the India Meteorological Department still takes into account El Nino for forecasts.

How El Nino affects Indian Monsoon?

- Indian Monsoon is a complex interplay of global and local events like El-Nino Southern Oscillation (ENSO), Indian Ocean Dipole (IOD), Equatorial Indian Ocean Oscillation (EQUINOO) and others.
- During the normal year, the North Easterly trade winds drive warm water from eastern pacific coast near Peru towards Western Pacific Ocean.
 - This leads to upliftment and cooling of the warm moist air in in the western part of the Pacific Ocean.
 - This rising limb of air bifurcates into at least two parts in the upper atmosphere. One part descends over the eastern Pacific Ocean, helping sustain the higher pressure there. This complete circulation of air between eastern and western Pacific Ocean is called **Walker Circulation**.
 - The other part descends near East Africa and aids the formation of the Mascarene High Pressure zone. This High Pressure aids the flow of moisture laden winds towards the Indian Subcontinent.
- During El Nino years, due the abnormal warming of water in the central and eastern tropical Pacific Ocean the high pressure area in the eastern Pacific Ocean weakens. As a result, less or no air descends near East Africa which results in the weakening of the Mascarene High Pressure zone, in turn leading to weakening of the South West Monsoon.
 - Simultaneously, the relatively high pressure in the western Pacific Ocean further impedes the flow of the South West Monsoon.
 - El Nino also creates less rainfall/drought conditions in the western Pacific Ocean (Indonesia, eastern and northern Australia and nearby areas including India etc.) whereas due to the presence of warm water in the eastern Pacific Ocean near Peru cloud formation takes place which causes heavy rainfall/floods in the coastal Peru.

 Researchers also believe that even the location of the warming in the Pacific may possibly have an influence on the monsoon. Anomalous warming in the Central and East Pacific (Nino 3.4 region) could have a more profound adverse impact on the monsoon than when the warming shifts to the adjoining far east Pacific (Nino 3. region).

Note: Typically, El Niños occur more frequently than La Niñas.

The Nino 3.4 region refers to the central and equatorial Pacific while Nino 3 is the adjoining far-east Pacific. During and El Nino, the Nino 3.4 region gets relatively warmer (as has been observed until March this year). This may have an adverse impact on the Indian monsoon.





Some important terminologies

- **ENSO:** El Nino-Southern Oscillation is a recurring climate pattern involving temperature and pressure changes in central and eastern Pacific waters near the tropics.
- While El-Nino is the abnormal warming of the waters in the Eastern Pacific Ocean near the Coast of Peru, Southern Oscillation relates to the changing wind and pressure patterns across western and central Pacific Ocean.

- Southern Oscillation index: It is calculated using the pressure difference between Darwin in Australia and Tahiti in the Pacific. (Tahiti minus Port Darwin) (negative SOI = El Nino, Positive SOI = La Nina).
- El Niño and La Niña are the extreme phases of the ENSO cycle; between these two phases is a third phase called ENSO-neutral.
- Equatorial Indian Ocean Oscillation (EQUINOO): Oscillation of warm water and atmospheric pressure between Bay of Bengal and Arabian Sea.

New Model to Predict Indian Monsoon

- Indian monsoon, both South West and North East, is too complex. Multiple factors affect rainfall like El Nino Southern Oscillation (ENSO), Indian Ocean Dipole (IOD)
- Scientists from Centre for Oceans, Rivers, Atmosphere and Land Sciences (CORAL), IIT Kharagpur, Indian Institute of Tropical Meteorology (IITM), Pune, and the Indian National Centre for Ocean Information Services (INCOIS), Hyderabad have developed a new model to predict Indian Monsoon.
- Aim is to estimate the variability and trends in rainfall over different climate regions of the country
- Problem with the old model (presently used):
 - Too much focus on ENSO.
 - The relationship between Equatorial Indian Ocean Oscillation (EQUINOO) and summer monsoon in models has been found to be opposite to actual observation.

Note: It is said that ENSO and EQUINOO are two major drivers for Indian monsoon that explain around 50% variability in monsoon.

Indian Ocean Dipole (IOD)

- Indian Ocean Dipole (IOD): Also known as the Indian Niño, it is an irregular oscillation of sea-surface temperatures in which the western Indian Ocean becomes warmer (positive IOD) or colder (negative IOD) than the eastern Indian Ocean.
- It is an atmosphere-ocean coupled phenomenon in the tropical Indian Ocean characterized by a difference in sea-surface temperatures.
- A 'positive IOD' or simply 'IOD' is associated with cooler than normal sea-surface temperatures in the eastern equatorial Indian Ocean and warmer than normal sea-surface temperatures in the western tropical Indian Ocean.

MICROPLASTICS: SMALL PLASTICS, BIG PROBLEM

Recent research reports point to the growing presence of microplastics in marine environments.

About:

- Microplastics now can be found worldwide, in the water of lakes and seas, in the sediments of rivers and deltas, and in the stomachs of various organisms ranging from zooplankton to whales.
- Microplastics have been detected in environments as remote as a Mongolian mountain lake and deep sea sediments deposited five kilometres below sea level.

What are microplastics & where do they come from?

- Microplastics are tiny pieces of plastic material typically smaller than five millimetres.
- They can be divided into two main categories according to their source:

Primary microplastics

- Directly released in the environment as small particles.
- Are estimated to represent between 15-31% of microplastics in the oceans.
- Main sources: laundering of synthetic clothes (35% of primary microplastics); abrasion of tyres through driving; intentionally added microplastics in personal care products, for example microbeads in facial scrubs.

Secondary microplastics

- Originate from degradation of larger plastic objects by external forces such as UV radiation, wind, waves, or animals, such as plastic bags, bottles or fishing nets.
- Account for 69-81% of microplastics found in the oceans.

Why do microplastics accumulate in nature?

- It is estimated that 6.3 billion metric tonnes of plastic waste have been produced since the 1940s, and 79% of that is now in landfills or the natural environment
- According to a 2017 International Union for Conservation of Nature (IUCN) report, microplastics are estimated to constitute up to 30% of marine litter polluting the oceans
- Further breakdown of plastic from secondary microplastics into ever-smaller particles does not lead to a complete degradation. Instead, **the original plastic polymer remains intact** at microscopic scale.

- Unless the original polymer is converted into carbon dioxide, water, methane, hydrogen, ammonia, and other inorganic compounds, a process of biodegradation influenced by external conditions, microplastics retain their properties.
- How they can be degraded: Exposure to UV radiation, oxygen, high temperatures, and microbial activity for an optimal duration can biodegrade some types of plastic.
 - However, many plastics labelled as biodegradableincluding single-use plastic shopping bags and takeaway food containers-will breakdown completely only when subjected to prolonged temperatures above 50°C.
 - These are the conditions produced in an industrial composter. Such conditions are rarely met in the marine environment.

CONSIDERED SOURCES

YEARLY WORLD CONSUMPTION AND TYPE OF LOSS						
	WORLD	INTENT	IONAL			
SOURCES	CONSUMPTION KTONS/YEAR PLASTIC	LOSS	REFENCCES			
PLASTIC PELLETS	257,000	NO	Plastics Europe (2007)			
SYNTHETIC TEXTILES	42,534	NO	FAO/ICAC (2013)			
TYRES	6,431	NO	ETRma (2010)			
ROAD MARKINGS	588	NO	Grand View Research, Inc. (2016)			
	452	NO	Coatings World (2012)			
CARE	40	YES	Leslio, H.A. (2015)			
	SOURCES PLASTIC PELLETS PLASTIC PELLETS SYNTHETIK TEXTILES TYRES ROAD MARKINGS MARINE COATINGS PERSONAL CARE	SOURCES WORLD CONSUMPTION REDUKTION PLASTIC 2577,0000 PELLETS 42,5334 TYRES 6,4311 ROAD MARKINGS 5888 MARINE COATINGS 452 PERSONAL PERSONAL	WORLD CONSUMPTION KTONSYEAR PLASTIC INTENT LOSS PLASTIC 257,000 NO PELETS 257,000 NO SYNTHETIC 42,534 NO TYRES 6,431 NO ROAD MARINES 588 NO MARINE COATINGS 452 NO			

What are the effects of microplastics?

- Microplastics found in the sea can be ingested by marine animals. Zooplanktons are known to directly consume microplastics, which are then in turn consumed by higher organisms.
- The plastic then accumulates and can **end up in humans** through the food chain.

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- d, consumption of coastal tourism, aquaculture, fisheries, riverine inputs, nussels or oysters, urban inputs), environmental and societal data.
 - This will allow mitigation measures to be better targeted, and used to predict and verify their effectiveness.
 - Examples of 'hot spots', from available evidence, include: Bay of Bengal, Mediterranean Sea, Gulf of Mexico, Japan Sea and other far eastern seas.
 - Remediation of microplastics already in the environment is another key component of reducing microplastics pollution.
 - Strategies under investigation included the use of microorganisms capable of breaking down synthetic microplastic polymers.
 - Follow the zero waste hierarchy: It is defined as the "progression of policies and strategies to support the Zero Waste system, from highest and best to lowest use of materials".
 - The 5 levels are: Reduce (Most preferred), Reuse, Recycle, Recover and Landfill (Least preferred).



Do You Know?

Bioaccumulation

- It is the accumulation of a substance, such as a toxic chemical, in various tissues of a living organism.
- Bioaccumulation takes place within an organism when the rate of intake of a substance is greater than the rate of excretion or metabolic transformation of that substance

Biomagnification

- It is the increasing concentration of a substance, such as a toxic chemical, in the tissues of organisms at successively higher levels in a food chain.
- As a result of biomagnification, organisms at the top of the food chain generally suffer greater harm from a persistent toxin or pollutant than those at lower levels.

- Among the various types of seafood, consumption of filter feeding invertebrates, such as mussels or oysters, appears the most likely route of human exposure to microplastics.
- The ingestion of microplastics can cause aquatic species to consume less food and therefore to have less energy to carry out life functions, and it can result in neurological and reproductive toxicity.
- Contaminating water sources: Microplastics are already known to contaminate the world's surface waters, now their presence in two groundwater systems of USA is also found.
- The effect on human health is as yet unknown, but plastics often contain additives, such as stabilisers or flameretardants, and other possibly toxic chemical substances that may be harmful to the animal or human ingesting them.
 - Microplastics are also known to absorb toxic chemicals which can even be carcinogen.

Microbeads

- In the late 1990s, cosmetic and personal care manufacturers began to market 'microbeads' as abrasives in skin cleansers, toothpaste, shaving cream, and similar products.
- Soon after, researchers monitoring water quality began to find microbeads in public water reservoirs and natural environments by the mid 2000s.
- Following public awareness campaigns widely supported by consumers, some producers responded by agreeing to remove the material from their goods.
- In December 2015, President Obama signed the Microbead-Free Waters Act of 2015, banning plastic microbeads in cosmetics and personal care products.

Reducing Microplastics Pollution: the way ahead

- Any proposed scheme would be ineffective as long as plastics and microplastics continue to enter the ocean.
 - Better control of the sources of plastic waste, through applying the principles of the **3 Rs (Reduce, Re-use, Recycle)**, and improving the overall management of plastics via the **circular economy**, represents the most efficient and cost-effective way of reducing the quantity of plastic objects and microplastic particles accumulating in the ocean.
 - **Public engagement and education** is a useful tool to help raise awareness and promote positive behaviour change, whilst we further develop our scientific knowledge.
- Identify probable 'hotspots' of land- and sea-based sources for plastic and microplastics, using a combination of targeted modelling, knowledge of actual and potential sources (e.g.

SHOULD BRITAIN APOLOGISE FOR JALLIANWALA BAGH MASSACRE

Britain cannot turn back or erase the past, but it can take steps to recognise what happened and to respond in a way that befits a modern relationship

About:

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- Recently the **London mayor, Sadiq Khan**, had appealed to the British government to tender an official apology for the Jallianwala Bagh massacre.
- A few months ago, Indian MP Shashi Tharoor suggested that the British government owes India an apology for its colonisation. Later the demand was reiterated in his book, An Era of Darkness.
- More than a thousand people were butchered on the command of **Brigadier General Dyer** to open machine gun fire on unarmed Baishakhi pilgrims trapped in the walled space of Jallianwala Bagh.
- Ahead of the **100th anniversary of the killings on April 13**, British Prime Minister **Theresa May expressed regret** for the Jallianwala Bagh massacre.
- Even though the British Prime Minister described the events as a "shameful scar on British Indian history", she **failed to make the formal apology** that many hope for.

Philosophical questions

- The issue of nations tendering apologies for historic wrongs is largely determined **by political calculations.**
- However, deeper than political considerations are philosophical underpinnings.
- When States and governments are called upon to apologise for historic wrongs like the colonial excesses or the slave trade, then a series of philosophical questions spring up.
- Is there any universal and eternal ethical code, static through ages, against which we judge the moral worth of actions and fix moral responsibility even centuries later?
- What obligates the contemporary governments and nations to apologise for acts of moral turpitude that happened in history?

Ethical arguments against collective responsibility

- The individual is a free moral agent i.e. the individual commands absolute freedom to act per his choice and therefore the moral responsibility for his actions falls squarely and solely upon the individual.
- Philosophers from Locke to Kant and then Rawls have adhered in some way or the other to this modernist tenet of 'moral individualism'.
- The implication of this philosophy of moral individualism is that there is little scope for collective responsibility.

• If moral responsibility falls solely on the individual, then only individuals and not nations are responsible for their actions and individuals must apologise for their sins, not the sins of their ancestors.

Ethical arguments in favour of collective responsibility

- A collective moral continuity through the history of a nation is essential to the idea of nationhood, collective identity and a shared culture.
- We take pride in the historical achievements of our nation and that **pride is an essential element of our national identity** or the idea of common nationhood.
- By the same token, **must we also not own moral shame and culpability for the historic wrongs** committed by our nation?
- If contemporary Britain, takes pride in the global dominance it enjoyed in the imperial era and accomplishments of some of its illustrious monarchs, it must also own the moral desert of colonial atrocities that fuelled those imperial achievements.
- Both these elements of collective pride and collective shame provide the moorings for collective identity to the British based on a sense of shared cultural continuity.
- Not owning up to the historic **sins erodes those moorings** of collective identity.

Other reasons for the need of British apology

- For better relations with India: Labour MPs of Britain had suggested that an apology was owed to the victims and their families as part of efforts to strengthen relations with India.
- For creating awareness: there was a need for the U.K. to raise awareness of the atrocity and the darker aspects of Britain's colonial legacy in schools, which would help children understand where they came from and where the country was today.
- Britain apologised for Mau Mau violence: The brutal torture of the Kenyan people during the Mau Mau emergency by means of the British has much in common with what happened in Amritsar.

Reasons why Britain may not be apologising

- Fear of setting a precedent: It could stir a hornet's nest of misconducts of former colonial empires. A UK minister held that "we debase the currency of apologies if we make them for many events."
- Financial reasons: The UK foreign office stated that such apologies would have financial implications. This suggests

that the UK wants to stay afar from getting itself fully recognised for the wrongful acts it did in India and **sparing itself from any future liabilities**, which may otherwise follow, once such an apology is made.

- Mahatma Gandhi seen as responsible: According to some English historians, Gandhi's Satyagraha and the people's refusal to obey the Rowlatt Act led to the violence.
- Action was in line with the law: Any act to the contrary of a law, howsoever just, fair and reasonable would invite violence.

Conclusion

- An apology from a British government in the throes of Brexit, at the moment, seems highly unlikely.
- However, the British government should now apologise, especially as we reach the centenary of the massacre.
- This is about properly acknowledging what happened and giving the people of Amritsar and India the closure they need through a formal apology.

2019 MARKS THE CENTENARY OF THE JALLIANWALA BAGH MASSACRE

Major Developments leading to the incident

- On April 10, 1919, demonstrations were held across Amritsar to demand the release of two popular leaders of the Indian Independence Movement, Satya Pal and Saifuddin Kitchlew.
- After the crowd was shot at by British troops, the protests started getting more violent who attacked several banks and other government buildings, including the Town Hall and the railway station.
- The violence continued to increase, and resulted in the deaths of at least 5 Europeans, including government employees and civilians.
- By April 13, the British government had decided to place most of the Punjab under martial law. The legislation placed restrictions on a number of civil liberties, including freedom of assembly, banning gatherings of more than four people.
- However, over 5,000 people gathered at Jallianwala Bagh on April 13, 1919. The date was for the Baisakhi festival which was also the Sikh new year.
- Michael O'Dwyer (Lieutenant Governor of the Punjab) is said to have believed that this was part of an attempt to rebel against the British.
 - The British were also fearful of a **Ghadarite uprising** in the midst of an increasingly tensed situation in Punjab, and the British response that ended in the massacre.

Hunter Committee

- After worldwide criticism an investigation committee named Hunter Committee was constituted.
- Three Indians, Sir Chimanlal Harilal Setalvad, Pandit Jagat Narayan, Sardar Sahibzada Sultan Ahmad Khan also were made a part of the 9 members committee.
- General Dyer was named as "The Butcher of Amritsar" in the aftermath of the massacre, and was removed from command and exiled to Britain.

Reaction in Britain

• But the House of Lords praised Dyer and gave him a sword inscribed with the motto "Saviour of the Punjab."

- Reaction in Britain to the massacre was mixed. Many condemned Dyer's actions—including Sir Winston Churchill, then secretary of war.
- In addition, a **large fund was raised** by Dyer's sympathizers and presented to him.

Outcomes

- It marked a **turning point in India's modern history**, in that it left a permanent scar on Indo-British relations.
- It was the prelude to Mahatma Gandhi's full commitment to the cause of Indian nationalism and independence from Britain.
- Rabindranath Tagore and Mahatma Gandhi, as a sign of condemnation, renounced their British Knighthood and Kaiseri-Hind medal respectively.
- In 1922, the infamous Rowlett Act was repealed by the British.
- Michael Francis O'Dwyer, the Lieutenant Governor of the Punjab in India from 1912 until 1919, endorsed Colonel Reginald Dyer's action regarding the Amritsar massacre and termed it a "correct action". He was assassinated by Udham Singh in London in 1940.



MISSION SHAKTI

India has joined a select group of four countries consisting of US, Russia and China.

About:

- Defence Research and Development Organisation (DRDO) successfully conducted an Anti-Satellite (A-SAT) missile test 'Mission Shakti' from the Dr A P J Abdul Kalam Island in Odisha.
- A DRDO-developed and a modified version of Ballistic Missile Defence (BMD) Interceptor Missile successfully engaged a live Indian orbiting target satellite in Low Earth Orbit (LEO) in a 'Hit to Kill' mode.
- India's interceptor missile used in the ASAT test has the capability to neutralise satellites **up to 1,000 km in space.**
- Until now, only US, Russia, and China could claim to have such capability. India is the fourth country to achieve this feat.
 - The US first tested ASAT technology in 1958, the USSR followed in 1964 and China in 2007.
- India's anti-satellite (ASAT) missile test was done in a low orbit of less than 300 kilometres and at a particular angle to ensure that minimal debris were disbursed above into space to avoid damage to other satellites or the International Space Station (ISS).
- All the debris created by India's test would take about **45 days** to decompose by coming under the influence of earth's gravity.

Significance of Mission Shakti for India

- India has for the first time tested and successfully demonstrated its capability to intercept a satellite and shoot it down in space based on complete indigenous technology. The test **demonstrates India's capability to safeguard her space assets.**
- The test also sends a strong message of deterrence to countries like China, that carried out a similar exercise first time in 2007 and the latest one last year.
- Targeting and destroying satellites of the enemy can completely halt communication systems of a country and during a conflict, this would mean the enemy could fail to use its missiles or drones.
- The technological capability for intercepting such a high velocity moving target at a higher altitude **has a direct bearing on Phase-II of the BMD programme** which envisages intercepting missiles travelling with a similar or lesser speed at a greater distance.

 Besides, the new missile developed for the ASAT test in record time will boost the confidence of DRDO scientists to undertake the development of more advanced missiles required for Phase-II of the BMD programme.



Space Debris

- Space debris encompasses both natural (meteoroid) and artificial (man-made) particles.
 - Meteoroids are in orbit about the sun, while most artificial debris are in orbit about the Earth.
 - Hence, the latter is more commonly referred to as orbital debris.
- Much of the debris is in low Earth orbit, within 2,000 km (1,200 miles) of Earth's surface.
 - However, some debris can be found in geostationary orbit 35,786 km (22,236 miles) above the Equator.
- How long a piece of space debris takes to fall back to Earth depends on its altitude.
 - Objects below 600 km (375 miles) orbit several years before re-entering Earth's atmosphere.
 - Objects above 1,000 km (600 miles) orbit for centuries.
- Damage due to space debris: Space shuttle windows often had to be replaced because of damage from collisions with manmade debris smaller than 1 mm (0.04 inch).
 - When in orbit, the space shuttle flew tail-forward to protect the forward crew compartment.

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- Any collision in space creates a cloud of debris, with each piece moving at **about 17,500 mph.**
 - That's roughly the speed required to keep a satellite in Low-Earth orbit and more than 10 times as fast as a bullet shot from a gun.

Kessler Syndrome

A situation in the context of space where one collision would create a cloud of debris that leads to other collisions, which in turn would generate even more debris, leading to a runaway effect called a **"collision cascade"** with the result that low Earth orbit would become unusable.

Steps taken to mitigate the problem of space debris

- To forestall such a build-up in debris, space agencies have begun taking steps to mitigate the problem, such as:
 - burning up all the fuel in a rocket stage so it does not explode later, or
 - saving enough fuel to de-orbit a satellite at the end of its mission.
- The British satellite Remove DEBRIS, which was launched in 2018 and deployed from the ISS, has tested two different technologies for removing space debris, capture with a net and capture with a harpoon, and will test a dragsail, which will slow down a piece of debris so it re-enters the atmosphere.
 - For satellites orbiting closer to Earth, operators lower the orbit of a decommissioned satellite so that it will naturally re-enter the atmosphere within 25 years (known as the "25-year Rule").
 - As the satellite begins to fall back toward Earth, the heat from air friction will burn up the satellite, causing it to disintegrate before it ever reaches the surface.
- Satellites in geostationary earth orbit (GEO) that are near the end of their missions are sometimes moved to a "graveyard" orbit 300 km (200 miles) higher, well out of the way of the busier operational orbits below.
- Airbus's future **"Space Tug,"** planned for 2023, is being built to grab old satellites and push them down to 125 miles (200 km) above Earth so they burn up.

International Treaties regarding ASAT

- No International treaty has been envisaged yet regarding particularly ASAT testing.
- UN Transparency and Confidence Building Measures (TCBMs): It includes registering space objects with the UN register, prelaunch notifications etc. India is signatory of this treaty.
- UN Outer Space Treaty 1967: It prohibits weapons of mass destruction in outer space but no restraining on ordinary weapons. India has ratified it in 1982.
- Inter-Agency Space Debris Coordination Committee (IADC) is an international forum for the worldwide coordination of

activities concerning with issuance of man-made and natural debris in space. India participates in IADC.

• India has supported UN resolution on No First Placement of Weapons on Outer Space.

Do You Know?

- **US and Israel** have consistently opposed the United Nations General Assembly's resolutions calling the Prevention of Outer Space Arms Race.
- **U.S.** has recently announced the creation of a 'space force' or a sixth branch of the American armed forces.

UN Outer Space Treaty

• The United Nations' (UN) Outer Space Treaty provides the basic framework on international space law, saying that space should be reserved for peaceful uses.

Salient Features

- States shall not place nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies or station them in outer space in any other manner;
- The Moon and other celestial bodies shall be used exclusively for peaceful purposes;
- Astronauts shall be regarded as the envoys of mankind;
- States shall be responsible for national space activities whether carried out by governmental or non-governmental entities;
- States shall be liable for damage caused by their space objects; and
- States shall avoid harmful contamination of space and celestial bodies.
- More than 100 countries are signatories. India ratified the treaty in 1982.

Note: While existing space treaties prohibit placing weapons of mass destruction in space, they **do not** explicitly prohibit the placing of other types of weapons.

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies

- This Agreement was adopted by the General Assembly in 1979 and entered into force in July 1984.
- The treaty provides that:
 - those bodies should be used exclusively for peaceful purposes,
 - their environments should not be disrupted,
 - United Nations should be informed of the location and purpose of any station established on those bodies.
 - Moon and its natural resources are the **common heritage of mankind.**
 - An international regime should be established to govern the exploitation of such resources when such exploitation is about to become feasible.

TRIBUNALS IN INDIA

The Supreme Court sought Centre's view on bringing all the tribunals under one central umbrella body.

About:

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- To ensure efficient functioning and streamlining the working of tribunals, the Supreme Court has sought the Centre's view on bringing all the Tribunals under one body.
- This was done during the hearing of a petition challenging certain provisions of the Finance Act, 2017.

Background:

- The Finance Act, 2017 allows the central government to specify the appointments, tenure, removal and reappointment of chairpersons and members of Tribunals including National Green Tribunal (NGT) through Rules.
- Earlier, these provisions were specified in the parent laws establishing these Tribunals.
- The Supreme Court in its two verdicts of 1997 and 2010 had directed government to bring all the tribunals under one central umbrella.

Tribunals in India:

- Tribunal is an administrative body established for the purpose of discharging quasi-judicial duties.
- Tribunals are not courts because Courts are governed by strict procedure defined in Criminal Procedure Code, Indian Penal Code and the Indian Evidence Act whereas tribunals are driven by the principles of natural justice.

Constitutional provisions:

- The provision for Tribunals was added by the 42nd Constitutional Amendment Act which added two new articles to the constitution.
- Article 323A: It empowers the parliament to provide for the establishment of administrative tribunals for adjudicating the disputes relating to recruitment and conditions of service of a person appointed to public service of centre, states, local bodies, public corporations and other public authority. Accordingly parliament has enacted Administrative Tribunals Act, 1985 which authorizes parliament to establish Centre and state Administrative tribunals (CAT & SATs).
- Article 323B: It empowers the parliament and the state legislatures to establish tribunals for adjudication of disputes related to matters of taxation, foreign exchange, industry and labour, land reforms, elections to parliament and state legislature, rent and tenancy Rights, etc.

Law Commission recommendations on issues with tribunals:

- **Independence:** Currently, the government makes appointments to the tribunals which form a pillar of the country's justice delivery system.
 - The tribunals functioning under the very government department which may be a litigant before them, makes the tribunals subservient to the executive. This could disturb the independent functioning of the tribunals.
 - The provisions relating to the qualifications, appointment, tenure, etc do not conform to the standards laid down by the Supreme Court in its various decisions.
 - The Law Commission suggested that a Committee led by the CJI should be in charge of the appointments to important posts.
 - It has also suggested that tribunals be monitored by a single nodal agency under the aegis of the Ministry of Law and Justice to ensure uniformity in affairs.
- **Functioning:** The disposal rates of tribunals in comparison to filing of cases per year is a welcoming 94% yet the tribunals are still burdened with high pendency of cases.
 - The official data in respect of the working of some of the tribunals do not depict a satisfactory picture.
 - Lack of infrastructure, unsatisfactory service conditions, delays engineered by lawyers and parties before the forums have been persistent problems.
- Vacancy: Large number of vacancies that are not filled for long periods are affecting the efficacy of tribunals.
 - The commission recommended that the procedure for filling up vacancies should start six months before the seats fall vacant.

Judicial Review of cases by Tribunals:

- In 1997, the Supreme Court in L. Chandra Kumar held that clause 2(d) of article 323A and clause 3(d) of article 323B, to the extent they empower Parliament to exclude the jurisdiction of the High Courts and the Supreme Court are unconstitutional.
- All decisions of the Administrative Tribunals are subject to scrutiny before a Division Bench of the High Court within whose jurisdiction the concerned Tribunal falls.

PERMANENT STATUS TO FINANCE COMMISSION

The present RBI governor has called for granting a permanent status to Finance Commission for continuity, consistency and better implementation of policies.

About:

- There is an ongoing debate on whether the Finance Commission should be made a permanent body or not.
- The present RBI Governor Shaktikanta Das is in favour to give permanent status to the Finance Commission.
- However, the former Reserve Bank Governor Y.V. Reddy believes that the Commission should be allowed to function in the same manner as it is doing currently.
- Currently, the Finance Commission has a five-year term.

Finance Commission

- A finance commission is set up every five years by the President under Article 280 of the Constitution.
- The constitution of each Finance Commission is announced by a gazette notification.
- The notification comprises terms that list out the Commission's work and considerations, called the Terms of Reference (ToR).
- **Members:** A Finance Commission would consist of a Chairman and 4 other members who are all will be appointed by the President.
- **Key functions:** The Commission makes recommendations to the president with regard to:
 - The **distribution of the proceeds of taxes** between the union and the states.
 - The principles which should govern the **grants-in-aid** to be given to the states.
 - It is also required to suggest measures to augment the resources of states and ways to supplement the resources of **panchayats and municipalities.**
 - Any other matter referred to the Commission by the President in the interest of sound finance.

Arguments for permanent status to FC

- Need for continuity: Finance commissions have over the past several decades adopted different approaches with regard to principles of tax devolution, grants to be given to states and fiscal consolidation issues. In other words, there has to be continuity and change between finance commissions.
- Need for consistency: There is a need to ensure broad consistency between finance commissions so that there is some degree of certainty in the flow of funds, especially to the states. This has become even more critical in the post GST scenario.

• For better implementation: If it is given permanent status, the Commission can function as a leaner entity in the intervening period till the next Finance Commission is set up in a full-fledged manner. During the intervening period, it can also address issues arising from implementation of the recommendations of the finance commission.

Arguments against permanent status to FC

- Permanent status can reduce proper use of discretion: The government would abdicate its discretion currently available in designing and implementing the specific purpose transfers.
- **Can dilute the neutrality:** Permanent status would dilute the neutrality of the Finance Commission between the Union and the States through a process of continuous association with the government.
- Permanent status can reduce political bargaining: There is a considerable merit in retaining the present structure as a forum of transfers involving continuous political bargaining with a broader mandate.

Weight of Criteria used by 11 th to 14 th Finance Commissions					Up for Review	
Criteria	11 th	12 th	13 th	14 th	15th Finance Commission	
Income Distance	62.5	50.0		50.0	to decide revenue sharing	
Population 1971	10.0	25.0	25.0	17.5	between Centre & State	
Population 2011				10.0	Recommendation for April 1.	
Index of Infrastracture	7.5				2020 to March 31, 2025	
Fiscal Discipline	7.5	7.5	17.5			
Tax E⊠ert	5.0	7.5			First Finance commission	
Fiscal Capacity Discipline			47.5		after rollout of GST	
Area	7.5	10.0	10.0	15.0	It may suggest changes in the	
Forest Cover				7.5	devolution formula based on	
Total	100	100	100	100	GST experience	

Source: Reports of the 1" to 14" Finance Commissions

Way Ahead

- The problem and the solution therefore are not with the Finance Commission but outside of it in terms of institutional structures.
- The way forward for fiscal federalism in India is to maintain the trust of all stakeholders in the institution.
- There is also **need to reinvent NITI Aayog to fill the vacuum** for other Central transfers to States.
- Most of the concerns are in the nature of mistrust between Union and States, and to some extent, lack of transparency, if not misunderstanding.
- There is also **need for reinventing NITI Aayog with appropriate stature** with the benefit of Constitutional legitimacy, possibly linking it to the **Inter State Council**.

INSTITUTIONAL INVESTORS IN COMMODITY MARKET IN INDIA

A panel constituted by the Securities and Exchange Board of India (SEBI) has recommended opening the commodity derivatives segment to all categories of institutional investors in a phased manner.

About:

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- Sebi proposed allowing foreign entities with exposure to the Indian physical commodity market to trade in commodity derivative.
- SEBI has proposed this via a consultation paper and said that the final regulations would be framed after taking into account public comments till June 18.
- The proposal follows recommendation from the regulator's Commodity Derivatives Advisory Committee (CDAC).

Other recent developments in Commodity Derivative Markets

- In March 2019, SEBI gave the final go-ahead to **mutual funds** and **portfolio managers** to participate in the commodity segment.
- In June 2017, the category III hedge funds i.e. Alternate Investment Funds (AIF) were allowed to enter into the commodity derivatives market. AIF-III raise money from high net worth individuals and corporates with a minimum contribution of Rs.10 million by each investor.
- In September 2015, the Commodity Regulator Forward Market commission (FMC) was merged with SEBI.

Commodity Derivatives Advisory Committee (CDAC)

- CDAC has been formed to review the commodity segment and suggest measures to improve the depth, efficiency and liquidity of the commodity market.
- Suggestions of CDAC:
 - The capital markets regulator should adopt a 'calibrated approach' before opening up the segment to overseas investors.
 - In the next phase, institutional investors like foreign portfolio investors, banks, insurance companies and pension funds should be allowed in the commodity derivatives segment.

Do You Know?

- A derivative is a **contract** between two or more parties whose value is based on an agreed-upon underlying financial asset, index or security.
- Commonly used derivatives are Futures contracts, Forward contracts, Options, Swaps, and Warrants.

Benefit of allowing the institutional investors in commodity derivatives segment

- Hike in trading volumes in Indian commodity derivatives market may bring higher revenues and earnings.
- New business opportunity for institutional investors.
- It will also deepen the commodity derivatives market.

Concerns/argument against

- This will bring more speculative investments into the Indian commodity market.
- It will defeat the basic objective of derivatives (i.e. efficient price risk management and price discovery), because FPIs, hedge funds, mutual funds and other institutional financial players do not have any direct exposure to underlying commodities.
- Price Volatility in the commodity markets will increase.

Way forward

- From a public policy perspective, the government's top priority should be on enhancing the participation of farmers and commercial hedgers rather than turning commodity derivatives market into a playground for speculators.
- Dissemination of Prices would allow the farmers to take appropriate decisions during pre-sowing and post-harvest period. For this price ticker boards – displaying futures and spot prices in the local language on a real-time basis – could be installed at local mandis, post offices, bank branches and community places.
- Micro and Mini Contracts for agricultural commodities may be launched to encourage direct participation of farmers and small traders.
- Farmer cooperatives and agricultural marketing federations (such as IFFCO and NAFED) may encouraged to act as aggregators and hedge positions in futures exchanges on behalf of their farmers.
- **Bottlenecks** such as fragmented spot markets, lack of road connectivity, insufficient number of accredited warehouses, grading facilities and other infrastructure inadequacies that restrict the participation of farmers in the futures markets, should be removed.
- Complete overhaul of existing regulatory and surveillance system is required to restore public confidence and market integrity.

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5G EXPLAINED

South Korea launches 5G networks.

About:

 South Korea launched the world's first nationwide 5G mobile networks.

What is 5G?

- 5G is the newest mobile network that's replacing the current 4G technology and it aims to provide a number of improvements be it speed, coverage, or reliability.
- 5G uses different kinds of antennas, operates on different radio spectrum frequencies, connects many more devices to the internet, minimizes delays, and delivers ultrafast speeds.

5G Works Differently than 4G

- Low latency is one of 5G's most important attributes, making the technology highly suitable for critical applications that require rapid responsiveness, such as remote vehicle control.
- 4G networks use frequencies below 6 GHz, but 5G uses extremely high frequencies in the 30 GHz to 300 GHz range.
- 5G uses shorter wavelengths, so antennas can be much smaller than existing antennas while still providing precise directional control.
 - 5G can support over 1,000 more devices per meter than what's supported by 4G.
- However, most of these super-high frequencies work only if there's a clear, direct line-of-sight between the antenna and the device receiving the signal.

towers that fire data in all directions, potentially wasting both energy and power.

- What's more is that some of these high frequencies are easily absorbed by humidity, rain, and other objects, meaning that they don't travel as far.
 - It's for these reasons that we can expect lots of strategically placed antennas to support 5G, either really small ones in every room or building that needs it or large ones positioned throughout a city; maybe even both.
- 5G networks can more easily understand the type of data being requested, and are able to switch into a lower power mode when not in use or when supplying low rates to specific devices.
- 5G has a minimum peak download speed of 20 Gbps while 4G sits at just 1 Gbps. Thus, from a peak speed perspective, 5G is 20 times faster than 4G.

What is peak speed?

When there are very few if any other devices or interferences to affect the speed, a device could theoretically experience what's known as peak speeds.

5G Vs LTE

- LTE stands for Long-Term Evolution, and it's a 4G technology.
- The main advantage that 5G offers over 4G LTE is faster speeds primarily because there will be more spectrum available for 5G and it uses more advanced radio technology.
- They're also **highly directional** and can be used right next to other wireless signals without causing interference unlike 4G
- The newer 5G is not a replacement for 4G, so we'll find LTE and 5G technology working together for the foreseeable future.

Wireless Communication Standards					
Generation	Features	Technology	Benefits		
1G	Voice Only	Analog technology	Poor battery life and voice quality, little security, and were prone to dropped calls.		
2G	SMS and MMS	Digital communications on GSM	Call and text encryption, along with data services such as SMS, picture messages, and MMS.		
2.5G and 2.75G	Data, finally	New packet-switching technique	Theoretical threefold speed increase.		
3G	More Data, Video Calling, and Mobile Internet	Mobile broadband	Maximum speed of 3G is estimated to be around 2 Mbps for non- moving devices and 384 Kbps in moving vehicles.		
4G	2008 to Present	Higher speeds than 3G	Max speed of a 4G network when the device is moving is 100 Mbps. The speed is 1 Gbps for low-mobility communication such as when the caller is stationary or walking.		

BLEACHING HITS WORLD'S SOUTHERNMOST CORAL REEF

Severe bleaching has already damaged the Great Barrier Reef in 2016 and 2017.

About:

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- The world's southernmost coral reef, the corals off Lord Howe Island some 600 km offshore from Sydney, has been hit by bleaching this summer.
- This highlights the fact that rising sea temperatures from climate change were affecting even the most isolated ecosystems.
- Scientists noted that **increasing baseline temperatures** caused by climate change, and **local factors** such as elevated temperatures in the area this summer, caused the bleaching to occur.

Coral Reefs

Almost all corals are colonial organisms. They are composed of hundreds to hundreds of thousands of individual animals, called polyps. In corals food is taken and waste is expelled through the same opening. Most corals feed at night. To capture their food, corals use stinging cells called **nematocysts**. Most reef-building corals contain photosynthetic algae, called **zooxanthellae**, that live in their tissues.

Mutualistic relations

- Coral polyps, which are animals, have **mutualistic relationship** with zooxanthellae.
- The coral provides the algae with a protected environment and compounds they need for photosynthesis.
- In return, the algae produce oxygen and help the coral to remove wastes.
- Most importantly, zooxanthellae supply the coral with glucose, glycerol, and amino acids, which are the products of photosynthesis.
- The coral uses these products to make proteins, fats, and carbohydrates, and produce calcium carbonate.
- Zooxanthellae are also responsible for the unique and beautiful colours of many stony corals.

Coral bleaching

- Sometimes when corals become **physically stressed**, the polyps expel their algal cells and the colony takes on a stark white appearance.
- This is commonly described as "coral bleaching" which may also lead to death of corals in the long term.
- Because their algal cells need light for photosynthesis, reef corals require clear water.

• For this reason they are generally found only in waters with small amounts of suspended material, i.e., in water of low turbidity and low productivity.

Anthropogenic Threats to Corals

- Human-caused, or anthropogenic activities are major threats to coral reefs.
- Pollution, overfishing, destructive fishing practices using dynamite or cyanide, collecting live corals for the aquarium market and mining coral for building materials are some of the many ways that people damage reefs all around the world every day.
- When some pollutants enter the water, nutrient levels can increase, promoting the rapid growth of algae and other organisms that can smother corals.
- Petroleum spills do not always appear to affect corals directly because the oil usually stays near the surface of the water, and much of it evaporates into the atmosphere within days.
 - However, if an oil spill occurs while corals are spawning, the eggs and sperm can be damaged as they float near the surface before they fertilize and settle.

Natural Threats to Coral Reefs

- Corals growing in **very shallow water** are the most vulnerable to environmental hazards.
- Large and powerful waves from hurricanes and cyclones can break apart or flatten large coral heads.
- Corals exposed during daylight hours are subjected to the most **ultraviolet radiation**, which can overheat and dry out the coral's tissues.
- Reefs also are threatened **by tidal emersions**. Long periods of exceptionally low tides leave shallow water coral heads exposed, damaging reefs.
- Increased sea surface temperatures, decreased sea level and increased salinity from altered rainfall can all threaten coral reefs.
- In addition to weather, corals are vulnerable to **predation.** Fish, marine worms, barnacles, crabs, snails and sea stars all prey on the soft inner tissues of coral polyps.

Coral reefs in India

 Coral reefs are present in the areas of Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Islands and Malvan. All coral species are protected under Schedule-I of the Indian Wildlife Protection Act (1972).
May, 2019

SUSPENSION OF LOC TRADE BETWEEN J&K AND POK

Ministry of Home Affairs has ordered suspension of all trade along the Line of Control (LoC).

About:

• Continuing crackdown on terrorism after Pulwana attacks, Indian government has suspended trade of 21 items conducted along the LoC separating J&K and Pakistan occupied Jammu and Kashmir.

Background of Trade across the LoC:

- While the land based trade between India and Pakistan is done through the Attari–Wagah border, trade across the LoC did not take place until 2008.
- In 2008, the trade across the LoC in J&K was started as a **Kashmir specific confidence building measure** in the backdrop of several failed attempts of India and Pakistan at solving Kashmir dispute.
- This trade across the LoC took place four days a week through Trade Facilitation Centers located at Uri and Chakkanda-Bagh.
 - Surprisingly, only 21 goods of common use to population on both sides of the border were traded at zero duty, unlike at Wagah border.
- **Barter System:** The trade was marred by currency, banking and communication issues and thus **took place in barter form.**
- Valuation of trade: Starting from INR 1 crore in 2008-09, the cross-LoC trade is currently valued at INR 3,000 crore which is considered far below its actual potential.
- **Past suspensions:** The trade was suspended earlier also after seizing of narcotics worth Rs. 100 crore from truck coming from PoK (2014), following Burhan Wani killing protest in J&K (2016) and other brief spells.

Reason for current suspension of trade:

- Alleged malpractice: As per reports received by the Gol, cross LoC trade routes were being misused by the Pakistan based groups for funding terror and smuggling illegal weapons, narcotics, and fake currency among others.
- Links with terror outfits: As per National Investigating Agency, a considerable number of LoC traders are involved with banned terrorist organizations in one form or the other.
- Several militant organizations have opened business in Pakistan and are using cross LOC trading routes infuse hawala money, weapons and narcotics into Kashmir.
- **Changed character:** Initiated for trade of common goods, the cross LOC trade today involves products mostly from **third party**, for instance California Almond from the US.

• It is speculated that LOC route could be misused following higher duty put in force after India's withdrawal of Most Favoured Nation to Pakistan.

India Pakistan Trade: Some Facts

- Trade by Value: Trade between India and Pakistan presently stands at \$2 billion (2018) but has the potential to increase to \$37 billion if both countries do away with artificial trade barriers, as per the World Bank.
- India's informal trade with Pakistan is 91% of formal trade. Many tradable items are exported from India to Pakistan through third countries, usually the United Arab Emirates.
- **MFN status:** India accorded Pakistan Most-Favoured-Nation (MFN) status or non-discriminatory market access in 1996, under the World Trade Organization (WRO).
 - However, Pakistan has not yet granted India the same status.
 - Pakistan allows only 138 items to be imported from
 India over the Attari–Wagah land route.
- Under the South Asian Free Trade Area (SAFTA), both countries have reduced tariffs to a maximum of 5%.
 - However, India and Pakistan continue to maintain long lists of sensitive items, numbering 614 and 936, respectively, including items on which no tariff concessions are granted.
 - Pakistan further maintains a **negative list comprising 1,209 items** that cannot be imported from India.

Most Favored Nation (MFN)

- As per the WTO agreements, MFN status ensures equal treatment to a nation as others.
- If a country grants special favor to a trading partner, it has to extend the same to all other WTO members.
- It formed part of GATT, GATS and TRIPS.
- Some Permitted exceptions:
 - Countries can set up a free trade agreement that applies only to goods traded within the group.
 - Developing countries can have special access to markets in developed nations.
 - A country can raise barriers against products that are considered to be traded unfairly from specific countries.

May, 2019

OCTOBER 2008 2015-2018 MARCH 2019 APRIL 2019 Line of Suspended again Intra-Kashmir Trade across the LoC suspended Government suspends business trade or several times on charges of due to repair LoC trade until better cross-LoC trade narcotics smuggling, weapons work on Kaman security mechanisms begins trade and border shelling post bridge are put in place The Indian government recently suspended Govt.'s reasons for suspension trade across the Line of Control with Paki-1000 Use of channel for American stan-occupied Kashmir. products like California almonds Here's a closer look at 750 the cross-border trade, Channelling funds for terror which has been sus-Drug trade 500 pended several times from 2015 to 2018 Smuggling of arms and 250 ammunition Funnelling fake currency notes n Ceasefire 2012 2010 2014 2016 2018 initiatives Year ending Border disorder **NOVEMBER 2003** India and Pakistan Cross-border trade has declined since declare ceasefire along the LoC and 2015 lay the ground for Due to the non-acinitiation of peace ceptance of LoC as an process international border DECEMBER 2004 between India and Pakistan, exports and India and Pakistan imports are called finalise 'traded-out' and confidence-building 'traded-in' goods. measures respectively

Cross-LoC trade was done by a 'barter' through the Uri-Muzaffarabad and the Poonch-Rawalakot routes on an agreed list of 21 items on both sides
 The trade took place four days a week from Tuesday to Friday
 The trucks must have either a J&K or an AJK registration number and should not weigh more than 9 tonnes

INDIA'S FIGHT OVER PAKISTAN'S AIRSPACE

About:

FACT FILE

- Pakistan has recently opened one route for west-bound flights from India.
- It had shut its airspace for all civilian flights following the Indian Air Force's strikes at Balakot.
- A decision on opening a passage for planes overflying Pakistan and entering India is yet to be taken.
- The route that has been opened passes from near Mumbai and enters southern Pakistan.
- This is only one of the 11 exit and entry points between India and Pakistan.

Impact of the airspace ban

- Since the ban by Pakistan on the use of its airspace, several flights within Asia, between Asia and West Asia or Europe or the U.S. were forced to take a longer route.
- This led to an **increase in operational costs**, forcing many airlines to cancel flights or hike fares.

• As many as 400 flights per day were affected due to closure of Pakistani airspace.

IATA's appeal to Pakistan

• The International Air Transport Association has urged Pakistan to open the airspace as soon as possible.

IATA

- The International Air Transport Association (IATA) is the trade association for the world's airlines.
- It represents around 290 airlines or 82% of total air traffic.
- Functions:
 - To improve understanding of the air transport industry among decision makers.
 - To develop global commercial standards for air transport.
 - To help airlines to operate safely, securely, efficiently, and economically.
 - To strive for sensible regulation.

ANALYSIS OF NOTA OPTION IN INDIAN ELECTIONS

Nota has polled more votes than the winning margin in more than 260 constituencies in assembly elections in states since it was introduced in 2013.

About:

- In the recent Assembly polls in Gujarat (2017), Karnataka (2018) Madhya Pradesh (2018) and Rajasthan (2018), NOTA seemed to be a popular option among many voters and its impact in the Lok Sabha Elections 2019 has yet to be seen.
- The None of the Above (NOTA) option enables the voter to not vote for any of the candidates contesting the elections.

About NOTA

- If the electorate is not happy or satisfied with any of the candidates, it is the voter's right to be able to reject all candidates and to do so while maintaining the secrecy of the ballot.
- NOTA was introduced in India following the 2013 Supreme Court directive in the **People's Union for Civil Liberties v. Union** of India judgment.
- It is **not a negative vote, but a neutral one** that records a voter's rejection of candidates. It does not hold any value in the final tally.
- Moreover, even if NOTA secures the most number of votes, the candidate with the most votes is declared the winner.
- The EC introduced the NOTA option for the first time in the **2013 Assembly elections** of Chhattisgarh, Mizoram, Rajasthan, Delhi and Madhya Pradesh.
- In 2014, the EC introduced the option in the **Rajya Sabha and** Lok Sabha elections.

Before NOTA

- Prior to the introduction of the NOTA option, **rule 49-0** under the **Conduct of Election Rules, 1961,** allowed voters to register a vote of disapproval or rejection if they felt none of the candidates were worth voting for.
- However, this violated the secrecy of the ballot as the voter had to inform the presiding officer of his/her decision to not vote and an entry was made in the register against his/ her name.
- This also put voters in the danger of being **targeted or harassed** by political parties and candidates.

Arguments for NOTA

• Apex court held that not allowing a person to cast a vote negatively "defeats the very **freedom of expression** and the right ensured in **Article 21** i.e., the right to liberty."

- NOTA option will encourage the voters to exercise their franchise even if they are not satisfied with any of the candidates contesting.
- Negative voting will lead to a **systemic change in polls as political parties** will be forced to project clean candidates. This may also help in controlling the **criminalisation of politics**
- NOTA gives an option to the voters to express their disapproval of all the candidates contesting in the election and **provide a way to express their disenchantment** in the contemporary political system of the country.
- Colombia, Ukraine, Brazil, Bangladesh, Finland, Spain, Sweden, Chile, France, Belgium and Greece allow their voters to cast NOTA votes. The US also allows it in a few cases.

Arguments against NOTA

- There are some scholars of the opinion that NOTA is a **waste** of votes since it does not hold any electoral value.
- NOTA would be meaning less if no mandatory re-election was held in cases where NOTA polled the majority of votes.
- When NOTA was introduced, some political leaders said that voting should be made mandatory to enhance the effect of the NOTA option.
- In 2016, a PIL was filed in the Madras High Court seeking the full **'right to reject'** instead of NOTA.
- There have also been suggestions that candidates rejected should not be allowed to contest for a fixed period of time.
- Another suggestion is that political parties whose candidates lose to NOTA should bear the cost of re-election.

Analysis of trends of NOTA use

- **Reserved constituencies** have seen a relatively larger number of NOTA votes,
 - This may be interpreted as the continued **social prejudice** against political reservation for SC/STs.
- Constituencies affected by left-wing extremism have also recorded higher NOTA performance and here probably it served as an instrument of protest against the State itself.
 - In the 2014 Lok Sabha elections, Bastar, the Nilgiris and Nabarangpur occupy three top slots in terms of NOTA votes polled.
- NOTA figures are comparatively higher in those constituencies which have seen a direct contest between the two major political parties.

NEXT IRS Current Affairs

May, 2019

RESOLUTION 2462 AND OTHER GLOBAL COUNTER-TERRORISM INITIATIVES

United Nations Security Council adopted a resolution to list Masood Azhar under the 1267 Al Qaeda Sanctions Committee of the Council.

About:

- The UN Security Council has adopted resolution 2462 to prevent and counter the financing of terrorism.
- The resolution was initiated by France.
- It is intended to update existing resolutions and adapt them to new forms of financing of terrorism and new challenges in this field.

Do You Know?

- Resolution 1373 was the first comprehensive resolution imposing obligations on all states to respond to the global threat of terrorism.
- It was adopted in 2001 in response to the September 11 terrorist attacks in the US.
- **Resolution 2462 also affirms the Resolution 1373** and in particular its decisions that all countries shall prevent and suppress the financing of terrorist acts.

Objectives of the resolution 2462

- The resolution calls upon all countries to enhance the traceability and transparency of financial transactions.
- This includes addressing risks associated with virtual assets and the risks of new financial instruments.
- It also encourages member states to apply risk-based antimoney laundering and counter-terrorist financing regulations to virtual asset service providers.
- It calls for effective partnerships with the private sector with regards to the evolution of trends, sources and methods of the financing of terrorism.

Global Counter-terrorism strategies and initiatives

- U.N. Global Counter-Terrorism Strategy: The United Nations General Assembly adopted the Global Counter-Terrorism Strategy in 2006. It is composed of 4 pillars:
 - Measures to prevent and combat terrorism
 - Measures to build states' capacity to prevent and combat terrorism and to strengthen the role of the United Nations system in that regard
 - Measures to ensure respect for human rights for all and the rule of law as fundamental basis for fight against terrorism.
 - Addressing the conditions conducive to the spread of terrorism

Four pillars of U.N. Global Counter-terrorism strategy



- Comprehensive Convention on International Terrorism (CCIT): It was proposed by India in 1996 but still there is no consensus among nations especially from USA and Organization of Islamic countries.
- **The Counter-Terrorism Implementation Task Force (CTITF):** The mandate of the CTITF is to step up the coordination and coherence of United Nations activities in the field of the global fight against terrorism.
- UN Global Counter-Terrorism Coordination Compact: The framework is an agreement between the UN chief, 36 organisational entities, the International Criminal Police Organisation (INTERPOL) and the World Customs Organisation.
 - It seeks to better serve the needs of member states in tackling the scourge of international terrorism.
 - The Coordination Committee of the United Nations will oversee the implementation of the framework and monitor its implementation.
 - The committee will be chaired by UN Under-Secretary-General for counter-terrorism.
- Establishment of UN Office for Counter Terrorism (OCT): The main functions of the new office would include:
 - Enhancing coordination and coherence across the 38 Counter- Terrorism Implementation Task Force entities,
 - Strengthening the delivery of UN counter-terrorism capacity-building assistance to Member States,
 - Improving visibility, advocacy and resource mobilization for UN counter-terrorism efforts and
 - Ensuring that due priority is given to counterterrorism
 across the United Nations system
- Resolutions of United Nations Security Council:

- Resolution 1373: Passed following the 11 September terrorist attacks on the United States. The resolution was adopted under Chapter VII of the United Nations Charter, and is therefore binding on all UN member states.
- **Resolution 1565:** It spelled out the definition of terrorism as seen by the Security Council. However, it does not represent a definition of "terrorism" which binds all states in international law.
- Resolution 1267:
 - It establishes the lists of sanctions on individuals and groups associated with Al Qaeda, Taliban and other terrorist organizations.
 - Resolution 2462: To prevent and counter the financing of terrorism.
- Financial Action Taskforce: It is the global standard-setting body for anti-money laundering and combating the financing of terrorism (AML/CFT). It seeks to protect the international financial system from money laundering and financing of terrorism. It recently put Pakistan in the 'Grey List' for lack of compliance.

Recent counter-terrorism initiatives

- New counter-terrorism strategy of US under Trump: The Strategy USA Pakistan-based terrorist outfits the Lashkar-e-Taiba (LeT) and Tehrik-i-Taliban Pakistan (TTP) as potential threat to the US.
- Exercise SCO Peace Mission: The joint exercise was conducted at Chebarkul, Chelyabinsk, Russia. India also took part.
- Exercise Maitree: India and Thailand joint military exercise to evolve drills and procedures involved in counter insurgency & counter terrorist operations in urban, rural and jungle terrain under UN mandate.
- Terrorist Travel Initiative: USA and Morocco launched Terrorist Travel Initiative under Global Counter Terrorism Forum's (GCTF).
- New initiative for Counter Unmanned Aerial System (UAS) Threats: USA and Germany launched initiative for Counter-UAS Threats.

Initiatives taken by India against terrorism

- Legal Measures: such as Unlawful Activities (Prevention) Act 1967, The National Security Act 1980, TADA 1987, POTA 2002.
- National Investigation Agency: The National Investigation Agency (NIA) is a central agency created by the government of India following the terror attack in Mumbai in 2008. It acts as the Central Counter Terrorism Law Enforcement Agency. The agency is empowered to deal with terror related crimes across states without special permission from the states.

- India has called for adoption of CCIT: It would provide a comprehensive global legal framework against terrorism.
- Part of Global Network of cities on Terror fight: Mumbai has now become part of this network which will strengthen exchange techniques and develop infrastructure to combat extremism and cyber terrorism.
- Financial Intelligence Unit: The regulations include maintenance of records of prescribed transactions, furnishing information to FIU-IND and verification of clients.
- **Demonetisation:** The purpose behind the move was to target fake currency notes in circulation, an important source of terror financing.
- Strengthening of PMLA in 2013: By strengthening confiscation and provisional attachment powers.
- **CTF cell:** A special Combating Financing of Terrorism (CTF) cell has been created under Ministry of Home Affairs for an integrated approach to tackle the problem of terror-funding.
- **De-radicalisation:** Measures by states such as Karnataka and Maharashtra for modernising madrasas, helping minority community in availing welfare schemes.

Do You Know?

- Masood Azhar was designated as a **"global terrorist"** by the UN Security Council 1267 Committee. The move was finally possible after China lifted its hold on a proposal to blacklist the Pakistan-based Jaish-e-Mohammed chief.
- This was in response to the listing request at the Committee co-sponsored by P-3 or group of three permanent UNSC members, the U.S., the U.K. and France, after the Pulwama attack that killed over 40 security personnel.
- This is a huge diplomatic victory for India, who was demanding it for a decade.

Way Ahead

- A **comprehensive strategy** is required-both in letter and spiritto deal with the menace of terrorism with involvement of different stakeholders- international actors, regional players, national and state government, civil society, media etc.
- Need for consensus building: to ensure the passage and implementation of CCIT framework by the global community.
- Using Diplomatic Platforms: India should use diplomatic channels like BRICS platform or Shanghai Cooperation Organization's Regional Anti-Terrorist Structure (RATS) to prevent state sponsored terrorism emanating from Pakistan.
- India must frame National Security Strategy and National Counter Terrorism Policy to have coherent and visionary guidelines to address the issue of terrorism.
- Sensitization, modernization and capacity building of intelligence and armed forces along with increasing police to population ratio.



ECONOMY

FESTIVAL OF INNOVATION AND ENTREPRENEURSHIP (FINE)

President of India inaugurated Festival of Innovation and Entrepreneurship (FINE) in New Delhi.

About:

- Gandhian Young Technological Innovation Awards were also awarded on this occasion.
- FINE is an initiative to recognise, respect, showcase, reward innovations and foster supportive ecosystem for innovators.
- The 5-day festival was organised by Rashtrapati Bhavan in association with **Department of Science and Technology (DST)** and National Innovation Foundation-India (NIFI).
- It was aimed to provide platform for innovators for building linkages with potential stakeholders whose support can improve their prospects in coming years to develop their ideas into implementable projects for the larger social good.

National innovation Foundation-India (NIFI)

- NIF India was set up in March 2000 with the assistance of Department of Science and Technology (DST).
- NIF scouts, supports and spawns' grassroots innovations and outstanding traditional knowledge based applications developed by individuals and local communities in any technological field, helping in human survival without any help from formal sector.
- It also tries to ensure that such innovations diffuse widely through commercial and/or non-commercial channels, generating material or non-material incentives for them and others involved in the value chain.
- NIF conducts National Biennial Grassroots Innovation Award Functions and annual Dr A P J Abdul Kalam Ignite Children Award functions.
- NIF has also set up an augmented Fabrication Laboratory (Fab Lab) for product development and strengthening inhouse research.
- Micro Venture Innovation Fund (MVIF) at NIF, with support from Small Industries Development Bank of India (SIDBI), has provided risk capital to 230 innovation based enterprise projects.
- The INSPIRE Award MANAK (Million Minds Augmenting National Aspiration and Knowledge) is being revamped and executed by DST and NIF-India to align it with the action plan for "Start-up India" initiative.

GLOBAL ENERGY TRANSITION INDEX

India ranks 76th on WEF Global Energy Transition Index.

About:

- India has moved up two places to rank 76th, among 115 economies, on **Global Energy Transition Index**.
- Global Energy Transition Index is an annual list, compiled by Geneva-based World Economic Forum (WEF), on how well the countries are able to balance energy security and access with environmental sustainability and affordability.
- Positive observations about India:
 - ndia has made significant strides to improve energy access in recent years and scores well in the area of regulation and political commitment towards energy transition. An enabling environment is being built in India to support the future energy transition.
 - India ranks considerably higher when it comes to readiness to adapt to future energy needs.
 - India is also the **second best in the BRICS** block of emerging economies, with Brazil being the best at 46th place globally.
- Negative observations about India:
 - India is amongst the countries with **high pollution levels** and has a relatively high carbon dioxide intensity in its energy system.
 - India scores low in terms of system performances. The current energy system is outdated.
 - The continued use of coal for power generation, increasing commodity prices and slower than needed improvements in energy intensity remains an issue.

World Economic Forum

- The WEF founded in 1971 as a not for profit organisation is an international organization for public-private cooperation.
- The Forum engages the foremost political, business and other leaders of society to shape global, regional and industry agendas.
- Other Index/Reports published by WEF:
 - Global Information Technology Report
 - Travel and Tourism Competitiveness Report
 - Global Competitiveness Report
 - Environmental Performance Index
 - Global Gender Gap Index
 - Inclusive Growth and Development Index

JOB CREATION BY MSME

Only 3.32 lakh MSME jobs were created in last four years.

About:

- According to the report on 'Survey on Jobs Creation and Outlook in MSME Sector', 3.32 lakh jobs were created in the last four years.
- Micro enterprises were the largest job generators, having created 73% of the net jobs. Small enterprises, on the other hand, accounted for 23% of the net jobs created, while medium enterprises accounted for just 4%.

Jobs at Hand	State	Jobs created	ln %
MSME jobs created in the last four years	Maharashtra	97,286	29.27
	Gujarat	47,879	14.40
	Telangana	32.982	9.92
	Karnataka	28,542	8.59
	T.N.	18,210	5.48
	M.P.	18,074	5.44
	A.P.	16,034	4.82
- North	Kerala	15,206	4.57
Contraction of the second seco	Rest of India	58,181	17.50
A. C.	Total	3,32,394	100

- The sectors which created employment were (a) hospitality (b) tourism, (c) textiles and apparel (d) metal products (e) Machinery parts (f) transport and (g) logistics.
- States which created large number of jobs were Maharashtra, Gujarat and Telangana.

MSMEs

• The Micro Small and Medium Enterprises (MSMEs) are small sized entities, defined in terms of their size of investment.

Manufacturing Sector		Services Sector	
Enterprises	Investment in plant & machinery	Investment in equipments	
Micro Enterprises	< 25 lakh rupees	< 10 lakh rupees	
Small Enterprises	25 lakhs – 5 crore rupees	10 lakhs – 2 crore rupees	
Medium Enterprises 5 – 10 crore rupees		2 – 5 crore rupees	

- The MSME (Amendment) Bill, 2018 proposes a uniform classification for all MSMEs. Under the Bill, all MSMEs, whether manufacturing or service-providing, will be classified on the basis of their annual turnover.
- Government initiatives like the 2% interest rate subvention given to MSMEs and recently implemented Trade Receivable

e-Discounting System (TReDS) are expected to drive future growth in the MSME sector.

Trade Receivable e-Discounting System

- TReDS is an online mechanism for facilitating the financing of trade receivables of MSMEs through multiple financiers.
- It enables discounting of invoices of MSME sellers raised against large corporate, allowing them to reduce working capital needs.

INDIA ENERGY MODELLING FORUM

First Workshop on India Energy Modelling Forum (IEMF) was recently held.

About:

- This workshop was organized by NITI Aayog and the United States Agency for International Development (USAID) with the support of the Pacific Northwest National Laboratory (PNNL).
- It was organized under the Sustainable Growth Pillar of the India-U.S. Strategic Energy Partnership.

About IEMF:

- IEMF has been envisaged as a pan-stakeholder platform for debating ideas, scenario-planning & discussing the India's energy future.
- It seeks to provide a platform for leading experts and policy makers to study important energy and environmental issues and ensure induction of modelling and analysis in informed decision making process.

ANTI-PROFITEERING UNDER GST

National Anti-Profiteering Authority (NAA) can act without consumer complaints also.

About:

- The chairman of the National Anti-profiteering Authority has clarified that the NAA can take note of the any instance of anti-profiteering even without a complaint from a citizen.
- This can be done because the chairman of the NAA is also a civilian and s/he can also take cognizance of such act.
- Even **mock purchases** can be made by NAA officers to check a trader's invoice for any profiteering activity.

What is profiteering under GST act?

 In terms of Section 171 of the CGST Act, 2017, the suppliers of goods and services should pass on the benefit of any reduction in the rate of tax or the benefit of input tax credit to the recipients by way of commensurate reduction in prices.

- The wilful action of not passing on the above benefits to the recipients in the manner prescribed is known as "profiteering".
- Anti-profiteering provisions will kick in when benefits arising out of the following are not passed to the customers:
 - Reduction in final price of an item due to reduction the tax rates applied on it.
 - Benefit of Input Tax Credit (ITC) available to the registered supplier.

About National Anti-Profiteering Authority (NAA):

- NAA was set up under Section 171 of the Central GST Act, 2017 to check whether trade and industry were passing on rate reductions under the Goods and Services (GST) Tax.
- NAA's **main function** is to ensure that traders are not realizing unfair profit by charging high price from the consumers in the name of GST.
- The responsibility of the NAA is to examine and check such profiteering activities and recommend punitive actions including cancellation of licenses
- Sunset clause for Anti-Profiteering law: In terms of Rule 137 of the CGST Rules, 2017, the Anti-Profiteering Authority shall cease to exist after the expiry of two years from the date on which the Chairman of the Authority enters upon his office unless the GST Council recommends otherwise.
- The **maximum time** envisaged for resolution of cases is **9 months** excluding the time taken by the State-level screening committee and the Standing Committee (maximum 2 months) for processing the complaints.

Note: Maximum retail price (MRP) written on products is the maximum amount that can be charged from a customer for the product. MRP is inclusive of GST and charging more than MRP attracts the provisions of **Legal Metrology Act.**

GLOBAL SKILLS INDEX, 2019 REPORT

US-based online education company Coursera released the Global Skills Index Report, 2019.

About:

- Global Skills Index report analysed skill trends and performance data for 60 countries.
- The report stated that **Demand for Technology and Data Science** skills is growing, while demand for Business skills is shrinking.
- Report stated that India "lagging" in two out of three future skills assessed.
- India is relatively strong in **technology** ranking 44th out of 60 countries, which comprises of general computer science skills, computer networking, databases, software engineering, and others.

- In the **business** domain, India is ranked at 50th position. It is relatively stronger in sales and marketing, but has catching up to do in management, communication, accounting and finance skills.
- In **data science** domain, India is ranked at 51st position. Indians are exceptionally good in mathematics but trailing its peers in applied data science, statistics and machine learning.
- India was also found to be **lagging among the 16 Asia Pacific countries**, which signals a great opportunity for more focused upskilling efforts on key competencies.

Recommendations of report:

- In order to keep pace with the change in global skills landscape, governments and businesses must upskill their workforces to build, manage, and leverage new technologies.
- India can achieve its skilling goals by **democratising access to** education across all levels of population.

REAL ESTATE INVESTMENT TRUSTS (REITS)

Recently, the initial public offering (IPO) of India's first Real Estate Investment Trust (Embassy REIT) was subscribed 2.5 times.

What is REIT?

- REITs provide a way for individual investors to earn a share of the income produced through commercial real estate ownership – without actually having to go out and buy commercial real estate.
- It is a company that owns, and in most cases operates, income-producing real estate.
- REITs own many types of commercial real estate, ranging from office and apartment buildings to warehouses, hospitals, shopping centers, and hotels.
- The sponsor entity launches REITs that owns the properties and then leases them to earn rental income, which is then distributed among the unit holders.

Types

There are three types of REITs available:

- Equity REITs which purchase, own and manage incomegenerating properties.
- Mortgage REITs which lend money directly or indirectly to real estate owners
- Hybrid REITs which are a combination of the first two.

How does it work

• Unlike shares, investors in a REIT get units, somewhat similar to units in a mutual fund.

- A REIT owns a number of rent-yielding commercial and hotel properties, and the unit-holders get a portion of this rental income in the form of dividend and interest income in proportion to their equity contribution.
- It gives the investor an option to buy partial stake in rentyielding commercial properties, with the benefit of a professional manager managing these assets.
- The trust distributes the cash flow to unit-holders in the form of dividend and interest income, generally, once every quarter.



Benefits

- **Ease of investment** Investing in REIT is just like investing in direct equity that can be done through a demat account.
- **Opportunity to invest in commercial properties** which typically earn more rent than residential properties with built-in clauses of rent hikes at fixed intervals.
- Apart from the rental income, any increase in the value of units will also add to overall capital appreciation.
- REIT is expected to bring transparency and liquidity in the real estate segment while allowing domestic and global investors invest in the sector through a well regulated investment vehicle.

Associated risks with REIT

- Litigation and compliance issues like title dispute, settlement of project affected people, environment clearance, state & central laws and political interference etc.
- Possible downturn in the real estate sector may lead to loss for the investor.
- Rate of occupancy is always a critical factor.
- High management fee and operating expenses charged.

How are REITs taxed?

- It is mandatory for a REIT to distribute 90% of its rental income among its unit holders.
- This income will be added to the overall income of the investor and will be taxed at the applicable rates.
- REIT also involves a tax deducted at source component that is 10% for resident investors and 40% for non-resident investors.

Way forward

• REIT in India is at a nascent stage and as the segment evolves, the regulatory environment could be tightened.

WORLD BANK PRESIDENT

David Malpass is the new World Bank President.

About:

- David Malpass, a top U.S. Treasury official in Trump administration, was on April 5 unanimously selected as the new President of the World Bank the term of 5 years.
- Since the bank's creation following World War II, all of its Presidents have been American men.
- The World Bank President is Chair of Boards of Directors of the International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA).
- The President is also ex officio Chair of Boards of Directors of the International Finance Corporation (IFC), Multilateral Investment Guarantee Agency (MIGA), and the Administrative Council of the International Centre for Settlement of Investment Disputes (ICSID).

CURRENCY CHEST IN INDIA

The Reserve Bank of India (RBI) has issued guidelines for banks to set up new currency chests.

RBI guidelines for new currency chest

- Area of the strong room/ vault of at least 1,500 sq ft. For those situated in hilly/ inaccessible places, the strong room/ vault area of at least 600 sq ft.
- The new chests should have a processing capacity of 6.6 lakh pieces of banknotes per day. Those situated in the hilly/ inaccessible places, a capacity of 2.1 lakh pieces of banknotes per day.
- The currency chests should have **Chest Balance Limit (CBL)** of **Rs 1,000 crore**, subject to ground realities and reasonable restrictions, at the discretion of the Reserve Bank.

What are Currency Chests?

- Currency chests are branches of selected banks authorised by the RBI to stock rupee notes and coins.
- The RBI offices in various cities receive the notes from note presses and coins from the coin mints. These are sent to the currency chests and small coin depots from where they are distributed to bank branches.
- The potential advantage of a currency chest was highlighted during demonetisation.

Note: As per the RBI's annual report of 2017-18, the currency management infrastructure consists of a network of 19 issue offices of the Reserve Bank, 3,975 currency chest and 3,654 small coin depots of commercial, co-operative and regional rural banks spread across the country.



INTERNATIONAL ISSUES

BOLIVIA JOINS ISA

Bolivia became the latest country to sign the framework agreement of the International Solar Alliance.

About:



- International Solar Alliance (ISA) is a treaty-based international government organization and the first one to be headquartered in India.
- International Solar Alliance (ISA) was launched by Indian Prime Minister and then French President at the U.N. Climate Change Conference in Paris on in November, 2015.
- Objective
 - The ISA has a target of achieving 1 TW of solar energy by 2030, which is estimated to require \$1 trillion to achieve.
 - ISA aims to provide a common platform to address the specific solar technology deployment needs of the solar resource-rich countries located between the Tropic of Cancer and Tropic of Capricorn.
- Membership
 - The ISA was initially envisaged for the 121 prospective member countries, most of them located **between the Tropics of Cancer and Capricorn**. These countries are also known as **sunshine countries** as they experience bright sunlight for **at least 300 days** of the year.

• Later, India mooted for an amendment to make all United Nations members eligible for ISA membership. Presently, countries not falling within the two tropics can join the ISA as partner countries enjoying all benefits of the ISA, except voting rights.

Coordination with other organisation

- ISA will establish networks and develop synergies with other bodies like International Renewable Energy Agency (IRENA), International Energy Agency (IEA), Renewable Energy Policy Network for the 21st Century (REN21) and Renewable Energy and Energy Efficiency Partnership (REEP). ISA will supplement their efforts in a sustainable and focused manner.
- India's contribution in ISA
 - India has offered to meet ISA Secretariat expenses for initial five years, and has also made a contribution of Rs.175 Crore for creating ISA Corpus fund.
 - In addition, India has offered training support for prospective ISA member countries at the National Institute of Solar Energy and also support to prospective ISA member countries for demonstration projects for solar home lighting, solar pumps for farmers and for other solar applications.
 - The GOI has dedicated 5 acres of land in the National Institute of Solar Energy campus for the construction ISA Headquarters.
- Till date ISA has launched five major programmes as follows:
 - Scaling Solar Applications for Agriculture Use;
 - Affordable Finance at Scale;
 - Scaling Solar Mini-grids.
 - scaling up solar rooftop.
 - scaling up solar e-mobility and storage.

COUNTRY BY COUNTRY REPORTS

India and the United States of America signed an Inter-Governmental Agreement for Exchange of Country-by-Country (CbC) Reports.

- India and the US can now exchange **country-by-country** (CbC) reports filed by the ultimate parent corporations based in either of the countries.
- India has already signed the **Multilateral Competent Authority Agreement (MCAA)** for Exchange of CbC Reports, which has enabled exchange of CbC Reports with 62 jurisdictions.

What is a Country-by-Country (CbC) Report?

- The Base Erosion and Profit Shifting (BEPS) Action 13 report (Transfer Pricing Documentation and Country-by-Country Reporting) provides a template for multinational enterprises (MNEs) to **report annually and for each tax jurisdiction** in which they do business the information set out therein.
- This report is called the Country-by-Country (CbC) Report.
- The Income Tax Act also requires Indian subsidiaries of MNEs to provide details of key financial statements from other jurisdictions where they operate.
- This provides the IT department with better operational view of such companies, primarily with regards to revenue and income tax paid.

Base Erosion and Profit Shifting (BEPS)

- BEPS refers to corporate tax planning strategies used by multinational companies that artificially shift profits from higher tax locations to lower ones, eroding the tax base of the higher tax locations.
- It exploits the loopholes and gaps between the tax rules of different countries. The aim is to minimise the overall corporation tax that is payable by the corporation.
- Theoretically, BEPS practices are **not illegal** but they deprive the home country of much valuable corporate tax that could have been used in developmental work.

OECD action plan to address BEPS

- OECD along with G20 have developed 15-point action plan on how to address the challenges arising from BEPS.
- The action plan seeks to enhance the coordination among different countries regarding sharing of tax related data and also seeks to address the taxation loopholes in respect of the Digital economy, transfer pricing and cross border supply of digital products and services.

Significance of exchanging CbC report

- This exchange of Country by Country report means that if there is a Multi-National Company headquartered in USA and having its subsidiary in India, then the CbC report filed in the US will be sufficient and Indian Subsidiary need not file local CbC report.
- This will reduce the compliance burden on the local subsidiaries and improve ease of doing business.

DISASTER RELIEF IN MOZAMBIQUE

INS Magar departed Mumbai for Mozambique with relief material.

About:

 INS Magar, an amphibious warfare vessel, departed Mumbai for Port Beira in Mozambique with essential relief material for the cyclone ravaged areas.



- Tropical cyclone Idai was one of the worst tropical cyclones on record to affect Africa and the Southern Hemisphere. It has affected Madagascar, Mozambique, Malawi and Zimbabwe.
- The Indian warship is carrying 300T of relief supplies including essential medicines, anti epidemic drugs, food provisions, clothing, repair and rehabilitation equipment, and temporary shelters.
- INS Magar will augment the Indian Navy's ongoing Humanitarian Assistance and Disaster Relief (HADR) efforts in Mozambique along with INS Sujata, Shardul and Sarathi.

MEMORANDUM OF UNDERSTANDINGS

The Union Cabinet has approved the signing of MoU between India and several other countries.

India-Indonesia

- The Union Cabinet has approved the signing of MoU between India and Indonesia on combating illicit trafficking in narcotic drugs, psychotropic substances and its precursors.
- India has signed similar Conventions/MoUs/ Agreements with the 37 countries.

Salient features of MoU

- The MoU is in line with the United Nations International Drug Control Conventions.
- The cooperation under this MoU includes exchange of information allowing and assisting each other in identifying persons involved in illicit trafficking in narcotic drugs and psychotropic substances.

Drug trade from Indonesia

- Indonesia has emerged as the largest drug market in South East Asia attracting both local and foreign dealers.
- The illicit trade in India is carried on via the Golden triangle.

India-Republic of Korea MoU on Startup Cooperation

• The MoU would facilitate and promote bilateral cooperation between the startups of both countries, subject to their national laws and regulations and any applicable international treaties, conventions and agreements to which the two countries are party.

India-Korea Startup Hub

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- The India-Korea Startup Hub is a one-stop platform to bring the Indian and Korean start-up ecosystems closer and to facilitate joint innovation between the two economies.
- The Hub will enable collaborations between startups, investors, incubators, & aspiring entrepreneurs of both countries and provide them requisite resources for market entry & global expansion.
- It is hosted on the Startup India digital platform.



India-Argentina MoU on Antarctica:

- The Union Cabinet was apprised about an MoU signed between India and Argentina on Antarctic cooperation.
- The MoU will help scientific cooperation on projects in the fields of Earth sciences, as well as those related to the protection and conservation of the natural environment of Antarctica and the Southern Oceans.

India-Morocco on youth matters:

- The Union Cabinet was apprised about an MoU signed on youth matters between India and Morocco.
- The areas of cooperation on Youth matters include:
 - organisation of youth programmes;
 - exchange of invitations to international conferences and seminars;
 - exchange of printed materials, films, experiences, research and other information;
 - participation in youth camps, youth festivals and other cooperative youth events.

INDIA-AFRICA HEALTH SCIENCES COLLABORATIVE PLATFORM

India-African Union sign MoU on strengthening cooperation in healthcare sector.

About:

- The platform will **initiate and strengthen the cooperation** in health sector in a **structured and organised** manner.
- MoU will pave the way for the cooperation in the areas of research and development, capacity building, health services, pharmaceutical trade and manufacturing capabilities for drugs and diagnostics.
- It is a major step to help enrich global health research and stitch it to regional needs of India and Africa.

ABU MEDIA SUMMIT

ABU Media Summit on Climate Action and Disaster Preparedness seeks to fully utilize media's potential.

About:

• 5th Asia Pacific Broadcasting Union (ABU) Media Summit on Climate Action and Disaster Preparedness was held in Kathmandu, Nepal.

ABU

- The Asia-Pacific Broadcasting Union (ABU) is the biggest broadcasting union in the world.
- Currently, the ABU has 272 members in 76 countries on four continents.
- The Union was established in 1964 as a non-profit, nongovernmental, non- political, professional association with mandate to assist the development of broadcasting in the region.
- ABU promotes the collective interests of television and radio broadcasters as well as key industry players and facilitate regional and international media co-operation.
- In the last decade, the Union has become a global player in using **media for social development** and nation-building.
- The ABU Secretariat is located in Kuala Lumpur, Malaysia.
- The theme of the summit is "Media Solutions for Sustainable Future: Saving Lives, Building Resilient Communities".

Objectives of the summit

- To address the issue of fully utilizing media's potential of accelerating climate action and disaster preparedness.
- To connect stakeholders to media professionals for collaboration and joint practical projects.

NEXT INS Current Affairs

100 YEARS OF ILO

The UN General Assembly celebrated the 100th anniversary of the founding of the International Labour Organization (ILO) on 10th April, 2019.

About:

- In its centenary year, ILO reported that still 2.8 million people still die each year from work-related causes.
- To target the same, a call for Universal Labor Guarantee was made.
- Recently, a Report on Safety and Health in the Future of Work was also launched.
- UNGA backed ILO as the standard bearer for SDG 8.

Background of ILO:

- **Establishment:** In 1919 by the Peace Conference, making it one of the oldest specialized agencies of the UN.
- Mandate: It secures and maintains fair and humane conditions of labour worldwide.
- Structure: Its three organs are:
 - International Labour Conferences: General Assembly of the ILO. Meets every year in June.
 - **Governing Body:** Executive Council of the ILO. Meets three times in a year in the months of March, June and November.
 - International Labour Office: Permanent secretariat (Geneva).

ILO's contribution to the world

- Equal footing: Owing to its unique tripartite character, every state is represented by government delegates, states' employers and workers, especially trade unions.
- **Peace promoter:** In 1969, the ILO was awarded the Nobel Prize for Peace for its contribution to global peace and prosperity.
- International labour standards: It has been one of the biggest contributions of ILO which is continuously been revised and extended.
- The 1919 Hours of Work Convention, establishing the eighthour day and the six-day week in industry was the first international convention adopted.
- **Promoter of human rights:** Before World War II, ILO made significant efforts to provide protection against forced labour.
- After the War, the sphere of work included abolishing of forced labour, freedom of association (trade unions), and curbing discrimination in employment and occupations.
- Maritime: Problems of maritime labour being different from other labours, ILO since 1920, works to improve their condition of employment and providing social insurance to seafarers.
- **Technical cooperation:** ILO also provides technical assistance in social policy and workforce training.

 Publications: ILO's important publications include Global Wage Report, International Labour Review and the Year Book of Labour Statistics.

India and ILO

- India is a founder member of the ILO and has been a permanent member of its Governing Body since 1922.
- There are eight core Conventions of the ILO, known as Fundamental Human Rights Conventions, related to:
 - Forced Labour convention (1930).
 - Abolition of Forced Labour convention (1957).
 - Equal Remuneration convention (1951).
 - Discrimination (Employment Occupation) convention (1951).
 - Minimum Age convention (1973).
 - Worst forms of Child Labour Convention (1999).
 - Freedom of Association and Protection of Right to Organise Convention (1048).
 - Right to Organise and Collective Bargaining Convention (1949).
- India has **ratified first six conventions**. Most recent ones-Minimum Age and Worst forms of Child Labour in 2017.
- The **Decent Work Country Programme (DWCP) for India** (2018-22) was formulated by ILO India to ensure just and progressive future of work in India.
- In December 2017, India was re-elected as member of Council of the IMO unopposed for two years (2018-19).

IMO'S NEW ELECTRONIC INFORMATION EXCHANGE RULE

International Maritime Organization (IMO)'s recently introduced new rule on electronic information exchange between ships and ports.

- The new rules seek to make cross-border trade simpler and the logistics chain more efficient.
- The revised rule will be mandatory under IMO's convention on Facilitation of International Maritime Traffic (FAL Convention).
- Under the requirement for electronic data exchange, **all national authorities** should now have provision for electronic exchange of this information.
- FAL Convention consists of 121 contracting governments and is a rulebook on standards, documentary requirements and procedures on ships' arrival, stay and departure.

Background:

- Mandate: IMO is the United Nations specialized agency responsible for maintaining the safety and security of shipping and preventing marine and atmospheric pollution by ships. IMO's work supports the UN SDGs.
- **Support to UN SDGs:** In April 2018, IMO agreed on an Initial GHG Strategy for international shipping. While aiming full decarbonization, the strategy calls for:
 - shipping emissions to peak as soon as possible,
 - shipping's carbon intensity to be reduced by at least 40% by 2030 and
 - total emissions to be cut by at least 50% by 2050 compared to 2008.

Do You Know?

- India launched a Port Community System 'PCS1x'— at ports in December 2018.
- It is an **indigenously developed cloud-based technology** for improved communications with all stakeholders of maritime trade on a single platform.
- It introduces world class state of the art payment aggregator solution and acts as a single data point for all transactions, reducing 1.5-2 days in the life of transaction.
- It is ecologically friendly as it reduces the need of paper.
- It automatically captures and stored data on its first occurrence thus eliminating the need for manual data entry.
- It was launched by Indian Ports Association (IPA) under the guidance of Ministry of Shipping.
- The 'PCS1x' system will enable trade to have an improved communication with the customs as they have also embarked on an **Application Programming Interface (API)** based architecture, thereby enabling real time interaction.
- It is introduced to bring Indian transactions at par with global practices, which ensures improves global ranking in **Ease of doing business report** (released by World Bank) and **Logistic Performance Index**.

Significance:

- With international shipping transporting more than 80% of the global good across the world, the current rule aims to make cross-border trade and related logistic chain more hassle free and efficient.
- New rule marks a vital move towards a digital maritime world thus moving away from paper based communication system.
- It will significantly reduce the administrative burden and increase efficiency of maritime trade and transport.

BOKO HARAM

Five years after Boko Haram kidnap 276 Chibok girls, 112 girls still missing in Nigeria.

About:

- In 2014, Boko Haram gunmen stormed the **Chibok girls' boarding school**, kidnapping 276 pupils aged 12-17.
- Five years ago the "Bring back our girls" slogan became a powerful rallying cry.
- Their **plight moved the world** and became a key election issue for President Muhammadu Buhari.
- After negotiations with Boko Haram, 107 of the girls either escaped, were released in exchange for prisoners or were recovered by the army.
- However, hundreds of Chibok girls remain missing.

Insurgency by Boko Haram

• The Boko Haram insurgency has claimed 27,000 lives in **Nigeria**, nearly two million people still cannot return to their homes and are spilled over into neighbouring countries **Niger**, **Chad and Cameroon**.

Boko Haram

- The name "Boko Haram" is translated as "Western education is forbidden".
- Boko Haram was founded upon the principles of the Salafism advocating Sharia law.
- It developed into a Jihadist group in 2009.
- Boko Haram seeks the establishment of an Islamic state in Nigeria.
- It opposes the Westernization of Nigerian society and the concentration of the wealth among a small political elite, mainly in the Christian south of the country.
- Boko Haram has grown in strength over the past year, after being weakened during the first years of **Buhari's presidency** — he was re-elected for a second term in February.
- The Islamic State West Africa Province (ISWAP), the IS-linked faction of Boko Haram, has increased its deadly attacks on military bases, killing several hundred Nigerian army soldiers.

INDO-PACIFIC WING IN MEA

India has decided to set up a separate 'Indo-Pacific' division.

About:

• India has set up an Indo-Pacific division in the Ministry of External Affairs.

- With the establishment of the Indo-Pacific division, there are now six divisions in the MEA managing the broader area: Indian Ocean Region, East Asia, ASEAN Multilateral, India-ASEAN Summit Secretariat, Southern Division, and the Indo-Pacific.
- The new division is intended to give a coherent architecture to India's **'Indo-Pacific' policy**, articulated by the Prime Minister at the **Shangri-La Dialogue in 2018**.

Shangri La Dialogue

- The Shangri-La Dialogue (SLD) is an intergovernmental security forum held annually by an independent think tank, the International Institute for Strategic Studies in Singapore.
- The Shangri-La Dialogue has evolved into a key strategic gathering of the Asia-Pacific region.
- It is attended by defence ministers, permanent heads of ministries and military chiefs of Asia-Pacific states.
- It is a Track 1.5 diplomacy.
- Earlier, the US has also renamed its Pacific Command to "Indo-Pacific Command" to give significance to its Indo-Pacific policy.

Significance of creating an Indo-Pacific division

 Better policy making: MEA's territorial divisions are crucial for policy making, so the creation of an Indo-Pacific division is a big step by the government.

Idea of Indo-Pacific

- The Indo-Pacific region is conceptualised around the idea of a **maritime super-region** with its geographical centre in Southeast Asia.
- There are **two fundamental principles** driving the notion of the Indo-Pacific.
- First, ensure that this region continues to abide by the **international laws** of freedom of navigation and equal access to all powers in the region.
- Second, restrict China from establishing a regional hegemony.
- Integrated approach: The division will integrate the Indian Ocean Rim Association (IORA), ASEAN region and the Quad.
- Emphasis on blue economy and security: This will integrate the blue economy part of the Indian policy, with the security part.

Issues with India's Indo-Pacific strategy

- It will be challenging for MEA to come up a concerted Indo-Pacific strategy when the **jurisdiction** for the entire region is **spread out** among various MEA divisions.
- India's aim is to stop Indo-Pacific from turning into a Chinese sphere of influence, but it doesn't have **sufficient resources** to do so.
- India does not have **sufficient diplomatic capacity** to meaningfully engage with all stakeholders at the same time.

Conclusion

- Indian foreign policy is **far from being realist** and has failed to devise methods to secure strategic alliances with smaller regional powers.
- A farsighted Indo-Pacific strategy would entail continued engagement with China while simultaneously developing **strong economic and security alliances** in East and South East Asia and across the Indian Ocean region.

UAE-INDIA COOPERATION ON EDUCATION

The UAE government will issue equivalency to all Indian degrees that match the set criteria in UAE.

About:

- United Arab Emirates notified that it has no objection to equivalency of those degrees that meets all other certificate equivalency criteria.
- India's University Grant Commission (UGC) issued Action Plan for Academic and Administrative Reforms which clarified that the word "external" in some of the Indian mark sheets reflects the method of evaluation and not place of study.

University Grant Commission

- UGC was established 1953 and became a statutory Organization in 1956.
- The UGC has been vested with two responsibilities: that of providing funds and that of coordination, determination and maintenance of standards in institutions of higher education.
- This move of UAE comes as a **huge relief for expats** having difficulty in getting jobs in the Gulf country.
- Indian nationals were facing problems following **rejection of equivalency** of some Indian degrees **due to lack of clarity** over internal/external marks.
- Those applications that have been rejected previously will be reviewed and equivalency letters would be issued after meeting all other certificate equivalency conditions.

US TO CLEAN UP TOXIC VIETNAM WAR AIR BASE

US has launched a clean-up operation at an air base in Vietnam.

About:

• The US has launched a **clean-up operation** at an air base in Vietnam where it used to store the notorious **chemical Agent Orange**.

NEXT IRS Current Affairs

May, 2019

- The fact that two former foes are now partnering on such a complex task is nothing short of historic.
- The ten-year programme, unveiled more than four decades after the end of the Vietnam War, will cost \$183 million.
- The site at **Bien Hoa airport**, is considered the most contaminated in the country.
- The amount of dioxin in the area is four times higher than that found at **Danang airport** where a similar operation was completed in November.
- The US compensates its veterans exposed to the defoliant, but does not compensate Vietnamese nationals.

Agent Orange

- Agent Orange was a defoliant sprayed by US forces to destroy jungles and uncover the enemy's hiding places during the Vietnam war.
- More than 80 million litres of Agent Orange are estimated to have been sprayed by US forces over South Vietnam between 1962 and 1971.
- It contained dioxin, which is one of the most toxic chemicals known to man and has been linked to increased rates of cancers and birth defects.
- Vietnam says several million people have been affected by Agent Orange, including children born with severe birth defects.

U.S SUPPORT TO WAR IN YEMEN MAY CONTINUE

U.S. President Donald Trump vetoed a resolution from Congress which directed him to end U.S. support for the war in Yemen.

About:

- Trump's veto signifies US's continued involvement in the ongoing war in Yemen.
- Trump argued that U.S. support for the bloody war was necessary to protect the safety of more than 80,000 Americans who reside in certain coalition countries.

About Yemen's crisis

- Yemen is at a breaking point with 10 million people on the brink of famine.
- There are as many as 100 civilian casualties per week, and Yemenis are more likely to be killed at home than in any other structure.
- The war began three years ago against the Iran-aligned Houthis, who control the capital Sana'a and most of the populated areas.

- The conflict has its roots in the failure of a political transition following an Arab Spring uprising. Arab Spring forced its long time authoritarian president, Ali Abdullah Saleh, to hand over power to his deputy, Abdrabbuh Mansour Hadi, in 2011.
- As president, Mr. Hadi struggled to deal with a variety of problems, including attacks by jihadists, a separatist movement in the south, the continuing loyalty of security personnel to Saleh, as well as corruption, unemployment and food insecurity.
- The Houthi movement, took advantage of the new president's weakness by taking control of their northern heartland of Saada province and neighbouring areas.
- Disillusioned with the transition, many ordinary Yemenis including Sunnis - supported the Houthis and in late 2014 and early 2015, the rebels took over Sanaa.
- The Houthis and security forces loyal to Saleh then attempted to take control of the entire country, forcing Mr Hadi to flee abroad in March 2015.
- Alarmed by the rise of a group they believed to be backed militarily by regional Shia power Iran, Saudi Arabia and eight other mostly Sunni Arab states began an air campaign aimed at restoring Mr Hadi's government.
- The coalition received logistical and intelligence support from the US, UK and France. Four years of military stalemate has followed.
- But Saudi Arabia came under increased global pressure to stop fighting in Yemen after the murder of journalist Jamal Khashoggi inside its consulate in Istanbul triggered a global outcry.
- UN observers will set up a monitoring team of government and rebel representatives to oversee the truce.
- But **the Stockholm agreement** is primarily focussed on Yemen's humanitarian conditions.
- That is why the ceasefire was agreed only in Hodeida.

Recent Peace Agreement

- A ceasefire was agreed between Yemen's Houthi rebels and forces loyal to President Mansur Hadi in the port city of Hodeida.
- The agreement was reached in UN-mediated talks held in Stockholm.
- At the time of the negotiations, the city was almost in the hands of the **Saudi-led coalition**.
- The coalition had blockaded the port, the main conduit for humanitarian aid to enter **Yemen** for months.
- **Operation Golden Victory:** Arab warplanes and warships pounded Houthi fortifications to support ground operations in the port city of Hodeida in operation "**Golden Victory**".

DISPUTE OVER INDIA'S SUGAR SUBSIDIES

Thailand seeks to join consultations over India's sugar subsidies case in WTO.

About:

- Thailand in 2018 was the world's second largest exporter of sugar with export value of USD 2.6 billion and thus has substantial trade interest in these consultations.
- Issue against India: Its subsidies to its sugar producers, both for production and exports, were disrupting world production and prices of the commodity.
- Australia, Brazil, EU, Russia and Costa Rica also seek to join consultations.
- As per WTO rules, these 6 countries would have to seek approval from India and Guatemala to join the consultation process.

History of issue till now

- Original case involves Guatemala filing a dispute under WTO's Agreement on Agriculture, Agreement on Subsidies and Countervailing Measures and the General Agreement on Tariffs and Trade 1994.
- Guatemala contested against the domestic support measures provided by India in favor of producers of sugarcane and sugar such as:
 - A system of **Minimum Selling Price** (MSP) for sugar at the Union level and **Fair and Remunerative Price (FRP)** at the levels of the State governments.
 - Financial assistance to sugarcane producers including production subsidies to mills to offset sugarcane price arrears, and subsidies to maintain buffer stocks, etc.
 - FRP is not purely market determined and higher FRP encourages higher sugar production.
- India defended against this contention by giving the following arguments:
 - Most of India's subsidies for sugar producers was in the form of production subsidies that was permissible under the WTO.
 - The subsidies to exporters given for exports was for transportation and marketing purposes which, too, was permitted by the WTO.

PM MODI HONOURED

The Order of Saint Andrew the Apostle, the highest civilian honour of the Russian Federation, was conferred upon PM Narendra Modi.

About:

• The award comes days after the United Arab Emirates announced conferring Modi with 'The Order of Zayed'

The Order of Saint Andrew the Apostle

- The Russian Federation conferred this highest civilian award on PM Modi for his exceptional services in promoting special & privileged strategic partnership between Russia and India.
- Other foreign awardees of the award included President of China Xi Jinping, President of the Republic of Kazakhstan Nursultan Nazarbayev and President of the Republic of Azerbaijan Geydar Aliev.

'The Order of Zayed'

- UAE honoured PM Narendra Modi with the Order of Zayed the country's highest civilian honour.
- The honour has been conferred upon PM Modi for strengthening ties between the UAE and India.
- Previously, Russian President Vladimir Putin, Chinese President Xi Jinping have been decorated with the honour.

Note: The UAE is home to the largest number of our citizens outside India, and is our partner in diverse pillars of cooperation including investment, energy defence and security.

INDIA IS HIGHEST RECIPIENT OF REMITTANCES

World Bank's migration and development brief released.

About:

- India retained its position as the world's top recipient of remittances with its diaspora sending \$79 billion back home in 2018 as per
- India was followed by China (USD 67 billion), Mexico (USD 36 billion), the Philippines (USD 34 billion), and Egypt (USD 29 billion).

Background

• Word Bank data shows that Gulf Cooperation Council member states continue to account for the bulk of these flows (56% share in total). However, in recent times, North America (the US and Canada) has become the second-largest source of remittances with a 21% share.

Reasons

• Remittances grew by more than 14% in India, where a flooding disaster in Kerala likely boosted the financial help that migrants sent to families.

Way Forward

• Remittances are on track to become the largest source of external financing. The high costs of money transfers reduce the benefits of migration.

EGYPT TO EXTEND SISI'S RULE

Constitutional amendment in Egypt.

About:

- Egypt's Parliament, held a session to vote on changes to the Constitution.
- The **objective of the session** is to keep the former military chief in power until 2030.
- It includes changing Article 140 of the Constitution which will allow the Egyptian president to extend his current four-year term, ending in 2022, by two years and subsequently till 2030.
- Egypt's parliament is due to vote on a controversial article which may allow the military a greater influence in political life.

SUDAN'S NEW RULER

Following a nation-wide protest, the Sudanese Army has removed President Omar al-Bashir and installed a Military Council headed by Awad Ibn Ouf to rule the country till elections are held.

About:

- President Omar al-Bashir, who ruled Sudan with an iron fist for 30 years, was overthrown in a coup by the armed forces.
- The army announced a two-year period of military rule to be followed by elections.
- Defence Minister Gen. Awad ibn Ouf was named de facto leader after overthrowing al-Bashir.
- However, Sudanese establishment wouldn't hand over ousted President Omar al-Bashir to the International Criminal Court, where he faces charges of crimes against humanity.

The International Criminal Court (ICC)

- The Court investigates and tries individuals charged with the gravest crimes of concern to the international community: genocide, war crimes, crimes against humanity and the crime of aggression.
- The ICC is a court of last resort for the prosecution of above mentioned serious international crimes.
- It was established by the Rome Statute.

Note: India is not a signatory to the Rome Statute.

- He is facing an arrest warrant over allegations of genocide in **Sudan's Darfur region** during an insurgency that began in 2003 and led to death of an estimated 300,000 people.
- His stepping down is considered as the Arab Spring in Algeria.

Arab Spring

- The Arab Spring was a series of pro-democracy uprisings that enveloped several largely Muslim countries, including Tunisia, Morocco, Syria, Libya, Egypt and Bahrain.
- The events in these nations generally began in the **spring** of 2011, which led to the name.
- It ultimately resulted in **regime changes** in countries such as **Tunisia**, **Egypt and Libya**.

Course of the Movements:

- Jasmine revolution: The Arab Spring began in December 2010 when **Tunisian street vendor** set himself on fire to protest the arbitrary seizing of his vegetable stand by police over failure to obtain a permit.
- Activists in other countries in the region were inspired by the regime change in Tunisia and began to protest similar authoritarian governments in their own nations.
- The participants in these grassroots movements sought increased social freedoms and greater participation in the political process.
- Notably, this includes the Tahrir Square uprisings in Cairo, Egypt and similar protests in Bahrain.

However, in some cases, these protests morphed into fullscale civil wars, as evidenced in countries such as Libya, Syria and Yemen.

ISRAEL ELECTIONS

Prime Minister Benjamin Netanyahu managed a relatively easy victory the fourth consecutive term in office, and fifth overall.

- One of the major factors hastening Mr. Netanyahu's victory was the **low voter turnout** among Israel's Arab residents, which was below 50%.
- Mr. Netanyahu's campaign against Arab politicians, together with a new alliance with anti-Arab extremists and the passage last year of a contentious nation-state law, which enshrined Israel as the homeland of the Jewish people alone, deepened calls for an election boycott in Arab communities.
- Trump Administration has recognised Jerusalem as Israel's capital in 2017 and has moved the American Embassy to the holy city last May.
- Israeli Prime Minister Benjamin Netanyahu had **pledged** to annex settlements in the occupied West Bank if he wins elections, a deeply controversial move against the two-state solution.

• Settlements built on land occupied by Israel in the **1967 Six-Day War** are deemed illegal by the international community and their ongoing construction is seen as a major barrier to peace.

ALGERIAN PRESIDENT STEPS DOWN

Under pressure from public protests, Algerian President Abdelaziz Bouteflika has decided to step down.

About:

- After nearly two decades in power, Algerian President Abdelaziz Bouteflika resigned following a wave of protests in the **North African nation**.
- Algeria's Constitution says that once the President officially resigns, the Speaker of the upper house of Parliament acts as interim leader for up to 90 days during which a presidential election must be organised.
- **Trigger for the protest:** Discontent after Mr. Bouteflika announced in February that he would seek a **fifth term** in office.
- Pressure from establishment: The pressure on him to quit came not only from the protesters but also from the ruling National Liberation Front (FLN)'s coalition ally as well as the country's powerful military.
- **Demography of Protestors:** About 70% of the Algerian population is under the age of 30 years. The demonstrators are **mostly young** and are worried about **unemployment**.

BRI-INDIA AND CHINA

China ready to wait for India's BRI participation.

About:

- China hosted the **second edition** of the Belt and Road Forum (**BRF**) in April 2019.
- China signalled that **it was ready to wait for India's participation** Belt and Road Initiative.
- China said that India was China's "natural partner" in the Belt and Road Initiative (BRI) as historically India was an important country on the ancient Silk Road.
- China also emphasised that **India could be negatively impacted** if it arrived as a latecomer in the BRI family as BRI is an "international public good".
- According to China, the Belt and Road Initiative uphold the principles of equality, transparency, market based principles and the customary international rules.
- This is the backdrop of recent China's President Xi's Europe visit, during which **Italy became the first G7** country to formally subscribe to the China-led BRI.

India's position on the Belt and Road Initiative

- During the **Qingdao summit (2018)** of Shanghai Cooperation Organisation (SCO), **India was the only member state to not endorse** the China's Belt and Road Initiative (**BRI**).
- India has slammed China Pakistan Economic Corridor (CPEC)

 a key component of BRI- stating that it was an affront to its sovereignty as it passes through Pakistan occupied Kashmir (PoK) that is integral part of India.
- India has also accused Chia of following 'debt trap'diplomacy via BRI. Rather than offering grants or concessionary loans, China provides loans at market-based rates, without transparency, much less environmental- or social impact assessments.
- Strategic mistrust: India considers BRI as part of China's containment strategy of India in the form of a disguised 'String of Pearls' strategy.

Arguments in favour of joining BRI

- Economic cooperation: Joining it will improve economic collaborations among the countries which may further improve India's ties with China.
- **Trade benefits:** BRI can open trade avenues for India not only through maritime route but also through road infrastructure.
- **Infrastructure:** BRI can help boost India's regional transport, energy security and blue economy by encouraging geographical integration.
- **Mutual advantage:** China has the financial capital, technology to accelerate the development of other countries and India also need resources for its own development.

How can India bridge the BRI divide with China?

• Following Wuhan spirit: In line with the Wuhan spirit, ties between India and China should be seen insulated from their differences on the Belt and Road Initiative (BRI).

Wuhan Summit

- PM of India Narendra Modi and President of China, Xi Jinping held their **first Informal Summit** in Wuhan, China in **April 2018**.
- The Wuhan summit had reset ties between New Delhi and Beijing, which reached a new low during the mid-2017 Doklam military stand-off.
- Japan's example: Despite reservations on BRI, Japanese Prime Minister decided to send his trusted party ally to China to attend BRF.
 - This signalled that Tokyo continued to have reservations about the BRI, but was nevertheless open to an engagement, provided a course correction was carried out in the future.

Way Ahead

• There is a need for a mature and pragmatic Indian response, which keeps the door open for a future partnership with the BRI.

3 INTERNAL SECURITY

BOLD KURUKSHETRA 2019

This was the 12th edition of joint military training between India and Singapore.

About:

- The joint military exercise between India and Singapore, **Bold Kurukshetra 2019** was recently held at **Babina Military Station in Jhansi** district of Uttar Pradesh.
- In November 2017, India and Singapore had entered into an agreement to strengthen defence ties between their armed forces.
- As per the agreement, personnel from the Singapore Armed Forces will receive training and firing exercises along with the Indian Armed Forces.
- Both India and Singapore have also agreed to step up intelligence and information sharing in maritime security, especially in the field of counter-terrorism, and agreed to expand collaboration on submarine safety and rescue.

INDIA SUCCESSFULLY TEST FIRES SUB-SONIC CRUISE MISSILE 'NIRBHAY'

The missile, which is capable of loitering and cruising at 0.7 Mach at altitude as low as 100 metre, has a range of 700 km to 1000 km.

About:

- NIRBHAY, the **long-range**, **sub-sonic**, **cruise missile** was successfully tested by Defence Research and Development Organisation (DRDO).
- This test proved the **sharper 'terrain hugging capability'** i.e. it can fly very close to the ground which enables it to avoid detection by enemy radars.
- The indigenously developed missile was test-fired from the **Chandipur**, off the Odisha coast.

Features of NIRBHAY

- The NIRBHAY missile has a **range** of 700 km to 1,000 km. After its launch in typical missile style, it can be controlled in aircraft mode.
- Travelling at **sub-sonic speeds** of different Mach (speed of sound), the **hit capacity** is enhanced by control and by homing in on targets at different altitudes.

- The missile has the **capability to loiter** and **cruise at 0.7 Mach**, at low altitudes.
- The guidance, control and navigation systems of the missile are configured around the DRDO designed Ring Laser Gyroscope and Microelectromechanical Systems (MEMS) based inertial Navigation System.
- The last successful trial of 'Nirbhay' cruise missile was conducted on November 7, 2017.

Inertial Navigational System

- Inertial guidance system is an electronic system that continuously monitors the position, velocity, and acceleration of a vehicle, usually a submarine, missile, or airplane.
- It provides navigational data or control without need for communicating with a base station.
- The basic components of an inertial guidance system are gyroscopes, accelerometers, and a computer.
- The gyroscopes provide fixed reference directions or turning rate measurements, and accelerometers measure changes in the velocity of the system.
- The computer processes information on changes in direction and acceleration and feeds its results to the vehicle's navigation system.

COAST GUARD PATROL SHIP VEERA COMMISSIONED

Commissioning of Veera will enhance the Indian Coast Guard's capability to discharge its multifarious maritime tasks.

- Indian Coast Guard Ship Veera was commissioned by Chief of Army Staff General Bipin Rawat at Naval Jetty at the dockyard in Vishakhapatnam.
- Veera is third in the series of Offshore Patrol Vessels (OPV) of the Coast Guard.
- It was built by L&T at its shipbuilding facility at Kattupalli in Chennai.
- Veera is equipped with the state-of-the-art machinery comprising an **integrated bridge system.**
- The system includes **advanced navigation and communication technology** and integrated platform management system.
- Post 26/11, the Coast Guard has been bestowed with greater responsibility for coastal security.

VEER PARIWAR APP

CRPF Veer Pariwar mobile app seeks to help families of martyrs.

About:

- President of India Ram Nath Kovind launched 'Veer Parivar App', a mobile application for families of CRPF personnel killed in the line of duty.
- The app was launched on the occasion of the CRPF's 'Valour Day'.

CRPF's Valour Day

- The Central Reserve Police Force observed its 54th Valour Day on **April 9, 2019.**
- The day is observed by the force every year as a remembrance of the gallant fight back by a small contingent of the **2nd Battalion of CRPF.**
- The fight was against an attack by a Pakistani Brigade at the Sardar post in **Gujarat's Rann of Kutch on April 9, 1965.**

Key features of the App

- The application **will act as an interface** between the Central Reserve Police Force (CRPF) authorities and the next of kin of the slain personnel.
- It will render all real time assistance to the families of the martyred CRPF personnel with regard to issuance of ex gratia, pensionary benefits and all information regarding the welfare schemes introduced for them by the government.
- The Android-based app will be installed by the force's officials securely on the phone of the families and will not be available over the app stores.

MITRA SHAKTI-VI

Sixth edition of the Mitra Shakti exercise was held in Sri Lanka.

About:

- Mitra Shakti: It is a joint training exercise conducted annually between the Indian Army and the Sri Lankan Army. It was started in 2013.
- **Primary focus** of the exercise is to train and equip the contingents to undertake joint counter insurgency and counter terrorist operations in urban/ rural environment under the United Nations flag.
- NOTE: SLINEX is the Joint exercise between the Indian and Sri Lankan navy.
- Some other exercises the Indian army with the SAARC countries

MULTI DISCIPLINARY TERROR MONITORING GROUP FOR J&K

Govt. sets up multi-disciplinary terror monitoring group (MDTMG) for J&K.

About:

• ADGP CID of J&K Police will head the MDTMG with following members: IGP in J&K Police, Additional Director of IB in J&K and representatives of CBI, NIA, ED, CBDT and CBIC.

Objectives of the group:

- It will ensure synergised and concerted action against terror financing and terror-related activities in Jammu and Kashmir.
- The group will **meet on a weekly basis** and submit their **action taken report regularly**.
- The terms of the reference of the group:
 - To take coordinated action in all registered cases that relate to terror, terror financing and terror-related activities and bring them to logical conclusion, identify all key persons, including leaders of the organisation(s) who are involved in supporting terrorism in any form and take concerted action against them.
 - It will have to investigate networks of various channels being used to fund terror and terror-related activities and take coordinated action to stop flow of such funds.
- It will also take action against government employees, including teachers, who are providing covert or overt support to terror activities.

Need for the group:

- To wipe out terrorism, there is a need to target terror funding and terrorist organisation sympathisers. Though NIA's Financial Offensive against Separatists is working but a specialised mechanism continuously focussing on J&K was needed.
- Terror finance in India follows 'hybrid model', which includes funding from within and outside the country, employing a variety of means to collect. According to NIA, Pakistan-based terror groups finance terrorism in Jammu and Kashmir by collecting donations from people in Pakistan through their charity organisations and then pass on the money through their over ground workers. E.g., Falah-e-Insaniyat Foundation (FIF), a charity run by terror outfits Jamaat-ud-Dawa (JuD) and Lashkar-e-Taiba (LeT), and Al Rehmat Trust, backed by another terrorists group Jaish-e- Mohammed (JeM).

LIMA 2019

INS Kadmatt at Langkawi, Malaysia to Participate in LIMA-19.

April, 2019

About:

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- INS Kadmatt is an indigenous stealth anti-submarine warfare (ASW) corvette and was commissioned into the Indian Navy in January 2016. It is named after one of the large islands amongst the Lakshadweep group of Islands.
 - INS Kalvari and INS Kandheri are two other Anti-Submarine Warfare corvette of Indian Navy.
- LIMA-19 is the 15th edition of Langkawi International Maritime and Aerospace (LIMA) Exhibition.

LIMA

- It is a maritime and aerospace exhibition that takes place once every two years in Langkawi, Malaysia since its debut in 1991.
- The event is one of the largest maritime and aerospace exhibitions in the Asia-Pacific. It is focused mainly on the defence industry but also supports civilian industries.

ARMY TO ABSORB WOMEN SOLDIERS, BUT ONLY AS MILITARY POLICE FOR NOW

The decision to induct women in the military police was taken with an aim to enhance their representation in the three services.

About:

• The Indian Army began the process of inducting women as Jawans (soldiers) by starting their online registration for recruitment in the corps of military police.

The role of the military police includes

- Policing cantonments and Army establishments.
- Preventing the breach of rules and regulations by soldiers.
- Maintaining movement of soldiers as well as logistics during peace and war.
- Handling prisoners of war, Extending aid to civil police.
- Women aged between **19 and 25** can now register online to become a part of the military police.
- The project was first mooted by Army Chief Gen Bipin Rawat soon after he took charge of the force.
- Currently, women are allowed in select areas such as medical, legal, educational, signals and engineering wings of the Army.
- As per government data, the Army has 3.80 per cent of its workforce as women, while the Air Force has 13.09 per cent and the Navy 6 per cent.

Significance of the decision

• This is being seen as a major breakthrough for women in armed forces as so far.

- Earlier women were being inducted only as officers and this is the **first time they would be taken in as soldiers**.
- As women will be inducted for the first time in PBOR (Personnel Below Officer Rank) role in Corps of Military Police, it will improve representation of women in our armed forces.
- Women will be inducted in a graded manner to eventually comprise 20 per cent of total Corps of Military Police.
- Their role would range from probing crime cases to assisting the Army in field operations wherever required.

INS IMPHAL

Over the years, Indian Navy has become a builder from a buyer.

About:

- The Indian Navy launched its third guided missile destroyer INS Imphal at Mazgaon Docks as part of its Project 15B.
- With a launch weight of 3037 tonnes, the INS Imphal, like the other ships under the project, has been **designed indigenously** by **the Indian Navy's Directorate of Naval Design, New Delhi**.
- These ships will be **propelled by four gas turbines** to achieve speeds in excess of 30 knots.

Project 15B

- Project 15B is aimed at adding state-of-the-art warships to the naval fleet.
- The Navy had launched **INS Vishakhapatnam**, the first Project 15B ship, in April 2015.
- The second ship, **INS Mormugao**, was launched in September 2016.
- A contract for four destroyers under the Project 15B has been signed.

New design concepts

- The P15B destroyers incorporate new design concepts for improved survivability, sea keeping, stealth and ship manoeuvrability.
- Enhanced stealth features have been achieved through shaping of hull and use of radar transparent deck fitting, which make these ships difficult to detect.
- Project 15B ships will be equipped to carry and operate **two multiple role helicopters.**
- The ships are packed with an array of state-of-the-art weapons and sensors including multi-functional surveillance radars and vertically launched missile system for long-distance engagement of shore, sea-based and air targets.



POLITY & GOVERNANCE

SPURIOUS DRUGS

Low conviction rate is hindering the fight against manufacture and distribution of spurious drugs.

About:

- According to the 54th Parliamentary Standing Committee on Chemicals and Fertilizers, low conviction rate is hindering the fight against manufacture and distribution of spurious drugs.
- **Spurious Drug:** Under the Drugs and Cosmetics (Amendment) Act 2008, any drug is deemed to be spurious or adulterated when its use for the treatment or prevention of any disease is likely to cause death or physical harm to the body.

Findings of the 54th Parliamentary Standing Committee on Chemicals and Fertilizers:

- Low conviction rate: India has been able to decide only 35 cases of the 606 prosecutions launched against the manufacture, sale and distribution of spurious drugs from 2015 to 2018.
- **Inadequate Sample size:** 593 samples were declared spurious or adulterated, while a total of 2,33,906 drug samples were tested during the three-year period. Considering the size of the country, this sample size is not adequate to measure the actual problem.

Recommendations by the Parliamentary Committee:

- Special courts should be opened in all states/UTs for time-bound decisions on prosecutions launched against manufacture, sale and distribution of spurious and nonstandard quality drugs.
- Government should **increase the number of samples** of drugs to be tested so as to instil fear in those who indulges in sale/ distribution of spurious/non-standard quality drugs.

ENAJORI INITIATIVE

Ensuing Lok Sabha Election 2019 are accessible for People with Disability (PwD) voters.

About:

- Enajori is a joint initiative of Chief Electoral Officer Assam and Social Welfare Department to facilitate PwD voters.
- This is in congruence with the motto of election 'No voter to be left behind'.

- Under this initiative comprehensive mapping of PwDs will be done in consultation with Booth Level Officers, Divyang Sarothis and a woman mascot-Chandraprabha, to facilitate the PwD voters for barrier-free and inclusive accessible elections.
- This includes escort during the poll day, counselling and to make aware of ethical and informed voting.

Legislative Compulsion

Section 11 of the Rights of Persons with Disabilities Act, 2016 states that Election Commission of India and State Election Departments shall ensure that all polling stations are accessible to persons with disabilities and all materials related to the electoral process are easily understandable by and accessible to them.

TASHIGANG

Tashigang in Himachal Pradesh is world's highest polling station.

About:

 The Tashigang polling station in Himachal Pradesh is one of the 17 assembly segments that form the Mandi Lok Sabha seat, the second largest constituency in India.



 It is at an altitude of 15,256 feet above Mean sea level. It falls in Buddhist-dominated Lahaul-Spiti.

COUNTRY HUMAN RIGHTS REPORTS FOR 2018

U.S. human rights report flags curbs on Indian media.

About:

• The country Human Rights report is the annual report, in which U.S. State Department submits its assessment of such rights as per the Universal Declaration of Human Rights and other international agreements to the U.S. Congress.

Findings of the 2018 report for India:

 It covers a range of issues including press and media freedoms, forced disappearances, custodial deaths and the NGO clampdown.

- **Custodial Deaths:** In terms of custodial deaths, the Report cites official (Indian) figures of 1,674 cases of such death between August 2017 and February 2018, with 1,530 occurring in judicial custody and 144 in police custody.
- Role of the Police and Security Apparatus: Police continue to be underpaid, overworked, and subject to political pressure, in some cases contributing to corruption.
- **Civilian Deaths:** The report also cites figures from the Office of the UN High Commissioner for Human Rights (OHCHR) on alleged violation of human rights by security forces in Kashmir.

On undertrials:

- The report, based on National Crime Record Bureau (NCRB) data, says just over 2,93,000 individuals were awaiting trial at the end of 2016.
- It also cites a 2017 Amnesty International report saying that Muslims, Dalits and Adivasis comprised a disproportionate number (53%) of pre-trial detainees.

• On Press Freedom:

- It cites a 2017 Press Council of India report saying at least 80 journalists were killed since 1990 but only one conviction had occurred thus far.
- The Editors Guild of India claimed the government limited press freedom by exerting political pressure and blocking television transmissions.
- The report quotes the 2018 World Press Freedom Index as saying online trolling and attacks on journalists was a major issue.
- On surveillance:
 - The Central Monitoring System (CMS) of the government, could, without informing the subject or a judge, monitor electronic communication in real time.

World Press Freedom Index:

- **Reporters Without Borders (RSF)** publishes the World Press Freedom Index **each year** since 2002.
- It measures the **level of freedom available to journalists** and not the quality of journalism.
- The degree of freedom available to journalists in 180 countries is determined by pooling the responses of experts to a **questionnaire** devised by RSF.
- The criteria evaluated in the questionnaire are: Pluralism, media independence, media environment and selfcensorship, legislative framework, transparency, and the quality of the infrastructure that supports the production of news and information.
- India was ranked 138 in the 2018 Index.
- Norway topped the list followed by Sweden.
- North Korea secured the last spot at 180.

Reporters without borders:

- It is one of the world's leading **independent organizations** dedicated to promoting and defending freedom of information.
- It is registered in France as a non-profit organization and it has consultant status at the United Nations and UNESCO.

RIGHT TO SELF-DEFENCE

The Supreme Court has acquitted a Forest Range Officer accused of killing a man allegedly belonging to a smuggling party, on the ground that he did it in his self-defence.

About:

- The Supreme court was reviewing the decision of the Madras High Court which had convicted the forest ranger under Section 304 Part II IPC and awarded him 5 years' Rigorous Imprisonment for killing a person accused of smuggling sandalwood.
- The Forest Officer defended himself that he did this in selfdefence.

Supreme Court's judgement:

- The SC referred to judgments in Amjad Khan vs. Haji Mohammad Khan and Darshan Singh vs. State of Punjab in delivering its verdict and invoked Sections 96 to 106 of IPC which deal with right of private defence of a person involved in commission of offences under the IPC.
- Section 97 of IPC provides that a right of private defence extends **not only** to the defence of **one's own body** against any offence affecting the human body but also to defend the **body of any other person.**
 - The right also embraces the **protection of property**, whether one's own or another person's, against certain specified offences, namely, theft, robbery, mischief and criminal trespass.
 - This section also provides scope of this right and its limitations.
 - One of the limitations is that this right does not arise if there is time to have recourse to the protection of the public authorities. Nor does it extend to the infliction of more harm than is necessary.

DRUGS AND CLINICAL TRIALS RULES 2019

The new rules protect the rights, safety and well-being of patients while ensuring a strong scientific base for the conduct of clinical trials.

About:

- The Union Health Ministry has notified the Drugs and Clinical Trials Rules 2019 to promote clinical research and patient safety in the country.
- The rules will apply to all new drugs, investigational new drugs for human use, clinical trials, bio-equivalence studies and ethics committees.

Highlights of the notification

- The new rules will **ensure patient safety**, as they will be enlisted for trials with **informed consent**.
- An ethics committee will monitor the trials and decide on the amount of compensation in cases of adverse events.
- Compensation in cases of death and permanent disability or other injuries to a trial subject will be decided by the **Drug Controller General**.
- Time for approving applications has come down to 30 days for drugs manufactured in India and 90 days for those developed outside the country.
- In case of no communication from **Drugs Controller General of India**, the application will be deemed to have been approved.
- As per the new rule, the requirement of a local clinical trial may be waived for approval of a new drug if it is approved and marketed in any of the countries (EU, U.K., Australia, Japan and U.S.) specified by the Drugs Controller General with the approval of the government.

Significance

- It will further the conduct of **ethical and quality clinical trials** in the country. Make faster accessibility of new drugs to the Indian population. Predictable, transparent and effective regulations for clinical trials
- India has the second largest population in the world and the highest disease burden but does less than 1.2% of global clinical trials. It will lead to more stability and growth in clinical research being done in India.

EXTENSION OF CONSTITUTIONAL PROVISIONS TO J&K

77th and 103rd constitutional amendments were extended to Jammu and Kashmir.

About:

- Recently, the 77th and 103rd constitutional amendments were extended to Jammu and Kashmir (J&K) by a presidential order, with the **concurrence of the J&K Governor.**
 - 77th constitutional amendment: relates to reservations in promotions for Scheduled Castes (SCs) and Scheduled Tribes (STs) in the State services

- 103rd constitutional amendment: relates to special provisions for the advancement of economically weaker sections (10% reservation in education and government jobs to EWS).
- This was by the President of India when he issued an **executive order** for amending the Constitution (Application to Jammu and Kashmir) Order, 1954.
- The objective of this extension was to provide the benefit of promotion in service to the SCs, the STs and also extend the reservation of up to 10% for "EWS" in educational institutions and public employment in addition to the existing reservation in Jammu and Kashmir.

Do You Know?

- When the State of Jammu and Kashmir acceded to India via the Instrument of Accession in 1947, only 3 subjects
 Defence, Foreign Affairs and Communications were handed over to the Union Government.
- Also, under article 370, the provisions of the Indian Constitution **do not automatically apply to J&K**.
- To extend constitutional provisions and amendments to the State, a presidential order to that effect has to be passed.
- This order requires the **concurrence of the State government**, where the subject matter does not relate to the 3 subjects specified in the **Instrument of Accession** (defence, external affairs, and communications).
- For other cases, only consultation is required.
- In exercise of the powers conferred of article 370 of the Constitution, the President, with the concurrence of the Government of the State of Jammu and Kashmir issued the Constitution (Application to Jammu and Kashmir) Order, 1954.
- This 1954 order has been amended multiple times to extend many provisions of the Indian Constitution to the State of J&K.
- This Presidential order has now been challenged before the J&K High Court on the grounds that it violates Article 370, which is the principle article governing India's relation with J&K.

Issues with the 2019 Presidential order

- The extension order was made with the concurrence of the Governor as the State Government was dissolved in November 2018.
- **Dilution of Article 370:** Later, in December 2018, the President assumed all the functions of the State government and the Governor through a proclamation under Article 356.
 - It is contended that in this case, the Governor is reduced to a mere delegate of the Centre and is expected to act as per the aid and advice of the Central Government.



SOCIAL ISSUES

WOMEN IN POLICE

A Model Policy on Women in Police in India was recently prepared by the Commonwealth Human Rights Initiative (CHRI).

About:

- The Model Policy on Women in Police in India has been prepared by the Commonwealth Human Rights Initiative (CHRI).
- The model policy lays down a framework to guide government efforts at improving women representation and their status in India police.

Commonwealth Human Rights Initiative (CHRI)

- CHRI is an independent, not partisan and non-profit international non-governmental organization which works towards the realisation of the human rights in the commonwealth.
- It was founded in 1987 when several Commonwealth countries came together in response to South Africa's policy of racism.
- It is headquartered in New Delhi.
- CHRI's objectives are to promote awareness of and adherence to the Harare Commonwealth Declaration, the Universal Declaration of Human Rights, and other internationally recognised human rights instruments, as well as domestic instruments supporting human rights in member states.
- CHRI attained special consultative status at the Economic and Social Council of the UN in 2005 and observer status at the ACPHR in 2002.

Status of Women in Police:

- Women comprise only 7.28% of India's police force.
- Less than 1% of policewomen in India occupy senior ranks.
- Over 90% of women in police remain constables the lowest possible rank which is the position they enter the force and eventually retire from.

Steps taken by Government:

- For the Union Territories, the Cabinet had in 2015 approved 33% reservation for women in non-gazetted posts from constable to sub-inspector.
- Apart from the UTs, Bihar has adopted 38% reservation while nine states have adopted 33%. However, targets remain very much on paper.

• The Home Ministry had issued several advisories to all state governments to increase representation of women in police to 33%.

Women in	State Police
Top 5	
Tamil Nadu	15.97%
Himachal	12.25%
Maharashtra	11.62%
Goa	10.80%
Haryana	9.12%
Bottom 5	
Telangana	2.47%
J&K	3.05%
Uttar Pradesh	3.81%
Andhra Pradesh	4.17%
Meghalaya	4.34%

Way Forward:

- Merely providing reservation is not enough, police departments should develop an action plan to achieve the target of 30% or more in a time-bound manner.
- Further, decisions on deployment of women must be free of gender stereotyping to facilitate bringing women into leading operational positions.
- At present, the tendency is to relegate them to desk duty, or make them work on crimes against women alone.
- In order to increase women involvement in policing, women should be posted in their home districts in consultation with supervising officers, as far as possible.
- Police departments must also ensure safe working spaces for women and adopt a zero-tolerance policy towards discrimination and harassment, in order to make policing a viable career option for women.

AVIAN INFLUENZA OR BIRD FLU

Mass culling of ducks in Cuttack after outbreak of bird flu, compensation announced.

- Samples collected from a state-run duck breeding centre tested positive for H5N1 virus.
- Administration is **spraying sodium** in the surveillance zone and instructing people **to not consume chicken and duck for three months.**

About H5N1 or Avian influenza

- H5N1 is a Type A strain of **influenza** virus that causes a highly **infectious**, severe **respiratory** disease in **birds** called avian influenza (or "bird flu").
- It is carried by and infects **birds** including farmed poultry such as chicken, ducks, turkey etc. That is why it **is also known as the bird flu.**
- It is mostly transmitted via bodily secretions, faeces, same feed or water bowl. From such infected birds, the virus can spread to humans who come in contact with them.
- Human cases of H5N1 avian influenza occur occasionally with close contact with infected live or dead birds, or H5N1-contaminated environments.
- The virus does not infect humans easily and it is difficult to transmit the infection from person to person. When people do become infected, the mortality rate is very high, about 60%.
- H5N1 consists of two types of proteins.
 - **H5** stands for the fifth of several known types of the protein hemagglutinin.
 - N1 stands for the first of several known types of the protein neuraminidase.
 - In total, 16 types of bird flu are there. The H5N1 strain is considered the deadliest of all.

Note: H1N1 is swine flu and H5N1 and H7N9 are avian influenza.

Status of Bird flu in India

- In the last 10 years there have been no human infected cases reported in India. In contrast, other parts of the world like China, Hong Kong have experienced 852 cases of human infection till date.
- In September 2016 India had declared itself free from the Bird flu virus and had even notified its H5N1 free status to the World organisation of Animal health which is the apex body across the world looking after the containment of H5N1 virus.

Measures against bird flu:

- Candidate vaccines to prevent H5N1 infection have been developed, but they are not ready for widespread use. Thus prevention is the best cure currently available.
- Avoiding contact with infected raw meat: It is a heat sensitive virus thus properly cooked meat should be eaten.
- Culling of the infected birds.
- Giving vaccination to the birds.
- Vaccination to humans: Avian Influenza vaccine is available outside India e.g. USA has developed vaccine for Human infection.

• **Hygiene** has to be maintained in the poultry farm. **Disinfectants** like 2% **Sodium Hypochlorite** or 4% **Formalin** can be used to reduce the virus load.

OPEN AND DISTANCE LEARNING (ODL) BAN IN AGRICULTURE

UGC bans degree courses in Agriculture through ODL but retains certificate and diploma courses.

About:

- University Grants Commission (UGC) has recently modified its Open and Distance Learning (ODL) Regulations, 2017 and added Agriculture in the lists of Programmes prohibited in ODL mode.
- Under the current regulations professional programmes such as medicine, engineering, architecture, nursing, dental, pharmacy and physiotherapy are already not permitted to be offered in distance mode.
 - The reason given for this is that a degree programme in these is technical in nature as it requires practical or laboratory courses
- Agriculture degree programmes will be **prohibited in ODL mode** and **no new enrolments will be permitted** from the Academic Session 2019-20 beginning July, 2019
 - However, to protect the interest of the students already enrolled to the agriculture degree programme, the Indian Council of Agriculture Research (ICAR) will hand-hold such higher education institutions.

University Grants Commission (UGC)

- The UGC is a statutory body set up by the Indian Union government in accordance to the UGC Act 1956 under Ministry of Human Resource Development.
- It is charged with coordination, determination and maintenance of standards of higher education.
- Functions:
 - Provides recognition to universities in India.
 - Oversees distribution of grants to recognized universities and colleges in India.
 - Provides scholarships and fellowships to beneficiaries
 - Monitor the conformity to its regulations by universities.
- Its headquarters is in New Delhi, and six regional centres in Pune, Bhopal, Kolkata, Hyderabad, Guwahati and Bangalore.
- The rule will not restrict distance learning diploma, certification and postgraduate diploma courses as the short-term courses are crucial to impart skill-based education and are used for

knowledge enhancement for students in interiors with limited access to resources.

 UGC also restricted timelines for universities regarding open distance learning (ODL): Academic sessions should begin by January and the second session by July; the corresponding admissions should end by the end of February and August respectively. The Higher Education Institutions have also been asked to upload information related to admission within 10 days from the last date of admission in respective sessions.

SHREYAS SCHEME

Scheme for higher education youth for apprenticeship and skills.

About:

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- The Scheme for Higher Education Youth for Apprenticeship and Skills (SHREYAS) has been launched by the Ministry of Human Resource and Development to align the education curriculum with the needs of industry & service sectors, and promote an On-The-Job exposure to all students.
- SHREYAS is a programme conceived for students in degree courses, primarily non-technical like BA, BSc. BCom courses, with a view to introduce employable skills into their learning, promote apprenticeship as integral to education.

Objectives

- To improve employability of students by introducing employment relevance with **'on the job work exposure' through the** National Apprenticeship Promotional Scheme (**NAPS**) and the National Career Service (**NCS**).
- To forge a close functional link between education and industry.
- To provide skills to the students in a dynamic manner.
- To establish an 'earn while you learn' system into higher education.
- To help industry in securing good quality manpower.
- To link student community with employment facilitating efforts of the Government.
- The scheme aims to cover 50 lakh students by 2022.

Salient Features:

- For providing industry apprenticeship or training opportunities to fresh graduates of 2019, it intends to introduce BA, BSc, and BCom (Professional) courses in the higher educational institutions.
 - These courses will be available to the students from Academic year April-May 2019.

- It is a joint initiative of three central ministries, including the Ministry of Human Resources Development, Ministry of Skill Development and Entrepreneurship, and the Ministry of Labour and Employment.
- It will be implemented by the Sector Skill Councils (SSCs) initially in the Banking Finance Insurance Services (BFSI), Retail, Health care, Telecom, Logistics, Media, Management services, ITeS and Apparel. More sectors would be added over time with emerging apprenticeship demand.
- The scheme will be operated in conjunction with National Apprenticeship Promotion Scheme (NAPS), which provides for placing of apprentices or trainees up to 10 percent of the total work force in every industry.
 - Under the NAPS scheme, the Central Government shares 25 percent of the stipend per month subject to a maximum of Rs.1500 per month during the period of the apprenticeship. Apart from that, **an amount upto Rs 7500** is met towards basic training cost, where needed.

Brought You By GovtProcess.In

Welcome to SCHEME FOR HIGHER EDUCATION YOUTH FOR APPRENTICESHIP AND SKILLS Ministry of Human Resource Development

Three Tracks

The programme would witness the **simultaneous implementation of three tracks** as follows:

- 1st Track: Add-on apprenticeship (Degree apprenticeship): Students, who are about to complete the degree programme, would be invited to choose a job role of their choice from a selected list of apprenticeship or training job roles.
- 2nd Track: Embedded Apprenticeship: The existing B.Voc (Bachelor of Vocation) programmes would be restructured into B.A (Professional), B.Sc (Professional) or B.Com (Professional) courses.
 - These courses would include educational input, vocational input, and mandatory apprenticeship of 6 to 10 months
 - Alternatively, one full semester of an existing B.Voc course would be dedicated to apprenticeship with industry.
- 3rd Track: Linking National Career Service (NCS) with Colleges: Under this, the NCS portal of Ministry of Labour & Employment would be linked with the Higher Education institutions. The students would be trained in soft skills required by the market. This would improve the employment opportunities.



ENVIRONMENT, DISASTER MANAGEMENT AND GEOGRAPHY

GYNANDROMORPHS

A rare half male, half female Cardinal (bird) was spotted recently in Pennysylvania.

About:

- **Gynandromorphs** are individual animals that have both genetically male and female tissues and often have observable male and female characteristics.
- These split-sex creatures are not as unusual as they may seem. It extends beyond birds and butterflies to other insects and crustaceans, like lobsters and crabs.
- Significance: These instances of split-sex animals and insects could offer clues to why some human diseases strike one sex more than the other e.g. obesity, metabolic syndrome, autoimmune disease, Alzheimer's, even aging differs with sex.



How gynandromorphs are born?

- Why some individuals are split sex is still a mystery.
- Mammals have X and Y chromosomes, **birds and insects have Z and W.**
- For birds, the most likely explanation is that a female makes an **unusual double-nucleus egg cell**, one with a Z chromosome and one with a W chromosome, and each is fertilized by a Z sperm of male, making some cells ZZ and others ZW in the same individual.
- For mammals: The above process is not applicable in mammals as female mammals naturally have two of the same sex chromosomes, and the instant an egg and sperm fuse, dramatic changes prevent the entry of a second sperm.

LAKE ACULEO

Chile's Lake Aculeo has been wiped out from map because of drought.

About:

- The Aculeo Lake, which was for decades one of the main tourist attractions of Santiago's surroundings, has disappeared due to a drought and overconsumption of water.
- Lake Aculeo's water levels began to fall at an alarming rate in 2011. By May of last year, it had dried out completely.

- Reasons for the demise of lake:
 - Climate change is considered a key factor primarily, a drastic decrease in rainfall. Average annual rainfall in central Chile during the 1980s was nearly 14 inches. By 2018, it was nearly 7 inches and continues to decline because of global warming.
 - Agricultural practices requiring vast amounts of water and lakeside development have also contributed to the depletion of water sources.
 - Post 2010 Chile's earthquake, the lake lost some water after its **aquifers were disrupted**.



RIVER PERIYAR

The Periyar River in Kerala has turned black near the Pathalam Regulator cum Bridge.

About:

• The discolouration of River Periyar and fish kill has been a serious issue for last couple of years. Decrease in dissolved oxygen level has caused several fish-kills in the past few years.

River Periyar:

- It is a perennial river and is used for supplying drinking water.
- It is popularly called as the Lifeline of Kerala. The main tributaries of Periyar are Muthirapuzha, Mullayar, Cheruthoni, Perinjankutti.
- The largest Hydroelectricity project called as Idukki Hydro Electric Project is commissioned on this river.

Reason for discolouration:

- Due to the poor quality of water as a result of eutrophication. When excessive nutrients reach the waterbody, it leads to algal bloom. When algae die and decay, it results in a foul smell and discolouration of water.
- Water in some reaches of the river system has been stagnant. Reduced water flow in the system has added to the deteriorating water quality.

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• Huge quantities of organic load in the form of sewage from nearby townships are regularly reaching the river system. Discharge of untreated effluents into the river from industrial units is also causing discolouration of water.



ASTROBATRACHUS KURICHIYANA

New Frog species, millions of years old, found in western Ghats.

About:

- A nocturnal amphibian, named Astrobatrachus kurichiyana for its constellation-like markings and the indigenous people of Wayanad's Kurichiyarmala, the hill range where it was found. It is dark brown with a bright orange underbelly, and speckled with pale blue dots
- It is found outside protected areas.

Significance of discovery:

- This species of frog is at least 60 million years old according to genetic analysis but had evaded attention until now.
- It is a new species different enough to be assigned to a new 'subfamily' Astrobatrachinae.
- It is an oddball frog as it has no close sister species for maybe tens of millions of years. Research team found that A. kurichiyana's closest relatives are the family Nyctibatrachidae, a group of nearly 30 species native to India and Sri Lanka. But their last common ancestor could date back tens of millions of years.
- Its presence in the southern Western Ghats highlights the mountain range's role as a historical biodiversity center.

CRITICALLY ENDANGERED VAQUITA PORPOISE

Critically Endangered Porpoise found dead off coast of Mexico.

About:

• Bycatch from the illegal gillnet fishery for the Totoaba fish threaten the Vaquita Porpoise with imminent extinction.

The Totoaba fish

- An endemic marine fish that is similar in size to Vaquita porpoise and is also critically endangered.
- It is caught largely for its swim **bladder**, and its numbers have been severely reduced due to overfishing in recent decades.

Vaquita Porpoise

- It is a species of porpoise endemic to the northern part of the Gulf of California that is on the brink of extinction.
- IUCN status: Critically Endangered (CR) marine animal of which only about 10 remain in the world. It is the most endangered cetacean in the world.
- Its population decrease is largely attributed to bycatch from the illegal gillnet fishery for the Totoaba fish.

FALL ARMYWORM (FAW)

Indian agriculture officials have launched an awareness campaign among farmers about the fall army worm moth and its management.

- It is reported that Fall Armyworm (Spodoptera frugiperda), an invasive pest, has invaded more than 10 states in India in just nine months since it was first spotted in Karnataka. Almost all southern states, western Maharashtra and Gujarat and some eastern states of India are fighting this pest.
- Fall Armyworm (FAW) is an **insect pest** that feeds on **more than 80 crop species,** causing damage to economically important cultivated **cereals** such as **maize**, rice, sorghum, and also to **legumes as well as vegetable crops and cotton.**
- It is reported that the caterpillar stage of the FAW goes unnoticed in its early stages but turns voracious as it grows and can destroy entire maize fields overnight. When developed into the moth stage, they can fly long distances overnight to attack distant fields.
- The FAW is **native to tropical and subtropical regions of the Americas.** The Food and Agriculture Organisation, a specialized agency of the United Nations, has already declared FAW as a food security threat in the African continent.

Why is its eradication extremely difficult?

- FAW has several characteristics that make eradication extremely difficult.
 - First, FAW is very mobile. Adult moths can travel 100 km in a night, and individuals can fly over 1000 km in a lifetime.
 - Second, FAW is very polyphagous it feeds on, and can reproduce on, many different species of plants. This means that it can rapidly spread across many environments and cropping systems, and isn't restricted by diet.
 - Finally, as the damage caused by FAW is sometimes confused by farmers with damage from other pests, confirmation of initial reports of FAW may at times be slow, allowing FAW to spread from its entry point before action is taken.

Integrated Pest Management of FAW

- IPM is an integrated strategy of pest control which aims at prevention of pests and its damage through a combination of techniques such as chemical, biological, new cropping system, modification of cultural practices, use of resistant varieties and through mechanical methods.
- IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.
- The "PUSH-PULL" strategy is a habitat management in which a repellent crop or attractive trap crop is grown to repel pests and attract natural enemies.
- **Biological control:** Naturally existing enemies act as bio control agents.
- **Parasitoids** come under this category. These parasitoids lay eggs on the egg masses, larvae or adult of FAW which destroys the host by growing on them.

ICE STUPAS

Special Stamp on Ice Stupa released.

About:

- India Post released a special stamp cover on Ice Stupa in Leh at an event in the presence of Himalayan Institute of Alternatives Ladakh (HIAL) founder Sonam Wangchuk who spearheaded the Ice Stupa initiative.
- Global warming and ecological imbalance have caused irreparable damage on Himalayas, thus this awareness about depleting glaciers through the stamp release has been taken up.
- Over 12 villages in Ladakh have built ice Stupas this year in various village with the technical and material support by the HIAL.

• Leh lies in the cold desert region and most villages in the region face acute water shortage, particularly during the two crucial months of April and May when there is little water in the streams whereas in June there is an excess of water and even flash flooding due to the fast melting of the snow and glaciers in the mountains.



Ice Stupa

- Ice Stupas refer to the artificial glaciers which freeze and hold the water vertically in the form of huge ice towers or cones of 30 to 50 metre height that look very similar to the local sacred mud structures called Stupa or Chorten.
- In the absence of the Ice Stupas, the water keeps flowing and wasting away down the streams and into the rivers throughout the winter.
- The water from these artificial glaciers **melt in the springtime**, just when the fields need.
- In each ice Stupa atleast 30-50 lakh ltrs of water is saved. This is apart from the naturally saved water in the slopes of mountains.
- Very little effort or investment is needed except for laying one underground pipeline from a higher point on the stream to the outskirts of the village.
- Purpose of Ice Stupas is not any celebration but:
 - Survival technique: Saving Winter water, that flows waste, for the purpose of drinking and irrigation in spring season.
 - For awareness generation that how the Mountain people are forced to do such innovative ideas to solve the water crises thus city people should not use resources in such a way that it creates problem for mountain people.

HUMP-BACKED MAHSEER

The Hump-Backed mahseer has been classified as critically endangered.

About:

- The hump-backed mahseer—a large freshwater fish also called the tiger of the water and found only in the Cauvery river basin of Tamil Nadu, Kerala, Karnataka (including Kerala's Pambar, Kabini and Bhavani rivers) is now "Critically Endangered" as per the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species.
 - The Bengal tiger, on the other hand has been classified under the 'Endangered' category.
- The inclusion of the hump-backed mahseer in the Red List was delayed because the fish did not have a scientific name. The inclusion was possible only after the mahseer got its scientific name i.e. Tor remadevii.
- Threats to the mahseer: The increasing instances of dynamite fishing, where explosives are used to kill a large school of fish, and the construction of dams and embankments along the river Cauvery, have caused severe damage to the habitats of the hump-backed mahseer.



IUCN latest update

- In the latest update of the IUCN red list, five other species were also categorized in the threatened categories viz. two wild orchids, the Arabian scad (a marine fish) and two wild coffee species found only in a few localities in the Western Ghats.
- The great hornbill (found in India and southeast Asia) was earlier categorised as "Near Threatened". It is now "Vulnerable" due to high hunting pressure coupled with habitat loss and deforestation, while the wreathed hornbill has moved from "Least Concern" to "Vulnerable".

IUCN Red List

- The International Union for Conservation of Nature (IUCN), founded in 1948, is the world's largest professional global conservation network having its headquarters in Gland, Switzerland.
- The IUCN Red List Categories define the extinction risk of different species. It has nine categories which range from NE (Not Evaluated) to EX (Extinct).

- Among these nine categories, those species categorized under the Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) categories are considered to be threatened with extinction.
- The quantitative criteria used to evaluate the extinction risk of species is as follows:
 - The rate of population decline.
 - The geographic range.
 - Whether the species already possesses a small population size.
 - Whether the species is very small or lives in a restricted area.
 - Whether the results of a quantitative analysis indicate a high probability of extinction in the wild.

EURASIAN LYNX

The first sighting of this animal from the Kashmir valley was reported. It was seen in the Dobjan forest area in Shopian district of South Kashmir region.

Eurasian Lynx

 Eurasian Lynx or Ee in Ladakhi is one of the medium-sized Wildlife cats which roam the high and cold snow covered mountains of Ladakh Himalaya.



- The cat is agile and strong and is high adapted to the thin air atmosphere of Ladakh.
- This would be the third smaller cat species reported from the valley. The other two more familiar ones are the Jungle Cat and the Leopard Cat.
- It is 'Least Concern' as per IUCN Red List.
- It is the largest species of lynx.

ENVIRONMENTAL DNA (EDNA)

An emerging tool in conservation for monitoring past and present biodiversity.

- Scientists have been using genetics to study wild animals for several years now but the process of collecting the DNA and analysing it has been time and cost intensive.
- However, a new genetic method developed by scientists hopes to make studying as well as conserving wild species

quicker, easier and cost-effective by deriving information from animal sources containing extremely low-quality DNA — including faeces and cooked meat.

What is eDNA?

- Environmental DNA (eDNA) refers to DNA that can be extracted from environmental samples, such as water, soil or faeces, without first isolating any target organisms.
 - It is **nuclear or mitochondrial DNA** that is released from an organism into the environment.
 - Every **eukaryotic cell** usually has two copies of nuclear DNA and hundreds or thousands of copies of mitochondrial DNA. This large number of mtDNA copies allows optimising the detection of species from environmental samples.

The environmental DNA approach has many advantages over traditional surveying methods:

- **Higher chance of detecting a species:** The technique's high sensitivity applies especially when a species occurs at a low density.
- **Cost efficiency and Accuracy:** It costs much less time and effort (and therefore much less money) to confirm the presence of a species or generate a list of species.
 - Sources of eDNA include secreted faeces, mucous, gametes, shed skin, hair and carcasses. Thus collecting eDNA is comparatively easy vis-à-vis normal DNA.
- **No disturbance:** It is no longer necessary to disturb the habitat of vulnerable species in order to establish their presence.
- eDNA has another advantage that it has **short degradation time** in contemporary ecosystems, in comparison with regular DNA.
 - As a result, eDNA has been obtained from ancient as well as modern samples.
- Less risk of introducing alien species and spreading disease (as sampling for eDNA uses sterile materials).
- eDNA also enables the detection of a species regardless of its life stage or gender.

Limits of environmental DNA approaches

- By analysing eDNA, it is not possible either to distinguish individuals of the same species (or in some cases genetically similar species) or to acquire information such as the number of individuals present on a site, their age, class, size, sex, etc.
- Except in rare cases, mitochondrial DNA (mtDNA), is maternally inherited, which prevents the identification of hybrids.

Persistence of environmental DNA

• Once released in the environment, DNA can be degraded by biotic (bacteria, fungi, endonucleases, etc.) and abiotic

factors (UV radiation, acidity, temperature, etc.), or persist in the environment, adsorbed on organic or inorganic particles.

- In general, cold and dry conditions slow down eDNA degradation. For example, in permafrost, eDNA can be stored for hundreds of thousands of years.
- In contemporary soils or in lacustrine or marine sediments, the persistence of eDNA varies from months to thousands of years depending on environmental conditions.
- In aquatic environments, eDNA is diluted and distributed in the water where it persists for 7–21 days, depending on the conditions.

Black Softshell turtle (Bostami Turtle/ Nilssonia nigricans):

- It has been declared extinct in the wild by the IUCN Red list. This species is only known to exist in artificial ponds in temples in India.
- Because of the ritualistic nature, the scientists have not been given access to the temple ponds and hence have used the technique of extracting environmental DNA (eDNA) to confirm the presence of specific varieties.

INDIAN ARMY MOUNTAINEERING EXPEDITION TO MT KAMET AND MT MAKALU

Indian Army is planning to attempt Mt Makalu (8485M), the fifth highest mountain peak in the world, in 2019.

About:

• As a precursor to it, an expedition to Mount Kamet (7756M), Uttarakhand is being conducted.

Five Highest Peaks in the World					
Rank	Mountain	Range	Country		
1.	Everest	Himalayas	Nepal/Tibet		
2.	K2 (Mount Godwin Austen)	Karakoram	India		
3.	Kangchenjunga	Himalayas	India/Nepal		
4.	Lhotse	Himalayas	Nepal/Tibet		
5.	Makalu	Himalayas	Nepal/Tibet		

Five highest peaks in the world continent wise:

- Asia: Mount Everest (8850 meters).
- South America: Aconcagua (6962 meters).
- North America: Denali AKA Mount McKinley (6194 meters).
- Africa: Kilimanjaro (5895 meters).
- Europe: Mount Elbrus (5642 meters).
- Antarctica: Mount Vinson (4897 meters).
- Australia: Mount Kosciusko (2228 meters) OR Australasia/ Oceania: Carstensz Pyramid (4884 meters).

NEELAKURINJI

Recent wildfires could have wiped out all seeds of the endemic flower.

About:

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- Wildlife experts say the recent large-scale wildfires on the grasslands where Neelakurinji (Strobilanthes kunthiiana) blossomed widely last year after a period of 12 years could have wiped out all the seeds of the endemic flowers from the area.
- **Kurunjimala sanctuary,** the natural habitat of the Neela Kurinji flowers, is located on the eastern part of the Southern Western Ghats of Kerala, just 42 km from Munnar town.
 - It was declared by the Government of Kerala in October, 2006.
 - The vegetation consists of mostly Shola and grasslands. Evergreen and decisuous forests are also found in the lower altitudes of the sanctuary.
 - The sanctuary also connects Chinnar Wildlife Sanctuary, Anamudi Shola National Park and Pampadum Shola National Park.
 - It is also contiguous to the Manjampatti Valley in Amravati reserve forest of Indira Gandhi Wildlife Sanctuary and the proposed Palani Hills National Park, apart from the protected areas mentioned above.

Do You Know?

- Silent Valley National Park is situated in the core of the Nilgiri Biosphere Reserve.
- Silent Valley is one of India's few rainforests.
- It would be more correct to call it a **shola forest**, a type of vegetation found only at the base of valleys in the western hills of south India.
- The name of the region was attributed considering the relative absence of the Cicada insects which normally produce a distinctive sound in a tropical forest environment.
- Silent Valley National Park is located in the Palakkad district of the state of Kerala.
- It is home to the largest population of Lion tailed macaques, an endangered species.

Neelakurinji

- Neelakurinji (Strobilanthes Kunthiana) is a bush with several branches and generally grows up to a height of 30-60cm.
- The species name Kunthiana has been derived from the **River Kunthi** which flows through the rich expanse of the renowned **Silent Valley National Park** in Kerala.

- **Properties:** The little flower with **no fragrance and no medicinal use** blooms once every 12 years (The last was in 2018).
 - The flowering season ranges between August and November.
 - The flower has purplish blue colour when aged. It looks light blue in the earlier stage of blooming.
- Areas of blooming: The species is endangered and is found in the shola grasslands, at an altitude of over 1,500 metres. It is endemic to India.
 - The Nilgiris, the Palani hills and the high ranges around Munnar are particularly noted for this rare variety.
 - The **Eravikulam National Park** is the main Neelakurinji flowering area.

Do You Know?

Nilgiri Hills, which literally means the blue mountains, got their name from the purplish blue flowers of Neelakurinji.

Plietesials: Plants that bloom at long intervals like Strobilanthes kunthianus are known as **plietesials.**

Masting:

- Synchronous production of seed at long intervals by a population of plants" is called masting.
- Strict masting only occurs in species that are **monocarpic** (or semelparous) -- individuals of the species only reproduce once during their lifetime, then die, as is the case with Strobilanthes kunthianus.
- Fun Facts: The Muthuvan tribes, who are the original inhabitants of Munnar, determine their age in relation to the number of Neelakurinji blooms they have observed.
 - The **Paliyans of Tamil Nadu** also use the blooming cycle of Neelakurinji flowers to calculate their age.

Shola Forest

- Shola forests are **tropical Montane forests** found in the valleys separated by rolling grasslands only in the higher elevations.
- They are found only in South India in the Southern Western Ghats.
- The shola forests are patches of forests that occur only in the valleys where there is least reach of the fog and mist.

CYCLONE IDAI

Cyclone Idai recently hit the port city of Beira in Mozambique.

- The Indian Navy launched a Humanitarian Assistance and Disaster Relief (HADR) operation near **Port Beira** in **Mozambique**.
- Mozambique has been hit by Idai, an 'intense tropical cyclone'.

What is a tropical cyclone?

- Tropical Cyclone is the formation of **very low-pressure system w**ith very high-speed winds revolving around it.
- **Factors** like wind speed, wind direction, temperature and humidity contribute to the development of cyclones.
- It is referred to as Hurricane in the Atlantic, Typhoon in the Pacific and Cyclone in the Indian Ocean.
- **Bomb cyclone:** The term is used by meteorologists to indicate a mid-latitude cyclone that intensifies rapidly.
- Cyclone Idai affects over 1.5 million people in three southern African countries- Mozambique, Zimbabwe and Malawi.
- In the Southern Hemisphere, it currently ranks as the thirddeadliest tropical cyclone on record.
- The cyclone has been named by Zimbabwe.

Naming of Cyclones:

- The process of naming cyclones involves several countries in the region under the aegis of the World Meteorological Organization which maintains the lists.
- For the Indian Ocean region, deliberations for naming cyclones began in 2000 and a formula was agreed upon in 2004.
- Eight countries in the region Bangladesh, India, Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand - all contributed a set of names which are assigned sequentially whenever a cyclonic storm develops.
- Purpose of naming a Cyclone: It's easier and less confusing to say "Cyclone Phailin" than remember the storm's number or its longitude and latitude. It's also easier when you have more than one storm to track.
- Names of some storms that cause widespread damage and deaths are usually retired and are **not brought back or reused later, at least for 10 years**. These names are then replaced with new names.
- The names are retired as a mark of respect to the dead. Once a name is officially retired, it is then replaced with a name of the same gender and beginning with the same letter.

BATTLE OF KANGLA TONGBI

Recently, the Platinum Jubilee Commemoration of Battle of Kangla Tongbi was organized.

About:

• The Battle of Kangla Tongbi, considered one of the fiercest battles of World War II, was fought by **Ordnance personnel of**

221 Advance Ordnance Depot (AOD) on the night of 6/7 April 1944 against the **Japanese forces** who had planned a three pronged offensive to **capture Imphal** and the surrounding areas.

- In this battle, the Japanese suffered many causalities and had to retreat.
- The Kangla Tongbi War Memorial is a mute testimony to this battle and conveys to the world at large that Ordnance personnel, apart from being professional logisticians, are second to none in combat, being equally proficient soldiers, should the occasion demand.

ECO-SENSITIVE ZONE (ESZ) AROUND BANNERGHATTA NATIONAL PARK

Despite objections, Bannerghatta National Park's ESZ has been reduced.

About:

- The **33**rd **ESZ Expert Committee of the Ministry of Environment, Forests and Climate Change (MoEFCC)** gave recommendations regarding the ESZ area of Bannerghatta National Park.
- In the latest notification, the Eco-Sensitive Zones (ESZs) was reduced to 169 sq.km by the committee.
- Environment activists have strongly opposed this due to reduction of nearly 100 sq. km. as compared to the first draft notification of 2016.

Concerns

- The reduction in the ESZ may open up more areas in the vicinity for mining and commercial development around the rapidly-urbanising Bengaluru city.
- Areas, where ESZ has been cut down drastically, are either being mined or are prospective mining areas.
- The other sector that will benefit from the cutting down of ESZ is **real estate** as land has now been freed from environmental constraints along highways close to BNP.

Response of the ESZ Committee

- This reduction of ESZ would lead to **more quarrying** in the area was **dismissed** by the ESZ Committee.
- It held that there is a **Supreme Court ruling prohibiting quarrying and mining activities** within a 'safe zone' of 1 km of a protected areas irrespective of the ESZ distance.
- However, this allows for other 'development' activities to take place, which can have an adverse impact on forests.

Eco-sensitive zone (ESZ)

- It is an area notified by the MoEFCC, around Protected Areas, National Parks and Wildlife Sanctuaries.
- Notifications declaring areas as ESZ are issued under the **Environment (Protection) Act 1986.**
- Purpose of declaring ESZs is to create some kind of "shock absorbers" to the protected areas. Thus ESZs are designated to regulate certain activities so as to minimise the negative impacts of such activities on the fragile ecosystem surrounding the protected areas.
- They also act as a **transition zone** from areas of high protection to areas involving lesser protection.
- The width of the ESZ could go up to 10 kms around the protected area.
- To categorise an area as ecologically sensitive, the government looks at topography, climate and rainfall, land use and land cover, roads and settlements, human population, biodiversity corridors and data of plants and animal species.
- Prohibited activities includes: Commercial mining, Setting of saw mills and industries causing pollution, Commercial use of firewood and major hydro-power projects, tourism activities like flying over protected areas in an aircraft or hot air balloon, discharge of effluents and solid waste in natural water bodies or terrestrial area.
- **Regulated activities includes:** Felling of trees, Drastic change in agriculture systems, Commercial use of natural water resource.
- Permitted activities includes: Ongoing agriculture and horticulture practices by local communities, Rainwater harvesting, organic farming, Adoption of green technology, Use of renewable energy sources.

Bannerghatta National Park

- It is located near Bangalore city in Karnataka. It was declared as a **national park in 1974**.
- A part of the national park was designated as Bannerghatta **Biological Park** in **2002**. The biological park provides for ex-situ conservation of species.
- It also has a **butterfly park-**the first in India.

UTTARAKHAND DISASTER RECOVERY PROJECT

The World Bank has been supporting the State Government since 2014 to restore housing and rural connectivity and to build the resilience of communities.

About:

- India signed a loan agreement with the World Bank for 96 million US dollars for additional financing of Uttarakhand Disaster Recovery Project.
- The loan will be used for the reconstruction of bridges, road and river bank protection works, and the construction of a training facility for the State Disaster Response Force (SDRF).
- The **aim** is **further to increase the technical capacity of the state entities** to respond promptly and more effectively to crises in the future.
- World Bank has estimated that natural disasters cost India an average of USD 9.8 billion annually.

Uttarakhand Disaster Recovery Project

- Through the Project, World Bank since 2014 seeks to restore housing and rural connectivity and to build the resilience of communities in Uttarakhand.
- The project focused upon the motto of Build Back Better Safer and Stronger Uttarakhand after 2013 disaster.
- In June 2013, a heavy deluge caused devastating floods and landslides in the Himalayan state of Uttarakhand, which hit more than 4,200 villages and killed 4,000 people.
- The Project has completed more than two thousand permanent houses and 23 public buildings and restored over one thousand 300 kms of roads and 16 bridges so far.
- It won the South Asia Procurement Innovation Awards (SAPIA) 2018 for adopting innovative approach and best practices in project procurement and implementation of works in various districts of Uttarakhand after the June 2013 disaster.
 - The key objective of SAPIA is to enhance learning and knowledge sharing from innovative approaches adopted by procurement entities and systems across the region.

AAREY COLONY

A new jumping spider species discovered in Aarey Colony has been named 'Jerzego sunillimaye'.

About:

- Aarey Colony, Maharashtra, is famous for jumping spiders.
- Spiders are important creatures as they are pest-controllers.

Critically Endangered Spiders in India

- The Rameshwaram Ornamental or Rameshwaram Parachute Spider.
 - It was recently described in 2004, and is only found in India.
• It can give a nasty bite which usually is not fatal.

• The species is semi-social, which means they live partly in groups.



- The Gooty Tarantula, Metallic Tarantula or Peacock Tarantula.
 - It is endemic to India.



AFRICAN CATFISH

A banned variety of fish in India posing a threat to indigenous varieties.

About:

- The African catfish (Clarias gariepinus) is a banned variety of fish in India.
- Native to Africa and the Middle East where it inhabits freshwater lakes, rivers, swamps, and urban sewage systems, the African catfish was introduced all over the world in the early 1980s for aquaculture.
- In India, the 'alien fish' as it is called, was first noticed in Andhra Pradesh, a bio-diversity hot spot of Indian aquaculture, in the 1990s.
 - It has since colonised water bodies and major rivers, invaded wetlands, and has been spotted right across the country.
- One African catfish can release 400,000 eggs in a single season.
- The voracious predator feeds on living and dead animal matter, including fish and invertebrates, and is known to attack small birds.
- It affects native fish species by way of:
 - genetic impact,
 - disease introduction, as well as

- catastrophic ecological impacts such as predation, competition and environmental modification.
- The African catfish is popular among fish-breeders since:
 - it grows fast,
 - can tolerate adverse water quality conditions and
 - can be raised in dense numbers.
- This air-breathing fish can crawl on dry ground and can survive in mud between rains.
- It has the ability:
 - to survive on land,
 - has omnivorous diet,
 - high tolerance for poorly oxygenated water and
 - has the ability to hide in vegetation which makes the species very difficult to control.
- The African catfish is one of the reasons behind a 70% decline over the past two decades in native fish species at Powai Lake in suburban Mumbai.

CENTRAL MONITORING COMMITTEE TO CHECK RIVER POLLUTION

There is need for a regular study of the Indian rivers with regard to biological health and its diversity.

About:

- National Green Tribunal has constituted a Central Monitoring Committee to check river pollution in over 350 river stretches across the country and make them pollution free.
- The committee will **prepare and enforce a national plan** to make river stretches pollution free.

• The committee comprises:

- A senior representative of NITI Aayog,
- Secretaries Ministry of Water Resources, Ministry of Urban Development, Ministry of Environment, Forest and Climate Change,
- Director General, National Mission for Clean Ganga and
- Chairman Central Pollution Control Board.
- Chairman CPCB will be the nodal authority for coordination.
- The CPCB, since the 1990s, has a programme to monitor the quality of rivers **primarily by measuring BOD (Biochemical Oxygen Demand),** which is a proxy for organic pollution the higher it is, the worse the river.

What is Biochemical Oxygen Demand (BOD)?

• It is the amount of dissolved oxygen used by microorganisms in the biological process of metabolizing organic matter in water.

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- The more organic matter there is (e.g., in sewage and polluted bodies of water), the greater the BOD; and the greater the BOD, the lower the amount of dissolved oxygen available for higher animals such as fishes.
- The BOD is therefore a reliable gauge of the organic pollution of a body of water.
- The health of a river and the efficacy of water treatment measures by the States and municipal bodies are classified depending on BOD.
- A BOD greater than or equal to 30 mg/l termed 'priority 1,' while that between 3.1-6 mg/l is 'priority 5.
- The CPCB considers a BOD less than 3 mg/l an indicator of a healthy river.
- One of the main reasons for treating wastewater prior to its discharge into a water resource is to lower its BOD—i.e., reduce its need of oxygen and thereby lessen its demand from the streams, lakes, rivers, or estuaries into which it is released.

Central Pollution Control Board (CPCB)

- It is a statutory organisation constituted **under the Water** (Prevention and Control of Pollution) Act, 1974.
 - Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.
- It serves as a field formation and also provides technical services to the Ministry of Environment and Forests for the provisions of the **Environment (Protection) Act, 1986.**

Principal Functions of the CPCB are:

- To promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution.
- To improve the quality of air and to prevent, control or abate air pollution in the country.
- To collect, collate and disseminate technical and statistical data relating to water pollution.

YELLOW WARNING FOR HIMACHAL

The Indian Metrological Department (IMD) issued a yellow warming to alert the people of Himachal.

About:

- The warming was issued ahead of severe thunderstorm and hailstorm with the potential to cause "damage, widespread disruption or danger to life".
- Yellow is the least dangerous of the weather warnings.

Colour coded warnings issues by IMD

• There are four types of colour codes signifying the level of caution issued by Indian Meteorological Department (IMD):

Four colour codes are issued to indicate various categories of alerts. Here is what each alert means:

- Green (All is well): No advisory is issued.
- Yellow (Be aware): It indicates the weather may change or worsen in the next few days.
- Amber (Be prepared): Amber means people need to be prepared to change plans and protect themselves, their family and community from the impacts of the severe weather based on the forecast from the Met Office.
- Red (Take action): Extremely bad weather is expected. People need to take action to keep themselves and others safe.
 Widespread damage, travel and power disruption and risk to life are likely. People must avoid dangerous areas and follow the advice of the emergency services and local authorities.

DHOLE - THE ASIATIC WILD DOG

The decline in population of Dhole, an endangered species, is a cause for concern.

About:

- A recent study has discovered a reduction in Dhole occupancy in Karnataka's Western Ghats, from 62 percent in 2007 to 54 percent in 2015.
- Dhole is commonly known as the Asiatic wild dog.
- It is listed as an endangered species by the IUCN.



Habitat and Ecology

- The Dhole is a **habitat generalist**, and can occur in a wide variety of vegetation types.
- Consequently, their elevation range is from sea level to as high as 5,300 m as in Ladakh. They have not been recorded in desert regions.
- In India, **tropical dry and moist deciduous forest** may represent optimal habitats, based on the areas thought to hold the largest Dhole populations.

- Besides prey numbers, other important factors that may influence habitat use include levels of human disturbance, water availability, tiger presence, and suitability of breeding sites.
- The Dhole is one of only three canid species with specialized dental adaptations for an exclusively carnivorous diet, termed hypercarnivory.
- In India, Dholes form **relatively large packs** to efficiently hunt large numbers of prey, as well as to protect litters, which are usually large.

Use and trade

- There is no widespread exploitation of Dholes for fur or other purposes, and there apparently is little if any value for their use as traditional medicines.
- Thus, wildlife trade does not directly affect Dholes.

Distribution in India

- In India, Dhole is present in the Central Indian Highlands, The Western Ghats, Eastern Ghats, and the jungles of North – East India.
- They may be also found in small number in the area of Ladakh.

Threats

- Massive infrastructural initiatives in the area, human intrusion in protected zones, change in land-use pattern, forest fragmentation and loss of forest cover are some of the major reasons for the decline in dhole population.
- The presence of semi-feral, free-ranging domestic dogs in unprotected forest areas might be another reason for the decline in dhole occupancy.
- Free-ranging dogs affect dholes as they compete with dholes for similar resources like prey animals.
- Moreover, these dogs often carry lethal and non-lethal disease pathogens that could result in the spread of diseases in the Dhole population.

Conservation

- In India, the Dhole is protected under the **Schedule II of the Wildlife Protection Act of 1972.** Since then, it is illegal to hunt and kill Dhole.
- The Dhole conservation breeding center was sanctioned by the Government in 2014, in the Indira Gandhi Zoological Park in Vishakhapatnam.

Do You Know?

It is not possible to employ the normally used capture-markrecapture camera trap-based survey method for estimating Dhole population because they do not have uniquely identifiable marks on their bodies.

11TH YEAR OF EARTH HOUR

On the last Saturday of March 2019, for the 11th year running, cities worldwide turned their lights off to mark Earth Hour.

About:

- Earth Hour is an annual **environmental campaign** that brings attention to the effects of climate change.
- It asks people to switch of lights at homes and businesses for an hour at 8.30pm (20:30), local time, usually on the last Saturday of March.
- World Wide Fund for Nature (WWF), which organizes the annual Earth Hour event, aims to stop the degradation of the Earth's natural environment.
- This year's theme is #Connect2Earth.
 - WWF has partnered with United Nations Convention on Biological Diversity (CBD) to create connect2earth.org."
- Earth Hour was famously **started as a 'lights out event'** in Sydney, Australia in 2007.
- Earth Hour only asks people to turn off the **non-essential lights** for one hour not lights that affect public safety.
- Earth Hour is not a black out.
- Earth hour **does not claim** that the event is an energy or carbon reduction exercise it is a symbolic action.
- WWF-Uganda created the world's first Earth Hour Forest.

Why is Earth Hour held in late March?

- The second-to-last and last weekend of March is around the time of the Spring and Autumn equinoxes in the northern and southern hemispheres respectively.
- This allows for **near coincidental sunset times** in both hemispheres.
- As a result, this ensures the **greatest visual impact** for a global 'lights out' event.
- Earth Hour should not to be confused with Earth Day.

Earth Day

- Earth Day is an initiative of the Earth Day Network.
- Every year it is celebrated on April 22.
- The first Earth Day on April 22, 1970, activated 20 million Americans from all walks of life and is widely credited with launching the **modern environmental movement.**
- It the largest civic observance in the world.
- It has nothing to do with switching off the lights.
- The theme for Earth Day 2019 is 'Protect Our Species' while the theme for 2018 Earth Day was to 'End Plastic Pollution'.

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About World Wide Fund for Nature (WWF)

- It is an international organization committed to conservation of the environment.
- Mission
 - to conserve the world's biological diversity,
 - to ensure that the use of renewable natural resources is sustainable, and
 - to promote the reduction of pollution and of wasteful consumption.
- The WWF provides money for conservation initiatives around the world.
 - These include programs focused on individual species, forests, and freshwater and marine issues as well as climate change and **responsible international trade.**
- The group has also been involved in efforts to provide a safe and sustainable habitat for the world's peoples, both urban and rural, including clean water, clean air, healthful food, and rewarding recreation areas.
- Among the WWF's notable achievements is its use of debtfor-nature swaps, in which an organization buys some of a country's foreign debt at a discount, converts the money to local currency, and then uses it to finance conservation efforts.
 - The WWF's first successful debt-for-nature swap took place in 1987 in Ecuador.
- The organization's logo is a distinctive panda.

EAST ASIAN-AUSTRALASIAN FLYWAY

Andaman and Nicobar Islands serve as a resting place for some birds using East Asian-Australasian Flyway (EAAF).

About:

- In the past few years some birds of southeast Asian origin have been recorded in the Andaman and Nicobar Islands during migration.
- These birds also use Andaman and Nicobar Islands for a few week rest before they can fly along the East Asian-Australasian Flyway (EAAF).

What is a Flyway?

- The routes that migratory waterbirds traverse on an annual basis are known as 'flyways.'
- There are nine major flyways around the world.
- Three migratory flyways cross Asia: the West Pacific Flyway, East-Asian Australasian Flyway, and the Centarl Asian Flyway.
- **BirdLife** works most closely within the East Asian-Australasian Flyway, as this flyway covers the majority of our Asian Partner countries.

East Asian - Australasian Flyway (EAAF)

• It stretches from the Russian Far East and Alaska, southwards through East Asia and South-east Asia, to Australia and New Zealand **including Andaman and Nicobar Islands** and encompasses 22 countries.





East Asian-Australasian Flyway Partnership

- It is a network of partners within the East Asian-Australasian Flyway (EAAF).
- It aims to protect migratory waterbirds, their habitat and the livelihoods of people dependent upon them.
- Partners include National Governments, Inter-Governmental Organisations, International Non-governmental Organisations, and International Private Enterprise, which agree to endorse the text and support the objectives and actions under this Partnership.
- However, only government partners can nominate new sites to the Network.

BirdLife International

- BirdLife International (formerly the International Council for Bird Preservation) is a global partnership of conservation organisations that strives to conserve birds, their habitats and global biodiversity, working with people towards sustainability in the use of natural resources.
- It is the world's largest partnership of conservation organisations, with over 120 partner organisations.
- BirdLife International is the official Red List authority for birds, for the International Union for Conservation of Nature.

Important Bird and Biodiversity Areas (IBAs)

- IBA is an area identified using an internationally agreed set of criteria.
- These are **globally important** for the conservation of bird populations.
- The program was developed and sites are identified by **BirdLife International.**
- Currently there are over 12,000 IBAs worldwide.
- IBAs are identified for terrestrial, freshwater and marine environments as well.
- Legal protection **only if** they become part of already protected areas, so no special legal protection on being identified as an IBA.

Criteria

- To be listed as an IBA, a site must satisfy at least one of the following criteria:
 - Globally threatened species:
 - Regular presence of a Critical or Endangered species, irrespective of population size, or
 - Vulnerable species, more than a threshold limit.
 - Restricted-range species
 - Biome-restricted species
 - Congregations

Do You Know?

Why did birds lose their teeth?

- Birds gave up teeth to speed up egg hatching.
- This is because there is no need to wait for the embryo to develop teeth a process that can consume 60% of egg incubation time.

FAKIM WILDLIFE SANCTUARY

The services of Alemba Yimchunger, a forest guard at the Fakim Wildlife Sanctuary, have been recognised with Earth Day Network Star.

About:

• The Earth Day Network Star award is conferred by a U.S.based international environment organisation that engages with green groups in 195 countries.

Fakim Wildlife Sanctuary

- The Fakim Wildlife Sanctuary in located in Kiphire district of Nagaland.
- The sanctuary is considered to be an abode for many wildlife animals such as leopards, tigers, wild buffaloes, hoolock gibbons and mithun and birds such as Hornbill.
- The important trees to be found here are Bogipoma, Bonsum, Khasi Pine, Amari, Oaks, Gamari, Nahor, Uriam, Hollock, Alder, Sasi and Kachnar.
- It was established in the year 1983, and **lies along the** international border with Myanmar.

INDIAN BULLFROGS

The Indian bull frog is steadily occupying the Andaman Islands' ecosystem.

About:

- Indian bullfrogs (Hoplobatrachus tigerinus), introduced in the Andaman Islands in the early 2000s, have become invasive species and eat native wildlife including fish and lizards.
- Now, experiments reveal that the frogs take to this invasive behaviour early in their lives.
- Even in the developmental stages, the large bullfrog tadpoles eat other native frog tadpoles.

Indian bullfrog

• This species is found throughout most wetland areas of India, Bangladesh and much of northern Pakistan.

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- It is 'Least Concern' as per IUCN Red List.
- They come out the streams and agricultural ponds after the first rains in May and breed by the hundreds, with each female able to lay between 3,500 and 20,000 eggs. Not all survive, but enough live to breed again, ensuring that the horde extends their range.
- With an average life span of seven years, and time to sexual maturity of 10-12 months, their population can dramatically shoot up in a very short time

GLOBAL COOL COALITION

The first-ever Global Coalition on Clean and Efficient Cooling was launched.

About:

- The Global Coalition on clean and efficient cooling (a.k.a. Cool Coalition), consisting of 23 members, was launched at the First Global Conference on Synergies between the 2030 Agenda and Paris Agreement.
- The objective is to look for and promote Clean, efficient cooling appliances and equipment, which can save up to \$2.9 trillion in energy use by 2050, and help avoid 0.4° Celsius warming of the planet.

India Cooling Action Plan

- India is the **first country** in world to develop such a document (ICAP), which addresses cooling requirement across sectors and lists out actions which can help reduce the cooling demand.
- Launched by the Environment Ministry, the India Cooling Action seeks to:
 - reduce cooling demand across sectors by 20% to 25% by 2037-38.
 - reduce refrigerant demand by 25% to 30% by 2037-38.
 - reduce cooling energy requirements by 25% to 40% by 2037-38.
 - recognize "cooling and related areas" as a thrust area of research under the national S&T Programme.
 - training and certification of 100,000 servicing sector technicians by 2022-23, synergizing with Skill India Mission.
- The rationale is that as the world gets warmer, the demand for air conditioners is projected to grow and the greenhouse gas it emits will endanger the planet.
- The Cool Coalition offers a three-in-one opportunity to cut global warming, improve the lives of hundreds of millions of people and make huge financial savings.

- The Global Cooling Coalition is supported by the United Nations (UN), Climate and Clean Air Coalition, the Kigali Cooling Efficiency Program and Sustainable Energy for All (SE for ALL).
- The Global Cool Coalition is a unified front that links action across the **Kigali Amendment**, Paris Agreement and Sustainable Development Goals.

Note: India has already developed a **national cooling action plan** that was launched by the Union environment ministry in March 2019.

Other initiatives for promoting efficient cooling

- Global Cooling Innovation Summit: A first-of-its-kind Global Cooling Innovation Summit was inaugurated in New Delhi in November 2018.
 - It seeks to explore concrete means and pathways to address the climate threat that comes from the growing demand from room air conditioners.
 - The Global Cooling Prize was launched at this Summit.
- **Global Cooling Prize:** It is a global competition to spur the development of a radically **more energy-efficient cooling technology** that will have at least **5x less climate impact**.

Back to Basics

Montreal Protocol

- The Montreal Protocol, finalized in 1987, is a global agreement to protect the stratospheric ozone layer by phasing out the production and consumption of ozonedepleting substances (ODS).
- The Montreal Protocol is the **first and the only environmental treaty to achieve universal ratification** by all countries in the world.

Kigali amendment to the Montreal protocol

- In October 2016, Parties to the Montreal Protocol adopted the Kigali amendment to phase down production and consumption of hydrofluorocarbons (HFCs) worldwide, which are used in refrigeration around the world and are a potent greenhouse gas.
- HFCs are widely used alternatives to ozone depleting substances such as hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs), already controlled under the Protocol.
- The world can avoid up to 0.4°C of global warming this century through implementation of the Kigali Amendment.

YANGTZE GIANT SOFT SHELL TURTLE ON THE VERGE OF EXTINCTION

The last surviving female dies in a Chinese zoo.

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Yangtze Giant Soft Shell Turtle

 The Yangtze giant soft shell turtle is known to have inhabited the Yangtze river in China and the Red river that flows from southern China into northern Vietnam for millions of years.



It was the inspiration behind the mythological creature "Bi Xi" or "Ba

Xia," the sixth son of the dragon in ancient Chinese belief.

• The Yangtze giant softshell turtle is the **largest freshwater turtle** in the world. It grows to 100 centimetres and weighs up to 100 kilograms.

What is the difference between them and hard shelled turtles?

- In soft shell turtles, the **top or back is fleshy**. In hard shell ones, it is **made up of bone** and covered by the skin or epidermis.
- The soft shell of the turtles renders them vulnerable to predators and hence, all of them are **usually found in freshwater habitats** like rivers, lakes and ponds.
- The hard shell varieties are found in both, marine and freshwater environments.
 - The largest turtle on the planet though, is neither hard shell nor soft. It is somewhere in the middle. It is called the Leatherback. It measures three-and-a-half metres and weighs 700-800 kgs.
- Freshwater turtles are more threatened today than marine ones as their population is low and highly localised. Pollution, sand mining, poaching and dams threaten their future.

What is the ecological importance of a soft shell turtle?

- They are scavengers.
- They eat dead bodies floating in rivers and keep them clean.
- They also feed on plankton.

MALHAM CAVE

An Israeli-led research team believes that Malham Cave is the longest salt cave in the world, measuring more than 6 miles in length

About:

- Malham cave sits under Mount Sedom, just southwest of the salty Dead Sea.
 - Dead Sea is a shrinking Salt Lake (and lowest point on Earth) that extends into Jordan, Israel and the occupied West Bank.

• By comparison, Iran's Qeshm Island salt cave, now the world's second largest salt cave, measures only 6,580 meters (4.1 miles).

Note: The Negev is a desert and semidesert region of southern Israel.

STATE OF THE GLOBAL CLIMATE IN 2018

The World Meteorological Organization (WMO) unveiled the State of the Global Climate 2018.

About:

• Every year, WMO issues this Statement on the State of the Global Climate based on data provided by National Meteorological and Hydrological Services and other national and international organizations.

Highlights: State of the Global Climate in 2018

- 2018 is on course to be the fourth warmest year on record.
 - This means that the past four years—2015, 2016, 2017 and 2018—taken together are the four warmest years on record.
- Greenhouse Gas concentrations continue to rise.
 - Carbon dioxide levels, which were at 357.0 parts per million kept rising to 405.5 parts per million in 2017.
- Mean Global Mean Sea Level for the period from January to July 2018 has been 2 to 3 mm higher than for the equivalent period in 2017.
- Ocean Heat Content was at record high.
 - More than 90% of the energy trapped by greenhouse gases, goes into the oceans.

• Ocean Acidification:

- In the past decade, the oceans absorbed around 25% of anthropogenic carbon dioxide emissions.
- Absorbed carbon dioxide reacts with seawater and changes the pH of the ocean. This process is known as ocean acidification.
- Observations in the open-ocean over the last 30 years have shown a clear trend of **decreasing pH.**
- Changes in pH are linked to shifts in ocean carbonate chemistry that can affect the ability of marine organisms such as molluscs and reef-building corals, to build and maintain shells and skeletal material.
- Sea ice well below average.
 - Arctic sea-ice extent was well below average throughout 2018 and was at record-low levels for the first two months of the year.



SCIENCE & TECHNOLOGY

BENZOIC ACID FROM PETROLEUM WASTE TOLUENE

IIT-Madras converted petroleum waste product Toluene into Benzoic acid.

About:

- Using platinum nanocatalyst, a team at the Indian Institute of Technology (IIT) Madras has successfully converted petroleum waste-product toluene into benzoic acid.
- Toluene is converted into benzoic acid through selective and controlled oxidation in the presence of a catalyst binaphthyl-stabilised platinum nanoparticles (Pt-BNP)
- **Binaphthyl** is a novel catalyst developed by the team which is the key to this process.
 - Generally, platinum nanoparticles are not stable in nature as they tend to agglomerate and become macroparticles. The catalytic activity is reduced once it becomes macroparticles.
 - The binaphthyl that is bound to platinum nanoparticles acts as a stabiliser and prevents nanoparticle agglomeration.
- A green oxidant (70% aqueous tert-butyl hydroperoxide or TBHP) was also used for converting toluene into benzoic acid.
- It is an **environment-friendly process** as it produced **no toxic by-products** common with such organic reactions.
- Moreover, it converted a waste product into useful product.

Uses of Benzoic acid

- Food preservative as it inhibits the growth of bacteria and yeast. Used in chewing gums, ice creams, jellies, pickles, fruit juices, soft drinks, pickles, barbecue sauces, salad dressings.
- Medicine for bacterial and fungal infections.

OPTICAL TWEEZERS

Physicists have shown that they could organize groups of individual atoms into large grids with high efficiency using optical tweezers.

About:

• This demonstration proves that optical tweezers are a better technique for catching and organizing atoms.

- **Significance of this accomplishment:** Lone atoms are a potential building block for harnessing quantum physics.
 - If researchers can capture and control these pieces of matter with lasers, they can create new types of materials that behave in strange ways.
 - They could also lead to quantum computers that might one day replace traditional computers.

Optical Tweezers

- Optical Tweezers use light to manipulate microscopic objects as small as a single atom.
 - Most frequently, optical tweezers are built by modifying a standard optical microscope.

Note: The 2018 Nobel prize was awarded "for ground breaking inventions in the field of laser physics" with one half to Arthur Ashkin "for the optical tweezers and their application to biological systems", the other half jointly to Gérard Mourou and Donna Strickland "for their method of generating high-intensity, ultrashort optical pulses."

How Optical Tweezers work?

- The basic principle behind optical tweezers is the **momentum transfer**.
- Light carries momentum that is proportional to its energy and in the direction of propagation.
- Any change in the direction of light, by reflection or refraction, will result in a change of the momentum of the light.
- If an object bends the light, changing its momentum, conservation of momentum requires that the object must undergo an equal and opposite momentum change.
- This gives rise to a force acting on the object.



Applications

- Optical tweezers have been used to trap dielectric spheres, viruses, bacteria, living cells, organelles, small metal particles, and even strands of DNA, without damaging them.
- Other Applications include:
 - confinement and organization (e.g. for cell sorting).
 - tracking of movement (e.g. of bacteria).

- application and measurement of small forces.
- altering of larger structures (such as cell membranes).
- Two of the main uses for optical traps have been the study of molecular motors and the physical properties of DNA.
- However, optical tweezers are only able to manipulate very small objects and only at very short distances.

Do You Know?

Recently, scientists have designed a way to levitate and propel objects using only light, by creating nanoscale patterns on the objects' surfaces.

PSLV-C45 AND EMISAT

PSLV-C45 successfully launched EMISAT and 28 international customer satellites from Satish Dhawan Space Centre (SDSC) in Sriharikota.

About:

- PSLV-C45 marked the first mission of PSLV-QL, a new variant of PSLV with four strap-on motors.
- PSLV-C45 mission was unique in several ways.
 - It was a four strap-on new variant;
 - The vehicle achieved three different orbits; and
 - For the first time, the fourth stage (PS4) (powered by solar panels) was placed at 485 km orbit to function as orbital platform for scientific experiments.
- The 28 international customer satellites, together weighing about 220 kg, are from four countries, namely, Lithuania (2), Spain (1), Switzerland (1) and USA (24).
 - These satellites were successfully placed in their intended sun-synchronous polar orbits.

The payloads carried by PS4 are:

- An automatic identification system from ISRO: The maritime satellite application will help capture messages transmitted from ships.
- The Automatic Packet Repeating System from AMSAT (Radio Amateur Satellite Corporation) is to assist amateur radio operators in tracking and monitoring position data.
- The Advanced Retarding Potential Analyzer for Ionospheric Studies (ARIS) from Indian Institute of Space Science and Technology (IIST) is to study the structure and composition of the ionosphere.

EMISAT

• It is a satellite built around ISRO's Mini Satellite-2 bus weighing about 436 kg. It is placed at 748 km height.

- The bus is the infrastructure of the spacecraft, usually providing locations for the payload typically for space experiments or instruments.
- The satellite is intended for electromagnetic spectrum measurement.
- It is also India's first electronic surveillance satellite.
- It is equipped with **Space-based electronic intelligence or ELINT** which will add teeth to situational awareness of the Armed Forces as it **will provide location and information of hostile radars placed at the borders.**
 - ELINT is jointly developed by ISRO-DRDO.

RAAVANA-1

Sri Lanka's first satellite launched.

About:

- Sri Lanka's first satellite 'Raavana-1' was launched into space, marking Sri Lanka's entry into the global space age.
- The BIRDS-3 satellites from Japan, Nepal, and Sri Lanka were taken to the International Space Station (ISS) as cargo, and boarded onto Antares rocket, which carries the Cygnus cargo spacecraft.
- The research satellite, named RAVANA-1 was designed and built at the Kyushu Institute of Technology in Japan.
- The satellite is expected to fulfil five missions including the capturing of pictures of Sri Lanka and its surrounding regions.

Birds Project

- The Joint Global Multi-Nation Birds Satellite project, acronym as "Birds project" is a cross-border interdisciplinary satellite project for non-space faring countries supported by Japan.
- It helps participating nations make **the first step towards creating indigenous space program** by designing, building, testing, launching and operating their first satellites.
- The project is being led by Kyushu Institute of Technology in Japan and its third version (Birds 3) involves students from **Sri Lanka, Bhutan, Nepal and Japan.**
- During this project, students shall design, develop and operate identical 1U CubeSats (1kg, 10cm cubic) belonging to the participating countries.

Do You Know?

- CubeSats are a class of nanosatellites that use a standard size and form factor.
- The standard CubeSat size uses a "one unit" or "1U" measuring 10x10x10 cms and is extendable to larger sizes; 1.5, 2, 3, 6, and even 12U.

May, 2019

TRANSITING EXOPLANET SURVEY SATELLITE

It will monitor more than 200,000 stars for temporary drops in brightness caused by planetary transits to look for exoplanets.

About:

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- NASA's Transiting Exoplanet Survey Satellite (TESS) is the next step in the search for planets outside of our solar system, including those that could support life.
- The **mission will find exoplanets** that periodically block part of the light from their host stars, an occurrence known as **transits.**
- TESS will survey 200,000 of the brightest stars near the sun to search for transiting exoplanets.
- TESS launched in April 2018, aboard a SpaceX Falcon 9 rocket.

What is the current exoplanet count?

- As of now, the number of known exoplanets stands at over 3,700.
- About 50 of them are believed to potentially habitable. They have the right size and the right orbit to support surface water and, at least theoretically, to support life.

How does TESS finds exoplanets?

- Tess will look for **dips in the visible light of stars**, which indicates that a planet has crossed the stars in our line of sight.
- Repetitive, periodic dips can reveal a planet or planets orbiting a star.
- This method is called the transit photometry and it can tell researchers a lot about a planet.
 - Based on how much of a dip in light a planet causes in its star, we can determine that planet's size.
 - Looking at how long it takes a planet to orbit its star, scientists are able to determine the shape of the planet's orbit and how long it takes the planet to circle its sun.
- The stars TESS will study are 30 to 100 times brighter than those the **Kepler mission and K2 follow-up** surveyed, which will enable far easier follow-up observations with both ground-based and space-based telescopes.
- TESS will also cover a sky area 400 times larger than that monitored by Kepler.

Exoplanets

- An exoplanet is a planet that orbits a star outside our solar system.
- Exoplanets are very hard to see directly with telescopes as they are hidden by the bright glare of the stars they orbit.

• So, astronomers use other ways to detect and study these distant planets. They search for exoplanets by looking at the effects these planets have on the stars they orbit.

Other methods of finding exoplanets?

- "Wobbly" star method.
 - An orbiting planet causes a star to orbit slightly off its centre. From a distance, this makes it look like the star is wobbling.
 - This method has one limitation that only big planets—like Jupiter, or even larger—can be seen this way.
 - Smaller Earth-like planets are much harder to find because they create only small wobbles that are hard to detect.

DEFENCE SATELLITES

ISRO set to launch a string of 'defence' satellites.

About:

- Indian Space Research Organisation (ISRO) is expected to launch 8 strategic earth observation (EO) satellites in 2019-2020.
- The satellites are:
 - **RISAT-2B: a radar imaging** satellite. It has all weather capability to take images of the earth. It is a **lighter version** of the spy satellite RISAT with an X-band synthetic aperture radar that can penetrate clouds and zoom **upto a resolution of 1 m.**

RISAT Satellites

- **RISAT-2, launched in 2009** was the **first** of the RISAT series to reach orbit.
- The images from old **RISAT-series satellites** were used to plan the **surgical strike in 2016** and **the air strike** on a Jaish camp in Pakistan's **Balakot** this year.

RISAT-2BR1, RISAT-2BR2, RISAT-1A

• Cartosat-3: a remote sensing satellite. It is an advanced version of Cartosat-2 series, with improved spatial and spectral characteristics. It has an enhanced resolution of 0.25 metre for cartographic applications and high-resolution mapping, which is the best in the world.

Cartosat-2 series

- They have a resolution of **only upto 0.5 m.**
 - GISAT-1 and 2 (new series): GISAT has both military and civilian use. Till now, old imaging satellites could map a particular area only once in 22 days. With GISAT, military can scan an area every other day. It can provide near realtime pictures of large areas under cloud free conditions.

- GSAT-32: a communication satellite. It will replace GSAT-6A, which was lost in a failed launch. It seeks to boost pointto-point communications for military.
- Until now, ISRO spaced out defence-use satellites over a few years as in the case of the Cartosat-2 series high-resolution imaging satellites but its focus has now shifted towards boosting defence assets in space amid heightened tension with Pakistan and Chinese presence in Indian Ocean.
- Satellites recently launched for "strategic use": HysIS, Microsat-R and the EMISAT.
- Traditionally, payloads for ISRO's satellites come from the Space Applications Centre, the payloads of the Microsat-R and EMISAT were from the DRDO.

ENVIRONMENTAL DNA (EDNA)

An emerging tool in conservation for monitoring past and present biodiversity.

About:

- Scientists have been using genetics to study wild animals for several years now but the process of collecting the DNA and analysing it has been time and cost intensive.
- However, a new genetic method developed by scientists hopes to make studying as well as conserving wild species quicker, easier and cost-effective by deriving information from animal sources containing extremely low-quality DNA including faeces and cooked meat.

What is eDNA?

- Environmental DNA (eDNA) refers to DNA that can be extracted from environmental samples, such as water, soil or faeces, without first isolating any target organisms.
 - It is **nuclear or mitochondrial DNA** that is released from an organism into the environment.
 - Every **eukaryotic cell** usually has two copies of nuclear DNA and hundreds or thousands of copies of mitochondrial DNA. This large number of mtDNA copies allows optimising the detection of species from environmental samples.

The environmental DNA approach has many advantages over traditional surveying methods:

- **Higher chance of detecting a species:** It has high sensitivity even when a species occurs at a low density.
- **Cost efficiency and Accuracy:** It costs much less time and effort (and therefore much less money) to confirm the presence of a species or generate a list of species.
 - Sources of eDNA include secreted faeces, mucous, gametes, shed skin, hair and carcasses. Thus collecting eDNA is comparatively easy vis-à-vis normal DNA.

- No disturbance: It is no longer necessary to disturb the habitat of vulnerable species in order to establish their presence.
- eDNA has another advantage that it has **short degradation time** in contemporary ecosystems, in comparison with regular DNA.
 - As a result, eDNA has been obtained from ancient as well as modern samples.
- Less risk of introducing alien species and spreading disease (as sampling for eDNA uses sterile materials).
- eDNA also enables the detection of a species regardless of its life stage or gender.

Note: The genetic material includes the regulatory regions that control how genes are turned on and off, as well as long stretches of "**nonsense**" or "**junk**" DNA, so called because we don't yet know what, if anything, it does.

Limits of environmental DNA approaches

- By analysing eDNA, it is not possible either to distinguish individuals of the same species (or in some cases genetically similar species) or to acquire information such as the number of individuals present on a site, their age, class, size, sex, etc.
- Except in rare cases, mitochondrial DNA (mtDNA), is maternally inherited, which prevents the identification of hybrids.

Persistence of environmental DNA

- Once released in the environment, DNA can be degraded by biotic (bacteria, fungi, endonucleases, etc.) and abiotic factors (UV radiation, acidity, temperature, etc.), or persist in the environment, adsorbed on organic or inorganic particles.
- In general, cold and dry conditions slow down eDNA degradation. For example, in permafrost, eDNA can be stored for hundreds of thousands of years.
- In contemporary soils or in lacustrine or marine sediments, the persistence of eDNA varies from months to thousands of years depending on environmental conditions.
- In aquatic environments, eDNA is diluted and distributed in the water where it persists for 7–21 days, depending on the conditions.

Black Softshell turtle (Bostami Turtle/ Nilssonia nigricans)

- It has been declared extinct in the wild by the IUCN Red list. This species is only known to exist in artificial ponds in temples in India.
- Because of the ritualistic nature, the scientists have not been given access to the temple ponds and hence have used the technique of extracting environmental DNA (eDNA) to confirm the presence of specific varieties.

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LIFE ON MARS

Growing 'Fungi' spotted in Mars Curiosity Rover photos.

About:

- A new study published in Journal of Astrobiology and Space Science found evidence—photographs that are supposedly of mushrooms — to support the hypothesis that life exists on Mars.
- Photographs were taken by NASA rovers Curiosity and Opportunity.
- The study also proposes Earth as an obvious source of life on Mars. It is probable that solar winds striking, ejecting and propelling microbe-laden dust and debris in the stratosphere and mesosphere, deep into space and microbes dwelling in rock ricocheted into space from Earth by meteor strikes, have repeatedly contaminated Mars and other planets and vice versa." Even spacecraft may have carried fungi or microorganisms to Mars.
- However, it has also been met with skepticism, and the paper itself concedes that the evidence is not proof. Some scientists believe the circular specimens photographed emerging from beneath the Martian soil, are not mushrooms but hematite, a form of iron oxide, which NASA affectionately refers to as "blueberries."

'BUBBLE BOY' DISEASE

Scientists turned one of the immune system's worst enemies HIV, the virus that causes AIDS, into a saviour.

About:

• The Bubble boy disease is also known as Severe Combined Immunodeficiency Syndrome (SCID).

SCID

- SCID is a group of very rare, life-threatening diseases that are present at birth.
- The disease causes the child to have very **little or no immune system.** As a result, the child's body is unable to fight off infections.
- This disease process is also known as the **"boy in the bubble"** syndrome because living in the normal environment can prove fatal to these children.

Causes of SCID

- SCID is a group of **inherited disorders**.
- Many genetic defects can cause SCID. These defects reduce the ability of white cells in the blood to fight infection.

• The best treatment for this disease is a **bone marrow transplant** (BMT), which, in most cases, would cure the problem.

CANDIDA AURIS

A Drug-resistant Fungus That Spreads in Healthcare Facilities.

About:

• Candida auris is "an emerging **fungus (yeast)** that presents a serious global health threat."

Why is Candida auris a problem?

- It causes serious infections. C. auris can cause bloodstream infections and even death, particularly in hospital and nursing home patients with serious medical problems.
- It's often resistant to medicines. Antifungal medicines commonly used to treat Candida infections often don't work for Candida auris.
 - Healthcare personnel oblivious to it for long continue to prescribe antibiotics giving the organism time to acclimatise to the medication.
- It's becoming more common. Although C. auris was just discovered in 2009 (It was identified in 2009 from yeast isolates from the ear of a Japanese patient), it has showed up in countries as far apart as Australia and Canada, Venezuela and Japan, over the past few years.
- It's difficult to identify. C. auris can be misidentified as other types of fungi unless specialized laboratory technology is used.
 - This misidentification might lead to a patient getting the wrong treatment.
- It can spread in hospitals and nursing homes. C. auris has caused outbreaks in healthcare facilities and can spread through contact with affected patients and contaminated surfaces or equipment because C. auris can live on surfaces and can colonise patients for several weeks.

THE CHAIN-MELTED STATE

Scientists have found a new state of physical matter known as "the chain-melted state".

About:

 Scientists have found a new state of physical matter known as "the chain-melted state" – which allows atoms to exist as both solid and liquid at the same time. This unusual but stable state is part solid and part liquid.

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- Atoms in physical material have been typically thought to be in one of three states: they were either solid, liquid, or they were gas. But researchers have discovered some elements that can take on properties of two different states, posing a complication to that view.
- Subjecting potassium to extreme environments such as pushing it up against high pressures and temperatures – were combined with powerful computer simulations to allow scientists to study the unusual state.
- While at high pressure and temperatures most of potassium's atoms form into a solid lattice structure, there is also a second set or potassium atoms that are in a fluid arrangement. And **both exists at the same time.**
- This pretty much means that the atoms can be arranged into a solid element and a liquid element structure at the same time.
 - In one lattice, the chemical bonds are strong and so elements remain in a solid state, while the other one is melting into a liquid state.
- Scientists in a study found that more than half a dozen other elements, including sodium and bismuth, were able to reach the state if they were put into the right environments.

Some more states of matter

- Plasma
 - The state consists of super energetic and super excited particles in the form of ionised gases.
 - The fluorescent tube and neon sign bulbs consist of plasma.
 - Inside a neon sign bulb there is neon gas and inside a fluorescent tube there is helium gas or some other gas.
 - The gas gets ionised, that is, gets charged when electrical energy flows through it.
 - This charging up creates a plasma glowing inside the tube or bulb.
 - The plasma glows with a special colour depending on the nature of gas.
 - The Sun and the stars glow because of the presence of plasma created by very high temperature.
- Bose-Einstein Condensate:
 - In 1920, Indian physicist Satyendra Nath Bose had done some calculations for a fifth state of matter.
 - Building on his calculations, Albert Einstein predicted a new state of matter the Bose-Einstein Condensate (BEC).
 - In 2001, Eric A. Cornell, Wolfgang Ketterle and Carl E. Wieman of USA received the Nobel prize in physics for achieving "Bose-Einstein condensation".
 - The BEC is formed by cooling a gas of extremely low density, about one-hundred-thousandth the density of normal air, to super low temperatures.

HELIUM HYDRIDE ION (HeH⁺)

Scientists have detected the most ancient type of molecule in our universe in space for the first time ever.

About:

- Helium hydride ion, the first molecule that formed almost 14 billion years ago following the Big Bang, was detected by NASA's flying observatory SOFIA towards a planetary nebula.
- Despite its importance in the history of the early Universe, HeH⁺ has so far escaped detection.



How Helium Hydride ion was made?

- Helium hydride ion (HeH⁺) was formed when falling temperatures in the young universe allowed recombination of the light elements produced in the Big Bang in reverse order of their ionisation potential.
- Just after the Big Bang, all the elements were in their ionised state and without their associated electrons. Thereafter, Helium combined first with free electrons to form the first ever neutral atom.
- At that time hydrogen was still ionised. Helium atoms combined with these protons into the helium hydride ion HeH*.

This is co considered to be the universe's first molecular bond.

Do You Know?

- SOFIA, the Stratospheric Observatory for Infrared Astronomy, is a Boeing 747SP aircraft modified to carry a 2.7-meter (106-inch) reflecting telescope.
- It makes its observation while flying in the stratosphere at 38,000-45,000 feet.
- This puts SOFIA above 99 percent of Earth's infraredblocking atmosphere, allowing astronomers to study the solar system and beyond in ways that are not possible with ground-based telescopes.
- SOFIA is a partnership between NASA and the German Aerospace Center (DLR).

HAEMOPHILIA

April 17 is World Haemophilia Day.

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About:

- Haemophilia is a medical condition, **mostly inherited**, in which the **ability of blood to clot is severely reduced**, so that even a minor injury can cause severe bleeding.
- There are **13 types** of clotting factors, and these work with platelets to help the blood clot.
- Haemophilia is caused due to a **defect in the gene** that determines how the body makes certain clotting factors.
- The genes that code for these factors are located on the X chromosome, making haemophilia an X-linked recessive disease.
- Because of the genetics involved in the way the sex of a child is determined, **men are more vulnerable to haemophilia than women.** There is **no known cure** for haemophilia.
- The line of treatment in case of internal or external bleeding is fresh blood transfusion.
- There are three forms haemophilia: A, B, and C.
 - Haemophilia A and B are more common in males than females. Haemophilia C affects males and females equally.



Why is haemophilia more common among men?

• The sex of an individual is determined by a pair of "sex chromosomes" (a chromosome is a DNA molecule that contains genetic information).

- Females are identified with an XX pair of sex chromosomes, and males with an XY pair.
- When an X chromosome from the mother pairs up with the father's X chromosome, the offspring is XX (female); when an X chromosome from the mother pairs up with the father's Y chromosome, the offspring in XY (male).
- Haemophilia is caused by a defect in the X chromosome.
- If a girl is born with one defective X chromosome, her other X chromosome can compensate for it. In such a case, she is a carrier of haemophilia but will not suffer from the condition herself. Only if both her X chromosomes are defective will she suffer from haemophilia herself.
- On the other hand, if a boy is born with a defective X chromosome, he does not have the second X chromosome to compensate for it, and will suffer from haemophilia. That is the reason haemophilia is more common among men.

'Royal disease'

- Britain's Queen Victoria (1819-1901) is the world's most widely known carrier of haemophilia.
- From her, the condition spread among a number of European royal families, which is why haemophilia was once known as the "royal disease".

HUMAN BODY IN SPACE

What happens to our body in space, and what are the risks?

About:

- Scott Kelly was the first American to spend nearly one year in space aboard the International Space Station, twice the normal time.
- The risks to human body in space are grouped into five categories related to the stresses they place on the space traveller: Gravity fields, isolation/confinement, hostile/closed environments, space radiation, and distance from Earth.
- Transitioning from one gravity field to another affects spatial orientation, head-eye and hand-eye coordination, balance, locomotion, and one is more likely to experience motion sickness.
- Bones lose minerals in space at a much faster rate than on earth, with density dropping at over 1% per month.
 - By comparison, the rate of bone loss for elderly men and women on Earth is from 1% to 1.5% per year.
 - Even after returning to Earth, bone loss might not be corrected by rehabilitation.
- Astronauts lose muscle strength, endurance, and experience cardiovascular deconditioning since because of lack of gravity it does not take effort to float through space.

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- The fluids in our body will shift upwards to our head, which could put pressure on your eyes causing **vision problems.**
- Astronauts' are apt to develop **kidney stones** due to dehydration and increased excretion of calcium from their bones.
- Medications react differently in body in space.
- On the space station, astronauts receive **over ten times the** radiation than what's naturally occurring on Earth.
 - Our planet's **magnetic field and atmosphere** protect us from harsh cosmic radiation, but without that, we are more exposed to the treacherous radiation.
 - Above Earth's protective shielding, radiation exposure may increase our **cancer risk.**
- Flu vaccine stimulates immune system, even in space. Also, inflammation increases while in space.
- NASA also found that the telomeres (endcaps of chromosomes that shorten as one ages) grew significantly longer while in space.

HYDROGEN FUEL

NASA is working on electric planes powered by cryogenic hydrogen.

About:

- To clean up the aviation industry, NASA-funded scientists are working to develop an all-electric aircraft powered by cryogenically-liquefied hydrogen fuel.
- Interestingly, NASA has used liquid hydrogen since the 1970s to propel the space shuttle and other rockets into orbit.

Hydrogen as Fuel: Solutions to all Energy needs

- Today, hydrogen fuel can be produced through several methods.
- Hydrogen can be separated from hydrocarbons through the application of heat a process known as **reforming.**
 - Most hydrogen is made this way from natural gas.
- An electrical current can also be used to separate water into its components of oxygen and hydrogen. This process is known as electrolysis.
 - Recently, scientists have discovered that nanocatalysts composed of nickel and iron increases the efficiency of water electrolysis.
- Some **algae and bacteria**, using sunlight as their energy source, even give off hydrogen under certain conditions.

Advantages of using Hydrogen as fuel

- Hydrogen is the most abundant element in the universe.
 - The sun and other stars are composed largely of hydrogen. Astronomers estimate that 90% of the atoms in the universe are hydrogen atoms.

- Water is the most abundant compound of hydrogen found on earth.
- Hydrogen can be produced from a variety of domestic resources, such as natural gas, nuclear power, biomass, and renewable power like solar and wind.
- Hydrogen is high in energy, yet an engine that burns pure hydrogen produces almost no pollution.
 - Hydrogen has the highest energy per mass of any fuel.
 - However, its low ambient temperature density results in a low energy per unit volume, therefore requiring the development of advanced storage methods that have potential for higher energy density.
- It can be used as fuel in rockets. Hydrogen is three times as powerful as gasoline and other fossil fuels. This means that it can accomplish more with less.
- It is also possible to use hydrogen **directly in internal combustion engines**, mix with diesel and CNG and also in fuel cells to directly produce electricity.
 - Hydrogen up to 20% (by volume) can be blended with compressed natural gas (CNG) for use as an automotive fuel.

Do You Know?

- A hydrogen fuel cell combines hydrogen and oxygen to produce electricity, heat, and water.
 - **Hydrogen** fuel cells are often compared to batteries. Both convert the energy produced by a chemical reaction into usable electric power.
 - However, the fuel cell will produce electricity as long as fuel (hydrogen) is supplied, never losing its charge.

Challenges of using Hydrogen as a Fuel

- It is expensive. A good reason for this is that it takes a lot of time to separate Hydrogen from its compounds.
- It is difficult to store. Hydrogen is a colourless and odourless gas and on combustion produces a colourless flame. It is also highly flammable.
 - Therefore, special devices are necessary to detect the gas leakage to ensure safety in public places.

Hydrogen Programme's in Major Countries

- Japan: Set up hydrogen fuelling stations. Plans to spend \$20 billion by 2020.
- **Germany:** Largest number of demonstration of hydrogen based applications; Hydrogen fuelling stations.
- Iceland: Iceland plans to be world's first hydrogen economy.
- USA: Annual spending around \$ 30M, Hydrogen Freedom Fuel Initiative announced in January; 2003 with budget of US \$ 2.2 billion.



ETHICS, VALUES & INTEGRITY

CLINICAL TRIALS

The New Drugs and Clinical Trial Rules, 2019 promises faster approvals for clinical trials in order to cut down on red tape.

About:

• The Rules state the any drug **discovered in India**, which is **proposed to be manufactured and marketed in the country**, will be deemed approved for clinical trials in 30 working days if no communication has been received from the Central Licensing Authority (CLA).

What are Clinical Trials?

- Clinical trials are research studies that explore whether a medical strategy/treatment/device is safe and effective for humans.
- Before a drug is launched in market, it has to be tested for its safety and efficacy. This is done in stages, with a large pool of patients after which the data from the trials is assessed.

Key issues with Clinical trials

- Voluntary Agreement of the participant: Companies exploit people who are in need of money and the people who are ignorant of medical consequences of the trial. It has been found that people who come for clinical trials are usually from low income groups, lacking free will, guided by monetary benefits.
- Informed consent: Informed consent is the process of telling the participants all the facts regarding a trial-including benefits and risks. Since a large proportion of participants are not well educated, they are trapped. It has been observed at many instances that the people who were admitted in hospitals for treatment were tested for clinical trials without their knowledge.
- Accountability and transparency while conducting trials: According to a submission in SC, about 2,800 patients have died in India during 2005 and 2012, while participating in clinical trials conducted by pharmaceutical companies.
- Research and trial details should be in public domain: The Clinical Trials Registry formed under the Indian Council of Medical Research calls for registration of all clinical trials conducted in India. However, there is a very poor registration rate resulting into inaccessibility of data of various trials or even data not being published at all due to "negative" results.

CODE OF ETHICS FOR SOCIAL MEDIA

Social media platforms have adopted a voluntary code of ethics for the upcoming general elections.

About:

- The ECI and Internet and Mobile Association of India (IMAI) have agreed on a Code of Ethics, which social media outfits will follow during the Lok Sabha elections.
- The Code emphasises transparency and stresses on measures to "prevent abuse of social media platforms".
- The Social Media Platforms have committed to process any violations reported under Section 126 of RPA, 1951 within three hours as per **Umesh Sinha Committee** recommendations.
 - Section 126 of RPA 1951, prohibits political parties and candidates from campaigning in the two days before voting.

The code:

- Under the Code, participants have voluntarily undertaken to establish a high-priority communication channel with the nodal officers designated by ECI.
- They have built the technology to upload MCMC (Media Certification Monitoring Committee) certification.
- They have also committed to taking action on paid advertisements violating MCMC certification requirements.
- The Code asks social media firms to train the EC's nodal officers on how their "platforms work and on mechanisms to inform the platforms about "potential violations of Section 126".
- Any political advertisement posted without the EC's certification and notified as such by the EC will be acted upon expeditiously by the social media platforms.

Umesh Sinha Committee recommendations:

- The Model Code of Conduct should be amended so that political parties release their manifestos **at least 72 hours before** voting ends in the first phase of polls.
- The provision of **Election Silence**,that prohibits poll campaigning in the last 48 hours leading up to voting, should be extended to cover print and social media, internet, cable channels.
- Social media agencies have to **label political** advertisements to separate them from other content, and maintain accounts of expenditure on political advertisement by political parties.
- Social media platforms and ECI should work together to flag and take down content that is violating electoral laws.

The Internet & Mobile Association of India (IAMAI):

It is not-for-profit industry body registered under the Societies Act, 1896. Its mandate is to expand and enhance the online and mobile value added services sectors.



CULTURE

HISTORY OF MUSLIM LEAGUE IN KERALA AND INDIA

In independent India, the All India Muslim League was succeeded by the Indian Union Muslim League (IUML).

About:

- During the recent elections campaign, comparison was made between All India Muslim League and its successor the Indian Union Muslim League.
- Soon after the partition of India, the **All India Muslim League**, which had led the movement for Pakistan, **was disbanded.**

About Muslim League

- It was a political party **established in 1906** in the British Indian Empire.
- The party arose out of a literary movement begun at the **Aligarh Muslim University** in which **Syed Ahmad Khan** was a central figure.
- However, in its later phase, It strongly advocated for the establishment of Pakistan, after the acceptance of 'Twonation theory' by MA Jinnah in 1940 Lahore resolution.
- This led to the partition of British India in 1947 by the British Empire.
- After its disbandment the party of **Mohammed Ali Jinnah** was succeeded by the **Muslim League in West Pakistan** and **The All Pakistan Awami Muslim League in East Pakistan**.

Trajectory of IUML in India

- In independent India, the All India Muslim League was succeeded by the Indian Union Muslim League (IUML).
- The IUML fought elections under the Constitution of India, and has always had a constant, if small, presence in Lok Sabha.
- The IUML is the strongest in Kerala, and has a unit in Tamil Nadu as well.
- It has long been recognised by the Election Commission of India as a state party in Kerala.

Parameters for recognition of state party in India

For any political party to be eligible for recognition as a State Party in a state, it has to satisfy any of **the five conditions**:

• Secure at least 6% of the valid vote & win at least 2 seats in an Assembly General Election.

- Secure at least 6% of the valid vote & win at least 1 seats in a Lok Sabha General Election.
- Win at least 3% of the seats or at least 3 seats, whichever is more, in an Assembly General Election.
- Win at least 1 out of every 25 seats from a state in a Lok Sabha General Election.
- Secure at least 8% of the total valid vote in an Assembly or a Lok Sabha General Election.

For any political party to be eligible for recognition as a National Party, it has to satisfy any of the three conditions:

- Secure at least 6% of the valid vote in an Assembly or a Lok Sabha General Election in any four or more states and won at least 4 seats in a Lok Sabha General Election from any State or States.
- Win at least 2% of the total Lok Sabha seats in a Lok Sabha General Election and these seats have to be won from at least 3 states.
- The party is recognized as a State Party in at least four states.

India has **seven recognised national parties** - Congress, BJP, BSP, CPI, CPI-M, NCP and All India Trinamool Congress.

NOTRE-DAME CATHEDRAL

Flames engulfed the 850-year-old gothic masterpiece.

About:

- Notre-Dame Cathedral or Notre-Dame de Paris is a **cathedral church in Paris.**
- It is the most famous of the Gothic cathedrals of the Middle Ages and is distinguished for its size, antiquity, and architectural interest.
- It has some of the most sacred relics of the Christian faith, including the Holy Crown of Thorns, believed to have been worn by Jesus at his crucifixion and a piece of the cross on which he was nailed and one of the nails.
- The great bell Emmanuel was the only bell spared from being melted down during the French Revolution.
- Napoleon Bonaparte crowned himself Emperor at Notre-Dame in December 1804.
- Notre-Dame is widely considered to be **one of the finest** examples of French Gothic architecture.

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French Gothic Architecture

- Gothic architecture was a style that first appeared in France during the second half of the 12th century and continued to evolve until the 16th century.
- In France, a Gothic cathedral was built in almost every major city.

Features of French Gothic Architecture

• The social and political context was dominated by the Church during the evolution and development of this style of architecture, so religion was the main theme of Gothic art and architecture.

Gothic architecture brought many

innovations in terms of construction

systems and design. One of its



Lavout Plan of the

defining characteristics was the

sense of verticality, which was sought after in every building.

- The idea was that the more vertical the building would feel, the closer the faithful visitors would feel to God.
- The layout in French Gothic cathedrals was often of a Latin cross. The main axis is the most important and defines the order of the composition.
 - The secondary axis is evident in some examples but very subtle in some others.
- Gothic **walls became lighter** due to their composition of stone columns and large windows or stained glass.
 - These elements allowed for open, illuminated spaces in the interior.
- The **pointed arch** was widely used in most of the French Gothic cathedrals. It was used as a structural and decorative element in doorways, windows, arcades, and galleries.
 - Pointed arches were effective in channeling weight to the columns in a steep angle, thus allowing for ceilings to be much higher and to increase the **perception of the verticality.**

- Vault ceilings were used, in the form of **cross-ribbed vaults**. This opened up the interior space of the cathedrals to accommodate more visitors.
- The **flying buttress** is another defining constructive element of Gothic architecture in France. The buttress **transfers part of the weight from the tall walls** and helps keep the structure stable.
- Another functional element that evolved into a decorative item was the **gargoyles**. These little monsters were spouts for rainwater to drain from the roofs.
 - However, they served a higher purpose; they were there to create fear of evil among the superstitious population of that time and encourage them to seek God's protection inside of the cathedral.

RABINDRANATH TAGORE LITERARY PRIZE 2019

Rana Dasgupta bags Rabindranath Tagore Literary Prize.

About:

- The second edition of Rabindranath Tagore Literary Prize was awarded to **author Rana Dasgupta** for his 2010 novel 'Solo', a tale of estrangement and the ultimate failure of material existence.
- The Rabindranath Tagore Literary Prize for social achievement was awarded to Yohei Sasakawa, the World Health Organization Goodwill Ambassador for Leprosy Elimination, for "his incredible efforts to uproot leprosy and great contribution to world peace".
- The Prize was also awarded to **Taiwan President Tsai Ing-wen** as "a beacon of democracy", the organisers said.

Rabindranath Tagore Literary Prize

- Tagore Prize is founded and launched with a strong vision to be a platform for improving and inspiring World Peace, Literature, Art and Education.
- The prizes promote the culture and beauty of literature just as Rabindranath Tagore had taught us to, but also, the culture and society of tolerance, harmony and non-discrimination.
- The prize is awarded for one extraordinary piece of work, or as a lifetime achievement.
 - In the latter case, at least one representative piece of work should be available in English.
- The prize consists of an amount of \$10,000, a Tagore statue and a certificate for contribution to literature will be given to the awardee.
- Awarding Criteria: Indian poets, playwrights and novelists (poetry, drama, prose/fiction; short story, novel) writing

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in officially recognized languages or dialects of the Indian subcontinent, including English are eligible for the prize.

- The award has twofold purpose:
 - to award the finest in Indian literature with Literature Prize, as honourable legacy to Rabindranath Tagore; and
 - to recognize positive and lasting impact on society and its change with our Social Achievement Prize.

SARASWATI SAMMAN, 2018

The highest recognition in the field of Indian literature.

About:

- Telugu poet K Siva Reddy is to be conferred the prestigious Saraswati Samman, 2018, for his collection of poems titled Pakkaki Ottigilite (Turning Aside While Lying Down).
- The award, instituted by the KK Birla Foundation, is given annually for an outstanding literary work written in any official Indian language and published during the preceding 10 years.



- It is the **highest recognition in the field of Indian literature** and carries a cash purse of Rs. 15 lakh, apart from a citation and a plaque.
- To felicitate writers, the KK Birla Foundation has instituted three awards in the field of literature:
 - Saraswati Samman,
 - Vyas Samman (for Hindi) and
 - Bihari Puraskar (for Hindi and Rajasthani writers of Rajasthan).

Past recipients of the Saraswati Samman include poet Harivansh Rai Bachchan, and writers Vijay Tendulkar, Shamsur Rahman Faruqi and Dr Indira Parthasarathy Ramanujar, among many others.

STONEHENGE

A missing piece of Stonehenge has been returned to Britain 60 years after it was taken.

About:

- Stonehenge is a **prehistoric stone circle monument**, **cemetery**, **and archaeological site** located on Salisbury Plain, England.
- It was **built in six stages** between 3000 and 1520 BCE, during the transition from the Neolithic Period (New Stone Age) to the Bronze Age.

- As a prehistoric stone circle, it is unique because of its artificially shaped sarsen stones (blocks of Cenozoicsilcrete), arranged in post-and-lintel formation, and because of the remote origin of its smaller bluestones (igneous and other rocks) from 160–240 km away, in South Wales.
- The name of the monument probably derives from the Saxon stan-hengen, meaning "stone hanging" or "gallows."
- Stonehenge was designated a UNESCO World Heritage site in 1986.



SANAULI

ASI unearths treasure at U.P. site.

About:

- The Archaeological Survey of India (ASI) is excavating a **4,000-year-old burial sites in Uttar Pradesh's Sanauli**.
- The excavation has unearthed underground "sacred chambers", decorated "legged coffins" as well as rice and dal in pots and animal bones buried with the bodies.
- Chariots, coffins, shields, swords and helmets had also been unearthed, pointing towards the existence of a warrior class in the area around 2,000 BCE.

Note: Sanauli is located on the left bank of the River Yamuna, 68 km north-east of Delhi which brought to light the **largest necropolis** (a cemetery, especially a large one belonging to an ancient city) of the **late Harappan period** datable to around early part of second millennium BCE.





RAILWAY ZONE FOR ANDHRA

A new zone for Andhra Pradesh: What could change for the Railways, state.

About:

- Railway Minister announced **a new Railway zone headquatered in Visakhapatnam**, fulfilling a demand from Andhra Pradesh politicians pending since the creation of Telangana nearly five years ago.
- The zone will named as Southern Coast Railway Zone. It will be the 18th Railway zone of the country.

Background:

• The Andhra Pradesh Reorganisation Act, 2014, had "promised" that the "Indian Railways shall, within six months from the appointed day, examine establishing a new railway zone in the successor State of Andhra Pradesh and take an expeditious decision thereon".



Railway Zones:

• The Indian Railways was envisaged as a modern organisation with a pan-India presence and character. Currently, the Railways have 17 zonal headquarters in 14 cities.

• Zones and divisions (a zone is divided into divisions) are created **based on administrative and operational needs.**

Administration of Railway Network:

- Each zonal railway is a self-governed unit with a jurisdiction and boundary. A train passes through multiple zones (and divisions) on its journey, crossing from one administrative entity to another at 'interchange' points where it is "handed over" to the next zone.
- Each zone is responsible for the smooth operation and punctuality of a train while it is in its jurisdiction.

EARTH'S MAGNETIC FIELD

Humans can detect the earth's magnetic fields.

About:

- A team of researchers from California Institute of Technology,
 U.S. and the University of Tokyo showed humans unconsciously responding to the changes in the earth's magnetic fields.
- But they are yet to decode what our brains may be using this information for.
- It could explain some people's better senses of direction than others. It might even be possible one day to restore our ancestral ability to use magnetic fields to navigate.
- However they caution that many studies are needed for independent replication.

Magnetoreception or magnetoception

- A sense which allows an organism to detect a magnetic field to perceive direction, altitude or location.
- This sensory modality is used by a range of animals for orientation and navigation using Earth's magnetic field, and as a method for animals to develop regional maps.
- It is present in bacteria, arthropods, molluscs, and members of all major taxonomic groups of vertebrates like Homing pigeon, bat, honey bee, ant, roundworm, chicken, etc.
- Humans are not thought to have a magnetic sense, but there is a protein (a cryptochrome) in the eye which could serve this function.

Error Correction of March Issue Magazine (2019)

• **Page 51:** The Kiru Hydro Electric Project is located on River Chenab, in the **Kishtwar district** of the Jammu & Kashmir (not Vijaypur as was incorrectly printed in the Magazine).

11 CURRENT AFFAIRS QUESTIONS

Multiple Choice Questions

7.

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- Consider the following statements about the 'Scheme for Higher Education Youth for Apprenticeship and Skills':
 - 1. It aims to align the education curriculum with the needs of industry & service sectors.
 - 2. It is a programme conceived for students in degree courses, primarily technical courses.
 - 3. It aims to establish, among others, an 'earn while you learn' system into higher education.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- 2. University Grants Commission (UGC) 'does not' allow degree courses in Open and Distance Learning (ODL) in which of the following subjects?
 - 1. Architecture 2. Nursing
 - 3. Physiotherapy 4. Agriculture

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- Consider the following statements about NASA's Transiting Exoplanet Survey Satellite (TESS):
 - The satellite will search for planets outside of our solar system that could support life using "Wobbly" star method.
 - 2. The satellite will also cover a sky area 400 times larger than that monitored by Kepler.
 - 3. The satellite was launched in April 2018, aboard an Ariane 5 rocket from Europe's spaceport in Kourou, French Guiana.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **4.** Dead Sea is a shrinking Salt Lake (and lowest point on Earth) that extends into:
 - 1. Jordan
 - 2. Syria
 - 3. Israel
 - Select the correct answer using the code given below:
 - (a) 1 and 2 only (b) 2 and 3 only
 - (c) 1 and 3 only (d) All of the above
- 5. Which of the following are among the challenges of using Hydrogen as a fuel?
 - 1. It is expensive.
 - 2. It is difficult to store.
 - 3. It has the lowest energy per mass of any fuel.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above

- Which of the following countries are involved in the Birds 3 project?
 - 1. Sri Lanka
 - 2. Pakistan
 - 3. Bhutan
 - 4. Nepal
 - 5. Bangladesh

Select the correct answer using the code given below:

- (a) 1, 3 and 4 only (b) 2, 3 and 5 only
- (c) 1, 2, 3 and 5 only (d) All of the above
- PSLV-C45 mission of Indian Space Research Organisation was unique in several ways such as:
 - 1. It was a new variant of PSLV with four strap-on motors.
 - 2. The vehicle achieved three different orbits.
 - 3. For the first the fourth stage (PS4) stage is powered by solar panels.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above

Consider the following statements about the EMISAT satellite:

- 1. It is a satellite built around ISRO's Mini Satellite-2 bus.
- 2. It is India's first electronic surveillance satellite.
- 3. It can provide location and information of hostile radars placed at the borders.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- Which of the following could be the applications of 'Optical Tweezers'?
 - 1. Confinement and organization of cells.
 - 2. Tracking of movement of bacteria.
 - 3. Application and measurement of small forces.
 - 4. Altering of cell membranes.
 - Select the correct answer using the code given below:
 - (a) 1, 2 and 3 only (b) 2, 3 and 4 only
 - (c) 1, 3 and 4 only (d) All of the above
- Consider the following statements:
 - 1. Mitra Shakti is a joint training exercise conducted annually between the Indian Navy and the Sri Lankan Navy.
 - 2. The primary focus of the exercise is to train and equip the contingents to undertake joint counter insurgency and counter terrorist operations under the United Nations flag.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2

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- **11.** Consider the following statements about 'Nirbhay':
 - 1. It is a two- stage ballistic missile and is similar to U.S. Tomahawk cruise missile.
 - 2. It is capable of loitering and cruising at the speed of sound at altitude as low as 100 metres.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- **12.** Which of the following countries were affected by the cyclone Idai?
 - 1. Madagascar 2. Mozambique
 - 3. Morocco 4. Malawi

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 2 and 4 only (d) All of the above
- **13.** Base Erosion and Profit Shifting (BEPS) Project is concerned with:
 - (a) Inclusion of environmental cost in calculating profits of Industries.
 - (b) Protectionist policies of the developed countries.
 - (c) Depreciation of the currencies of developing countries. due to compulsory imports.
 - (d) Artificially shifting of profits by MNCs to low or no-tax locations.
- 14. Consider the following statements about the International Solar Alliance (ISA):
 - 1. It has been jointly launched by India and Germany.
 - 2. It was launched on the side lines of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties 21 (CoP21) at Paris.
 - 3. Most of its member countries fall within Asia, Africa and South America.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **15.** Consider the following statements about the Periyar River:
 - 1. It flows into Vembanad Lake before entering into the Arabian Sea.
 - 2. It is one of the few perennial rivers in the region.
 - 3. It is the longest river of Kerala.
 - 4. It flows through Kerala and Tamil Nadu.

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- **16.** Which of the following aggravated the destruction caused by floods in Kerala in recent months?
 - Kerala has lost a massive amount of natural forests and wetland to agriculture, plantation and infrastructure development.
 - 2. Land used for non-agricultural purposes (mostly for housing and infrastructure) has more than doubled in the last 50 years.
 - 3. Traditional crops like rice and tapioca have been replaced with plantations of rubber and other commercial crops.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- 17. According to the Global Skills Index, 2019 Report India was lagging in which of the following 'future skills' assessed by the report?
 - 1. Technology domain
 - 2. Business domain
 - 3. Data science domain
 - Select the correct answer using the code given below:
 - (a) 1 only (b) 2 and 3 only
 - (c) 3 only (d) 1 and 3 only
- **18.** The GST's 'anti-profiteering' clause refers to
 - (a) The centre should transfer the above average collections to those States who might receive lesser collections after the implementation of the new regime.
 - (b) Businesses that receive the benefit of paying lower taxes under the GST must pass it on to the consumers.
 - (c) A greater part of the profit after the implementation of the regime should go to the corporate social responsibility fund.
 - (d) A limit on the profit-margin of the companies under the new regime.
 - Which of the following reports/indices are published by the World Economic Forum?
 - 1. Global Competitiveness Report
 - 2. Environmental Performance Index
 - 3. World Economic Outlook
 - 4. Inclusive Growth and Development Index
 - Select the correct answer using the code given below:
 - (a) 1, 2 and 3 only
 - (b) 2, 3 and 4 only
 - (c) 1, 2 and 4 only
 - (d) All of the above
 - Consider the following statements about the National Innovation Foundation-India (NIFI):
 - 1. It was set up in March 2000 with the assistance of National Innovation Council.
 - Among others, it supports outstanding traditional knowledge based applications in any technological field, helping in human survival without any help from formal sector.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- 21. Consider the following statements about Gynandromorphs:
 - 1. They have both genetically male and female tissues.
 - 2. They often have observable male and female characteristics.
 - 3. They are mostly limited to the species of birds and butterflies.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above

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22. Consider the following statements:

- 1 Hydrogen has the highest energy per mass of any available fuel.
- Hydrogen has a very high ambient temperature density 2 resulting in high energy per unit volume.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- 23. Consider the following statements about the Trade Receivable e-Discounting System:
 - It is an online mechanism for facilitating the financing of 1. trade receivables of MSMEs through multiple financiers.
 - It enables discounting of invoices of MSME sellers 2. raised against large corporate, allowing them to reduce working capital needs.

Select the correct answer using the code given below:

- (b) 2 only (a) 1 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- 24. The presence of which of the following metals beyond a threshold make e-waste hazardous in nature?
 - 1. Mercury 2. Uranium
 - Selenium З. Arsenic 4

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- 25. Consider the following statements about 'Reporters Without Borders'
 - 1. It is registered as a non-profit organization.
 - 2 It has consultant status at the United Nations and UNESCO
 - 3. It publishes the World Press Freedom Index each year.

Select the correct answer using the code given below:

- 1 and 2 only (b) 2 and 3 only (a)
- (c) 1 and 3 only (d) All of the above
- 26. Tribunals in India can be established for adjudication of disputes related to:
 - 1. Taxation
 - 2. Foreign exchange
 - З. Land reforms
 - 4. Elections to parliament and state legislature

Select the correct answer using the code given below:

1, 2 and 3 only (b) 2, 3 and 4 only (a)

(c) 1, 2 and 4 only (d) All of the above

- Consider the following statements about the E-Waste 27. Management Rules, 2018:
 - 1. The new E-waste rules include Compact Fluorescent Lamp (CFL) and other mercury containing lamps.
 - 2 Unlike earlier Rules, collection of waste is now exclusively Producer's responsibility.
 - 3 The Central Pollution Control Board (CPCB) has been given the power to levy fines for non compliance.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above

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- Which of the following statements are correct regarding the Securities and Exchange Board of India (SEBI)? 1. It has quasi-legislative functions. 2. It has quasi-judicial functions 3. It has quasi-executive functions. Select the correct answer using the code given below: 1 and 2 only (b) 2 and 3 only (a) (d) All of the above (c) 1 and 3 only Consider the following statements: The hump-backed mahseer is found only in the Cauvery 1 river basin of Tamil Nadu, Kerala, Karnataka. The hump-backed mahseer is "Critically Endangered as 2. per the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species. Select the correct answer using the code given below: (b) 2 only (a) 1 only (C) Both 1 and 2 (d) Neither 1 nor 2 Consider the following statements about 'Pheromone Traps':
 - 1 Each pheromone is designed for a specific insect.
 - 2. They can be used to detect an infestation before it occurs.
 - 3 Lures need to be replaced often to better trap new insects

Select the correct answer using the code given below:

- 1 and 2 only (b) 1 and 3 only (a)
- (c) 2 and 3 only (d) All of the above
- Consider the following statements:
 - 1. Hydrogen is the most abundant element in the universe.
 - 2. The sun and other stars are composed largely of hydrogen.
 - Water is the most abundant compound of hydrogen З. found on earth.

Select the correct answer using the code given below:

- 1 and 2 only (b) 2 and 3 only (a)
- (d) All of the above (c) 1 and 3 only
- 32. The Battle of Kangla Tongbi is famous in the context of:
 - (a) Revolt of 1857 (b) First World War
 - (c) Second World War (d) Indo-Pak war of 1971
- 33. For any political party to be eligible for recognition as a State Party in a state, it has to satisfy which of the following conditions?
 - 1 Secure at least 6% of the valid vote & win at least 2 seats in an Assembly General Election.
 - Secure at least 6% of the valid vote & win at least 1 seats 2. in a Lok Sabha General Election.
 - 3. Win at least 3% of the seats or at least 3 seats, whichever is more, in an Assembly General Election.

Select the correct answer using the code given below:

- 1 and 2 only (b) 2 and 3 only (a)
- (c) All of the above (d) Any one of the above
- 34. Consider the following statements:
 - 1. Under article 370, the provisions of the Indian Constitution automatically applies to J&K.

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 To extend constitutional provisions and amendments to the State, a presidential order to that effect has to be passed.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- **35.** Consider the following statements about the All India Muslim League:
 - 1. It was a political party established in 1906 in the British Indian Empire.
 - 2. The party arose out of a literary movement begun at the Aligarh Muslim University in which Syed Ahmad Khan was a central figure.
 - 3. It strongly advocated for the establishment of Pakistan, after the acceptance of 'Two-nation theory' by MA Jinnah in 1940 Lahore resolution.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 1 and 3 only
- (c) 2 and 3 only (d) All of the above
- **36.** Who among the following were members of an investigation committee named Hunter Committee that was constituted to investigate the developments leading to the Jallianwala Bagh Massacre?
 - 1. Sir Chimanlal Harilal Setalvad
 - 2. Pandit Jagat Narayan
 - 3. Sardar Sahibzada Sultan Ahmad Khan
 - 4. Mahatama Gandhi

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- **37.** Which of the following were among the effects of the Jallianwala Bagh Massacre?
 - 1. It was the prelude to Mahatma Gandhi's full commitment to the cause of Indian nationalism and independence from Britain.
 - 2. Mahatma Gandhi, as a sign of condemnation, renounced this Kaiser-i-Hind medal.
 - 3. In 1920, the infamous Rowlett Act was repealed by the British.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 1 and 3 only
- (c) 2 and 3 only (d) All of the above
- **38.** Candida auris, which was recently in news, is:
 - (a) A new species of micro-organism which can degrade oil.
 - (b) A drug-resistant fungus that spreads in healthcare facilities.
 - (c) A phenomenon related to earth's ionosphere which occurred over Poles recently.
 - (d) A species of insect spreading across the continents.
- **39.** Which among the following are characteristic features of the French Gothic Architecture?
 - 1. Secularism 2. Verticality
 - 3. Pointed arch 4. Lighter walls

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- 40. Environmental DNA (eDNA) can be extracted from:
 - 1. Cooked meat
 - 2. Faeces
 - 3. Water and soil

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **41.** Which of the following statements are true regarding the functions of 'gargoyles' in the French Gothic Architecture?
 - 1. These little monsters were spouts for rainwater to drain from the roofs.
 - 2. They were there to create fear of evil among the superstitious population.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2

The second edition of Rabindranath Tagore Literary Prize was awarded to:

- 1. Rana Dasgupta 2. Yohei Sasakawa
- 3. Tsai Ing-wen 4. Arundhati Roy

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- Rabindranath Tagore Literary Prize has been established:
 - 1. To award the finest in Indian literature with Literature Prize, as honourable legacy to Rabindranath Tagore.
 - 2. To recognize positive and lasting impact on society and its change with our Social Achievement Prize.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- **44.** Consider the following statements about the Saraswati Samman, 2018:
 - 1. It is the highest recognition in the field of Indian literature.
 - 2. It is awarded every year by the President of India on Republic Day.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- **45.** Consider the following statements about Stonehenge:
 - It is a prehistoric stone circle monument, cemetery, and archaeological site located on Salisbury Plain, England.
 - 2. It was built in stages during the transition from the Neolithic Period (New Stone Age) to the Bronze Age.
 - 3. It is designated a UNESCO World Heritage site.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 1 and 3 only
- (c) 2 and 3 only (d) All of the above

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- **46.** Consider the following statements:
 - 1. While H1N1 is swine flu, H5N1 is an avian influenza
 - 2. H5N1 does not infect humans easily and it is difficult to transmit the infection from person to person.
 - 3. Both H1N1 and H5N1 are caused by viruses.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 1 and 3 only
- (c) 2 and 3 only (d) All of the above
- **47.** Consider the following statements about the Environmental DNA (eDNA):
 - 1. eDNA can be extracted from water, soil or faeces, without first isolating any target organisms.
 - 2. eDNA encompasses single species detection to analyses of ecosystems.
 - 3. eDNA can be obtained from ancient as well as modern samples.

Select the correct answer using the codes given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **48.** Hydrogen fuel can be produced through which of the following methods?
 - 1. Reforming
 - 2. Electrolysis of water
 - 3. Some algae and bacteria using sunlight
 - Select the correct answer using the code given below:
 - (a) 1 and 2 only (b) 1 and 3 only
 - (c) 2 and 3 only (d) All of the above
- **49.** The drying out of Santiago's Aculeo Lake is attributed to which of the following reasons?
 - 1. Earthquake
 - 2. Climate change
 - 3. Overconsumption

Select the correct answer using the code given below:

- (a) 1 only (b) 2 and 3 only
- (c) 3 only (d) All of the above
- **50.** Which of the following characteristics of Fall Armyworm (FAW) make their eradication extremely difficult?
 - 1. It is a nocturnal pest.
 - 2. It is very polyphagous.
 - 3. It is very mobile.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 1 and 3 only
- (c) 2 and 3 only (d) All of the above
- 51. Consider the following statements about the satellite 'Raavana-1':
 - 1. It was Sri Lanka's first satellite that was launched into space recently.
 - 2. It was launched with the help of China National Space Administration.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2

52. Which of the following have been correctly matched?

Hydrogen Programme **Major Countries** 1. Japan Plans to spend \$20 billion by 2020. 2 Largest number of Germany demonstration of hydrogen based applications. 3 Iceland Plans to be world's first hydrogen economy. USA Hydrogen Freedom Fuel 4 Initiative.

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- 53. Consider the following statements:
 - 1. Hydrogen can be used as fuel in rockets as it is three times as powerful as gasoline and other fossil fuels.
 - 2. It is possible to use hydrogen directly in internal combustion engines.
 - Hydrogen up to 20% (by volume) can be blended with compressed natural gas (CNG) for use as an automotive fuel.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above

Which of the following could be the risks of staying for extended periods of time in space?

- 1. Bones lose minerals.
- 2. Kidney stones.

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3. Vision problems.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- 55. Which of the following is considered to be the first molecule that formed almost 14 billion years ago following the Big Bang?
 - (a) Hydride ion (b) Helium hydride ion
 - (c) Hydroxide ion (d) Hydronium ion
- **56.** Consider the following statements about SOFIA, the Stratospheric Observatory for Infrared Astronomy:
 - 1. It is a Boeing 747SP aircraft modified to carry a 2.7-meter reflecting telescope.
 - 2. It observes the universe above 99 percent of Earth's infrared-blocking atmosphere.
 - 3. It is a partnership between NASA and the German Aerospace Center (DLR).

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- 57. Consider the following statements:
 - 1. Haemophilia is an inherited bleeding disorder.
 - 2. The blood doesn't clot properly as a result of this order.
 - 3. There is no known cure for Haemophilia.

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- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **58.** Consider the following statements:
 - 1. The sex of an individual is determined by a pair of "sex chromosomes".
 - 2. Females are identified with an XY pair of sex chromosomes, and males with an XX pair.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- **59.** Consider the following statements:
 - 1. A genome is all of a living thing's genetic material.
 - 2. Each one of earth's species has its own distinctive genome.
 - 3. Genomes not only belong to species, but they also belong to individuals.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **60.** Which of the following are advantages of the genome sequencing?
 - 1. To find genes much more easily and quickly.
 - 2. To understand how the genome as a whole works.
 - 3. To study the parts of the genome outside the genes.
 - Select the correct answer using the code given below:
 - (a) 1 and 2 only (b) 2 and 3 only
 - (c) 1 and 3 only (d) All of the above
- 61. Which of the following correctly defines the term "nonsense" or "junk" DNA?
 - (a) DNA which regulates our emotions.
 - (b) DNA which is responsible for the regulation of excretory system
 - (c) DNA which helps the immune system to throw out the dead cells out of the system.
 - (d) DNA which we don't yet know what, if anything, it does.
- 62. Consider the following statements:
 - 1. Microplastics are tiny pieces of plastic material typically smaller than five millimetres.
 - 2. The Microbead-Free Waters Act of 2015 has been passed by Norway.

Select the correct answer using the codes given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- The 'H' and 'N' in H1N1 influenza represent:
- (a) Viruses

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- (b) Proteins
- (c) Bacteria
- (d) Varieties of pigs/birds
- **64.** The environmental DNA approach has many advantages over traditional surveying methods, such as:
 - 1. To distinguish individuals of the same species.

- 2. Less risk of spreading disease.
- 3. Less risk of introducing alien species.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **65.** Consider the following statements:
 - 1. Black Softshell turtle has been declared extinct in the wild by the IUCN Red list.
 - 2. This species is only known to exist in artificial ponds in temples in India.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- Consider the following statements about the Notre-Dame Cathedral:
 - 1. It houses the Holy Crown of Thorns, believed to have been worn by Jesus at his crucifixion.
 - 2. Napoleon Bonaparte crowned himself Emperor at Notre-Dame.
 - 3. Notre-Dame is widely considered to be one of the finest examples of French Gothic architecture.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 1 and 3 only
- (c) 2 and 3 only (d) All of the above

Which of the following are among the limitations of environmental DNA approach?

- 1. It is not possible to distinguish individuals of the same species.
- 2. It is not possible to acquire information such as the number of individuals present on a site, their age, class, size, sex, etc.
- 3. The identification of hybrids is very difficult with this approach.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- 68. The 'chain-melted state' is a new state of matter discovered by the scientists which allows atoms to exist as:
 - (a) Solid and liquid at the same time.
 - (b) Liquid and gas at the same time.
 - (c) Gas and solid at the same time.
 - (d) Solid, liquid and gas at the same time.
- 69. Consider the following statements about 'Space Debris':
 - 1. Space debris encompasses both natural and artificial particles.
 - 2. Natural particles are in orbit about the sun, while most artificial debris is in orbit about the Earth.
 - 3. Much of the debris is in low Earth orbit, within 300 km of Earth's surface.

Select the correct answer using the code given below:

1 and 2 only (b) 2 and 3 only

(a)

(c) 1 and 3 only (d) All of the above

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- **70.** The Sun and the stars glow because of the presence of which of the following states of matter:
 - (a) Chain-melted state
 - (b) Plasma
 - (c) Bose-Einstein Condensate
 - (d) Nuclear fission
- **71.** Who among the following assassinated Michael Francis O'Dwyer, the Lieutenant Governor of the Punjab in India from 1912 until 1919, who endorsed Colonel Reginald Dyer's action regarding the Amritsar massacre and termed it a "correct action"?
 - (a) Bhagat Singh (b) Ram Prasad Bismil
 - (c) Udham Singh (d) Bhagwati Charan Vohra
- **72.** Candida auris is "an emerging fungus (yeast) that presents a serious global health threat" because:
 - 1. It causes serious infections.
 - 2. It's often resistant to medicines.
 - 3. It can spread in hospitals and nursing homes.
 - 4. It's difficult to identify.

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only (d) All of the above
- **73.** Consider the following statements about the Severe Combined Immunodeficiency Syndrome (SCID):
 - 1. It is a group of inherited disorders.
 - 2. It reduces the ability of white cells in the blood to fight infection.
 - 3. This disease can't be cured.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **74.** Which of the following satellites have been launched for "strategic use"?
 - 1. HysIS
 - 2. Microsat-R
 - 3. EMISAT

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- **75.** The images from which of the following satellites were used to plan the surgical strike in 2016 and the air strike on a Jaish camp in Pakistan's Balakot this year?
 - (a) HysIS (b) Microsat-R
 - (c) Cartosat (d) RISAT
- 76. Recently, the 77th and 103rd constitutional amendments were extended to Jammu and Kashmir (J&K) by a presidential order, with the concurrence of the J&K Governor. Consider the following statements in this context:
 - 77th constitutional amendment: It is related to special provisions for the advancement of economically weaker sections (10% reservation in education and government jobs to EWS).
 - 2. 103rd constitutional amendment: It is related to reservations in promotions for Scheduled Castes (SCs) and Scheduled Tribes (STs) in the State services.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- 77. When the State of Jammu and Kashmir acceded to India via the Instrument of Accession in 1947, which of the following subjects handed over to the Union Government.
 - 1. Defence 2. Foreign Affairs
 - 3. Finance 4. Communications

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 2 and 4 only (d) All of the above
- For any political party to be eligible for recognition as a National Party, it has to satisfy which of the following conditions?
 - 1. Secure at least 6% of the valid vote in an Assembly or a Lok Sabha General Election in any four or more states and won at least 4 seats in a Lok Sabha General Election from any State or States.
- 2. Win at least 2% of the total Lok Sabha seats in a Lok Sabha General Election and these seats have to be won from at least 3 states.
- 3. The party is recognized as a State Party in at least four states.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 2 and 3 only
- (c) All of the above (d) Any one of the above

As per the Drugs and Clinical Trials Rules 2019, the requirement of a local clinical trial may be waived for approval of a new drug if it is approved and marketed in which of the following countries?

- 1. U.S. 2. U.K.
- 3. Australia 4. Japan

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 2 and 4 only (d) All of the above
- Consider the following statements regarding the right to self-defence in Indian context:
 - 1. The right of private defence extends not only to the defence of one's own body against any offence affecting the human body but also to defend the body of any other person.
 - 2. The right to self-defence embraces the protection of property, whether one's own or another person's, against certain specified offences, namely, theft, robbery, mischief and criminal trespass.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- Consider the following statements about the World Press Freedom Index, 2018:
 - 1. Reporters Without Borders (RSF) publishes the World Press Freedom Index each year.
 - 2. It measures the level of freedom available to journalists and the quality of journalism.
 - 3. India was ranked 138 in the 2018 Index.

80.

79.

78.

NEXT IRS Current Affairs

May, 2019

- Select the correct answer using the code given below:
- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- 82. Arrange the following States in India in decreasing order of the e-waste they generate:
 - 1. Maharashtra 2. Tamil Nadu
 - З. Karnataka 4 Gujarat

Select the correct answer using the code given below:

- (a) 1 > 2 > 3 > 4 (b) 2 > 3 > 1 > 4
- (c) 3 > 4 > 2 > 1(d) 3 > 2 > 1 > 4
- 83. Consider the following statements regarding the tribunals in India
 - Tribunal is an administrative body established for the 1 purpose of discharging quasi-judicial duties.
 - Tribunals are courts because like courts they are 2 governed by strict procedure defined in various Codes.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- Which of the following is the first State to come up with 84. a separate e-waste policy in the country and the policy of collection of electronic waste by community- based organizations (CBOs)?
 - (a) Maharashtra (b) Tamil Nadu
 - (c) Karnataka (d) Gujarat
- 85. Consider the following statements:
 - Tashigang in Jammu and Kashmir is world's highest 1. polling station.
 - It is one of the assembly segments that form the second 2. largest Lok Sabha constituency in India.

Select the correct answer using the code given below:

- (b) 2 only (a) 1 only
- (d) Neither 1 nor 2 (c) Both 1 and 2
- 86. The sense which allows an organism to detect a magnetic field to perceive direction, altitude or location is present in:
 - 1. Bats 2. Honey bee
 - 4. Chicken З. Roundworm

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
- (c) 1, 2 and 4 only (d) All of the above
- 87. The latest Railway zone of India is headquatered at:
 - (a) Shilong (b) Visakhapatnam
 - (d) Amritsar (c) Leh
- 88. Which of the following have been correctly matched?

Exercise Name Participants

- 1. Ekuverin India & Maldives
- 2. India & U.K. Mitra Shakti З.
- Shakti India & France India & USA
- Yudh Abhyas 4.
- Select the correct answer using the code given below:
- 1, 2 and 3 only (b) 2, 3 and 4 only (a)
- (c) 1, 3 and 4 only (d) All of the above

- 89. Which of the following are Anti-Submarine Warfare corvette of Indian Navy?
 - 1. INS Kalvari 2 INS Kandheri
 - **INS Kadmatt** 3

91.

92.

94.

- Select the correct answer using the code given below:
- (a) 1 and 2 only (b) 2 and 3 only
- (C) 1 and 3 only (d) All of the above
- 90. Consider the following statements:
 - Mission Shakti led India to join a select group of countries 1 consisting of US, Russia and France.
 - The missile used in Mission Shakti was a modified 2 version of Ballistic Missile Defence (BMD) Interceptor Missile of DRDO.

Select the correct answer using the code given below:

- (a) 1 only (b) 2 only
- (c) Both 1 and 2 (d) Neither 1 nor 2
- Consider the following statements about the 'Plasma' state of matter:
 - 1. The state consists of super energetic and super excited particles in the form of ionised gases.
 - The fluorescent tube and neon sign bulbs consist of 2. plasma.
 - Gases gets ionised when electrical energy flows through 3. it.

Select the correct answer using the code given below:

- 1 and 2 only (b) 2 and 3 only (a)
- (d) All of the above (c) 1 and 3 only
- Consider the following statements about PSLV-C45 mission:
 - 1. India's Polar Satellite Launch Vehicle (PSLV-C45) successfully launched EMISAT and 29 international customer satellites.
 - 2 This flight marked the first mission of PSLV-QL, a new variant of PSLV with four strap-on motors.
 - It was the 47th flight of the Polar Satellite Launch Vehicle. З.
 - Select the correct answer using the code given below:
 - (a) 1 and 2 only (b) 2 and 3 only
 - (c) 1 and 3 only (d) All of the above

93. Consider the following statements about the Shola forests of India:

- These are tropical montane forests found in the valleys 1. separated by rolling grasslands only in the higher elevations.
- 2. These are found only in the Southern Western Ghats.
- These forests particularly thrive in areas having З. abundant of fog and mist.
- Select the correct answer using the code given below:
- (a) 1 and 2 only (b) 2 and 3 only
- (c) 1 and 3 only (d) All of the above
- Consider the following statements about 'Eurasian Lynx':
 - It is high adapted to the thin air atmosphere of 1. mountainous regions.
 - 2. It can be found in Ladakh region of India.
 - 3. It is the smallest species of lynx.

98

 (c) 1 and 2 only (d) All of the above 95. The 'transit photometry method' to find the planets can help scientists to find those planets which can support life as by using this method the scientists can: Determine the shape of the planet. Determine the shape of the planet is orbit. Determine the size of the planet. Determine how long it takes the planet to circle its sun. Select the correct answer using the code given below: 1 and 2 only 2 and 3 only 3 and 2 only 4 and 2 only 5 and 3 only 5 and 3 only 6 and 2 only 7 the Negev is a desert and semi-desert region of: If is listed as an 'critically endangered species by the IUCN. 97. Consider the following statements about Dhole - the Asiatic Wild Dog: If is listed as an 'critically endangered species by the IUCN. It has specialized dental adaptations for an exclusively carrivorous diet. 10. It is not the other is the tot is the planet is the planet. If has specialized dental adaptations for an exclusively carrivorous diet. 10. It is not to the largest population of Lion tailed macaques, an endangered species.			ect the correct answe 1 and 2 only		ng the codes given below: 2 and 3 only	98.	Arrange the following mountains in decreasing order of their height:				
 95. The 'transit photometry method' to find the planets can help scientists to find those planets which can support life as by using this method the scientists can: Determine the shape of the planet's orbit. Determine the size of the planet. Determine how long it takes the planet to circle its sun. Select the correct answer using the code given below: (a) 1 and 2 only (b) 2 and 3 only (c) 1 and 3 only (d) All of the above 96. The Negev is a desert and semi-desert region of: (a) Iran (b) Libya (c) Israel (d) Mongolia 97. Consider the following statements about Dhole - the Asiatic Wild Dog: It is listed as an 'critically endangered species by the IUCN. Their elevation range is from sea level to as high as 5,300 m. It has specialized dental adaptations for an exclusively carnivorous diet. 28. Kangchenjunga Kangchenjunga Lhotse Makalu Select the correct answer using the code given below: (a) 1 and 2 only (b) Libya (c) Israel (d) Mongolia 97. Consider the following statements about Dhole - the Asiatic Wild Dog: It is listed as an 'critically endangered species by the IUCN. Their elevation range is from sea level to as high as 5,300 m. It has specialized dental adaptations for an exclusively carnivorous diet. 28. Kangchenjunga Kangchenjunga Kangchenjunga Kangchenjunga Kangchenjunga Lhotse Makalu Select the correct answer using the code given below: (a) 1 > 2 > 3 > 4 (b) Libya (c) Israel (d) Mongolia 99. Consider the following statements about the Silent Valley National Park: (a) 1 only (b) 2 only (c) Both 1 and 2 (d) N		• • •	,	. ,	,		1.	-			
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 (a) 1 and 2 only (b) 2 and 3 only (c) 1 and 3 only (d) All of the above Synchronous production of seed at long intervals by a population of plants" is called masting. Strict masting only occurs in species that only reproduce once during their lifetime, then die. Strict masting only occurs in species that only reproduce once during their lifetime, then die. Strict masting only occurs in species that only reproduce once during their lifetime, then die. Strict masting only occurs in species that only reproduce once during their lifetime, then die. Select the correct answer using the code given below: (a) I only (b) Libya (c) Israel (d) Mongolia Select the correct answer using the code given below: (a) I only (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2 It is listed as an 'critically endangered species by the IUCN. Their elevation range is from sea level to as high as 5,300 m. It has specialized dental adaptations for an exclusively carnivorous diet. 		З.	Determine how long	it tak	es the planet to circle its sun.		(C)	1 > 3 > 2 > 4 (d) $2 > 4 > 1 > 3$			
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 (c) Israel (d) Mongolia Select the correct answer using the code given below: (a) 1 only (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2 100. 101. 11. It is listed as an 'critically endangered species by the IUCN. 2. Their elevation range is from sea level to as high as 5,300 m. 3. It has specialized dental adaptations for an exclusively carnivorous diet. 2. It is one of India's few shola forests 3. It has the dental adaptations for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 3. It has the dental adaptation for an exclusively carnivorous diet. 4. It is home to the largest population of Lion tailed macaques, an endangered species.	96.		0	(b) Libya							
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1. (c)	2. (d)	3. (c)	4. (c)	5. (a)	6. (a)	7. (d)	8. (d)	9. (d)
10. (b)	11. (d)	12. (c)	13. (d)	14. (b)	15. (a)	16. (d)	17. (a)	18. (b)
19. (c)	20. (b)	21. (a)	22. (a)	23. (c)	24. (c)	25. (d)	26. (d)	27. (d)
28. (d)	29. (c)	30. (d)	31. (d)	32. (c)	33. (d)	34. (b)	35. (d)	36. (a)
37. (a)	38. (b)	39. (b)	40. (d)	41. (c)	42. (a)	43. (c)	44. (a)	45. (d)
46. (d)	47. (d)	48. (d)	49. (d)	50. (d)	51. (a)	52. (d)	53. (d)	54. (d)
55. (b)	56. (d)	57. (d)	58. (a)	59. (d)	60. (d)	61. (d)	62. (a)	63. (b)
64. (b)	65. (c)	66. (d)	67. (d)	68. (a)	69. (d)	70. (b)	71. (c)	72. (d)
73. (a)	74. (d)	75. (d)	76. (d)	77. (c)	78. (d)	79. (d)	80. (c)	81. (c)
82. (a)	83. (a)	84. (b)	85. (b)	86. (d)	87. (b)	88. (c)	89. (d)	90. (b)
91. (d)	92. (b)	93. (a)	94. (a)	95. (d)	96. (c)	97. (d)	98. (a)	99. (c)
100.(d)	V							

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May, 2019

Subjective Questions

GS Paper 1

- Q.1 Discuss the developments leading to the incident of Jallianwala Bagh Massacre. What were its major outcomes? (10)
- Q.2 "Prediction of El Niño has become even more important as it is impacting the Indian monsoon more than before." Discuss this statement in the light of effects of an El Niño event on the Indian Monsoon? (15)
- Q.3 Enumerate the important features and characteristics of French Gothic Architecture. Are there any buildings in India influenced by this style of architecture? (10)

GS Paper 2

- Q.4 Providing the "None of the Above" (NOTA) option to the electors in India, in the present form, is counter-productive to its intended objectives of ensuring that political parties field clean candidates. Critically Analyse. (15)
- Q.5 What are the articles that determine the relationship of India with the state of Jammu and Kashmir? Discuss the utility of such special relationship even after 70 years of independence. (10)
- Q.6 On the lines of medical tourism, clinical trials can be used to create a new economic opportunity in the health-care sector in India. Discuss. (10)
- Q.7 Discuss the structure and functioning of tribunals in India.
 Do you think bringing all the tribunals under one body would lead to greater efficiency in their working? Discuss. (10)
- Q.8 The focus of present day democratic systems in on cooperative federalism which entails economic cooperation too. Highlight the role of finance commission in ensuring this cooperation. Also comment on the idea of making the finance commission a permanent body. (15)
- Q.9 Compare and contrast the positions of India and Japan towards the 'Belt and Road Initiative'. (15)
- Q.10 India needs meaningful, remunerative jobs that align with the aspirations of the youth and skills demanded by the industry. Comment. (15)

GS Paper 3

Q.11 The institution of Independent Directors is vital for the efficient and effective functioning of corporate governance

framework in any company. Discuss. Also highlight the issues and initiatives taken in the field of corporate governance in India. (15)

- Q.12 Discuss the necessity of conducting 'Mission Shakti' when the Space is already suffering from Kessler Syndrome. (10)
- Q.13 "Institutional participation does not necessarily mean better participation." Critically analyse this statement in the context of SEBI's decision to allow institutional investors to invest in commodity derivatives. (15)
- Q.14 What are 'optical tweezers'? Discuss their applications and limitations. (10)
- Q.15 NASA is planning to send humans to Mars in near future.What happens to our body in space, and what are the risks?How can we overcome the limitations of human body for longer distance space travel? (10)
- Q.16 Environmental DNA (eDNA) is emerging as a major tool in conservation for monitoring past and present biodiversity. Discuss.
- Q.17 Is solar energy really an eco-friendly energy? Discuss this statement in the context of emerging threat of solar e-waste in India. Give some suggestions for the timely solution of this threat before it goes out of proportion. (15)

GS Paper 4

- Q.18 Right to self-defence is considered to be the basic right of every living being. Under what circumstances is the enforcement of this right becomes immoral and unjustified? What according to you are the reasonable restrictions that limit the scope of this right? (10)
- Q.19 "Today we are talking about increasing the role of women in the armed forces whereas the status of women even in police is equally bad." As a DIG of your state, what steps would you like to take in order to make policing a viable career option for women. (20)
- Q.20 Do you think it is ethically right to hold a nation responsible today for the atrocities committed 100 years ago? Discuss the various ethical issues involved in doing so for both the countries involved.



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List of candidates selected from NEXT IAS





AIR-2 ARUSHI MISHRA

AIR-3 JIVANI K. NAGJIBHAI

AIR-36

CHIRANJEEV P JAIN

AIR-52

NARENDRA RAWAT

AIR-79

SARVESH SONWANI



AIR-6 AMIT JAIN









Advt.

AIR-13 PRATIBHA VERMA

AIR-33

KHANDEKAR KUNDALIK



AIR-19 PRASHANT PATEL

AIR-35

AYUSH JAIN

AIR-48

ABHIMANYU

AIR-75

SAHIL SINGH



MANAS SINGH













AIR-22 KSHITIJ SAXENA

AIR-39

GANESH U R

AIR-54

HITESH K. MEENA

AIR-82

RAHUL MEENA



W ABHIJIT JINCHANDRA

AIR-44

ANKUR K, JAIN

AIR-57

VIVEK C. YADAV





AIR-45 MOHD ABDUL SHAHID

AIR-62

VIKAS YADAV

AIR-86

VARUN DALIA





AIR-66 ANIKET M. WANVE



AIR-89 WAYBHASE KUNDLIK

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NEXT IRS Centres:

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