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कृपया इस स्थान में प्रश्न संख्या के अतिरिक्त कुछ न लिखें।

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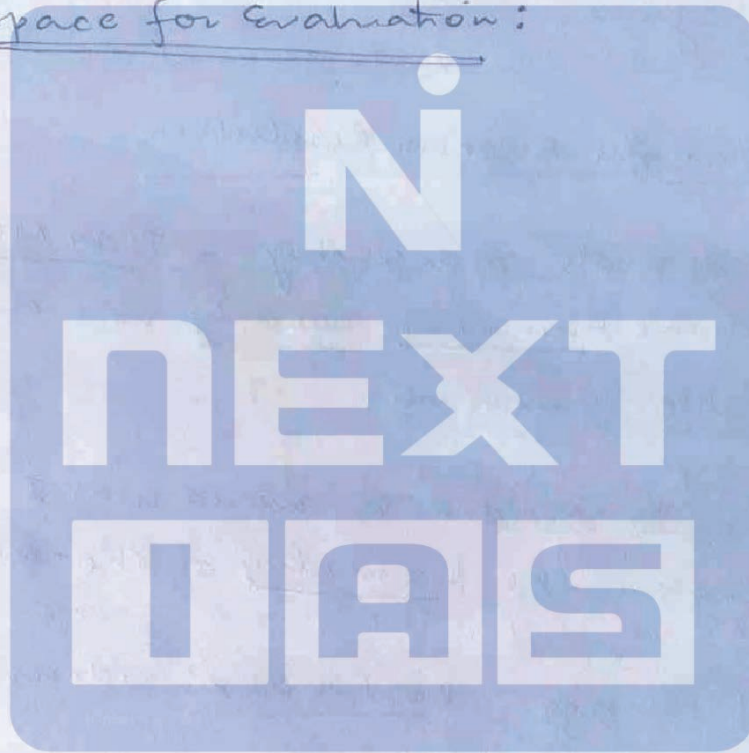
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SRISHTI MISHRA

GS1 - Sectional Length Test
TC-047

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91.

The Russian Revolution took place in the midst of the 1st World War and was one of the earliest attempts to overthrow an existing regime.

Reasons for Russian Revolution

- * Inadequate monarchy - Tsar Nicholas II of the Romanov dynasty was an incapable monarch.
- * Economic burden of World War I was falling on the peasantry of the country.
- * Social change: Karl Marx's ideas of
 - land to the tiller
 - equal distribution and
 - state ownership of capital and land
 were spreading as capitalist profiteering was seen as exploitation of the weak giving rise to inequality.
- * Strong leadership: Lenin.

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The February & October Resolutions had the following consequences:

- (i) overthrow of monarchy
- (ii) establishment of USSR.
- (iii) state control became absolute.
- (iv) establishment of Comintern to support other nations.
- (v) end of private property.

Influence on Indian National movement

- (i) 1920 : m.v. Roy established the Communist Party of India (CPI).
- (ii) Socialist ideals saw a rise:
 - a) equality
 - b) justice
 - c) fraternity
 } incorporated in Constitution.
- (iii) Communist revolutionary zeal:
eg: Bhagat Singh

Thus, Russian Revolution was a spark for nationalist movements worldwide.

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Q2)

After independence, Churchill had wrongly prophesized that India would disintegrate and fall into retrogression. Instead, India made leaps in not just governance but also science and technology.

Strides in Science & Technology :-

(i) Agricultural Science: The Green Revolution ended India's dependency of on USA's PL-480 scheme of grain import as hybridized and genetically modified crops led to greater productivity.

(ii) Telecom Sector growth: Under the Rajiv Gandhi government, telecom and satellite communication saw a rise, bringing Indians communication closer together, enhancing defense as well as growth of business and efficient administration.

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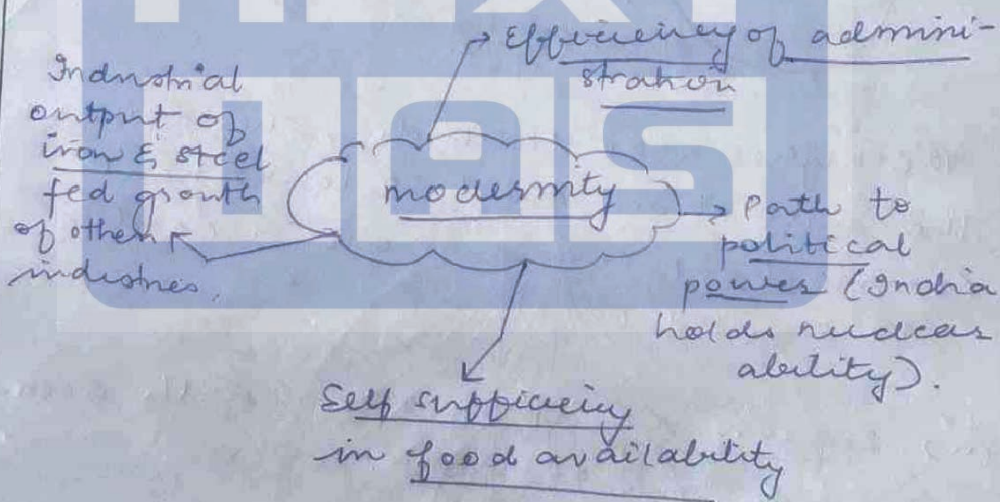
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(iii) Space Technology : Homi Bhabha, Vikram Sarabhai and APJ Abdul Kalam revolutionized rocketry and made India a nuclear power after Operation Shakti (followed later by Operation Smiling Buddha).

(iv) Industrial development through capital-intensive growth under Mahalanobis Model.



The constant focus on science and technology has eventually led to an Ama Nirbhar Bharat in the 21st century.

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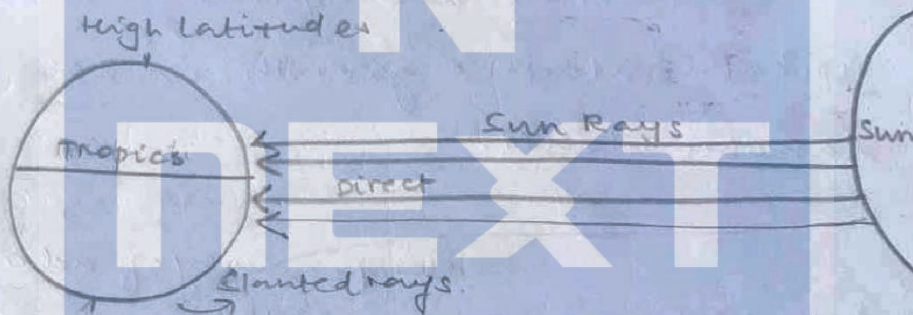
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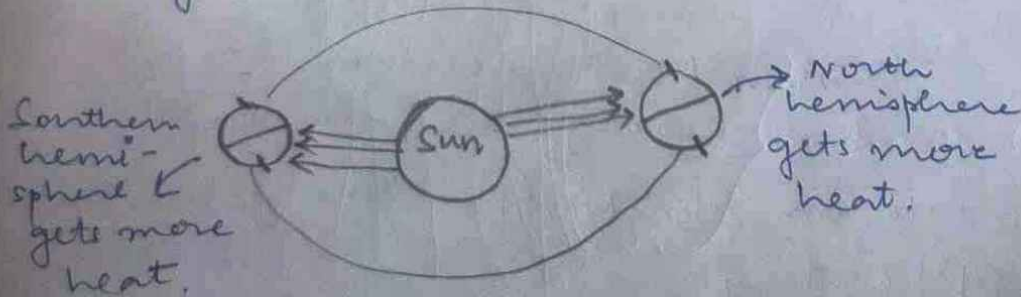
The Earth's heat budget is a fluctuating constant. However, the distribution of this heat depends on various factors:

(i) latitude of Earth.



The higher the latitude, the lower the insolation and so lower heat (same heat covers more area due to slanted rays)

(ii) season (tilt of the Earth according to time of year.)



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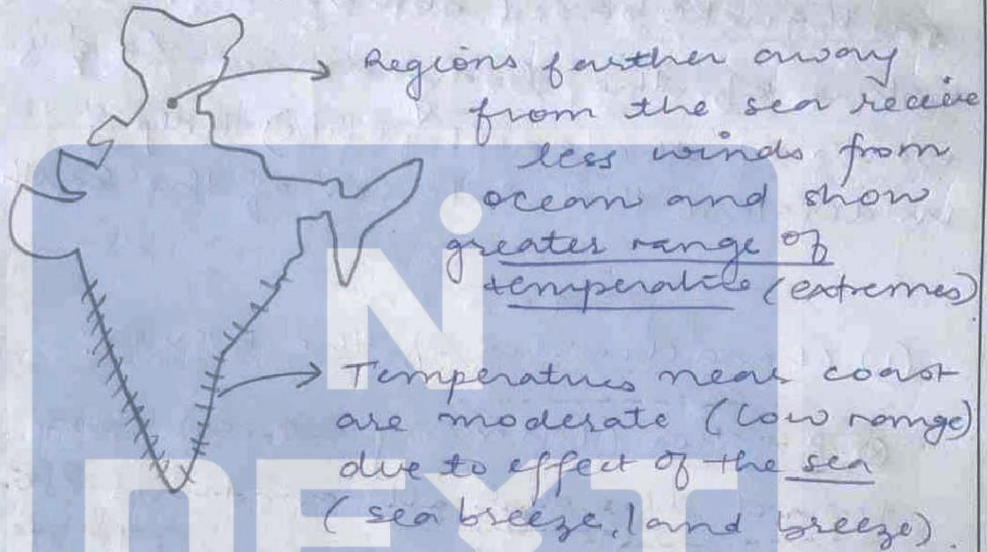
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(iii) Continuity of the region:



(iv) Altitude: Himalayas are cooler because mountaintops are further away from heat-emitting surface of the Earth.

(v) winds, Ocean Current transfer heat, from low to high pressure. Thus, various factors affect the distribution of heat on Earth.

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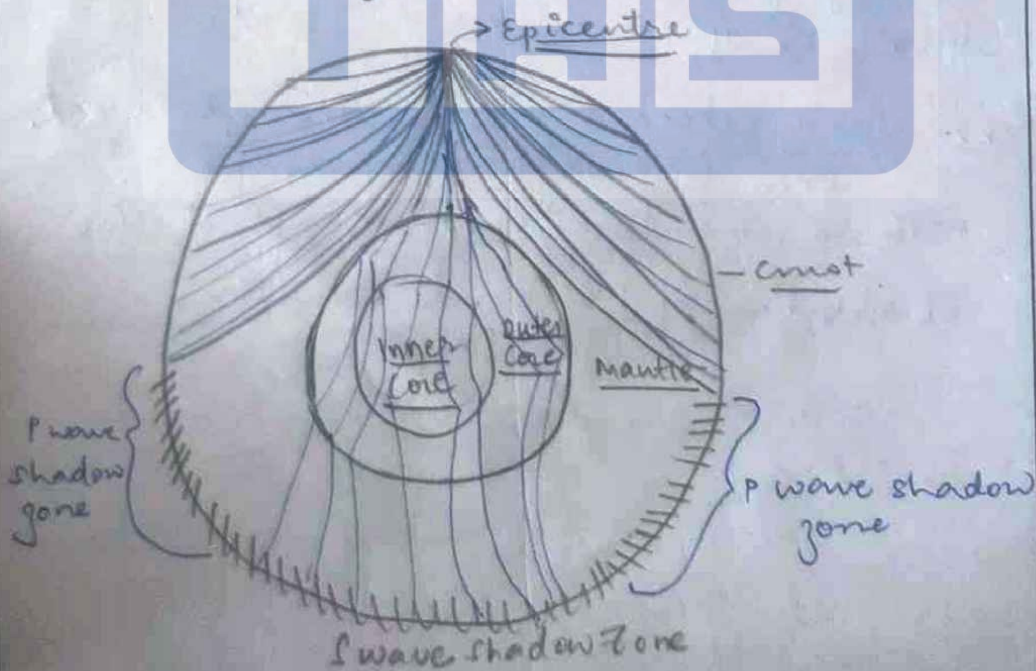
Q4)

Seismic investigation refers to earthquake-based observation. The nature of the body waves (P & S waves of the earthquake) help understand the interior of the earth.

① Characteristic of the waves:

② P waves (Primary waves) can travel through all mediums (solid, liquid, gas).

③ S waves (secondary waves) can travel only through ^{liquid} ~~solid~~ medium.



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Q. 2) Understanding the interior.

(i) Since secondary waves cannot travel through outer core, and P-waves can be detected on other side of planet, it can be implied that the inner core is solid.

(ii) According to this it is understood that pressure causes inner core to become solid despite high temperatures.

Thus, shadow zones of earthquakes provide an indirect glimpse into the interior of the Earth.

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95.

Melting glaciers have become a red flag and symbol of the toll that global warming is taking on the world's biomes and especially the cryosphere.

Implications on

Ecosystems

Human Society

- | | |
|--|---|
| <ul style="list-style-type: none"> ⊙ Rising sea levels ⊙ increase in mangrove, wetland ecosystems. ⊙ Release of fresh water into oceans → growth of fresh water species. ⊙ <u>flooding</u> of rivers ⊙ <u>higher lower albedo</u> as more dark surfaces are uncovered. ⊙ <u>lower</u> more glacier-dams. | <ul style="list-style-type: none"> ⊙ Higher sea level endangers coastal communities eg: Bangladesh, island nations. ⊙ Increased <u>inequality</u> due to higher vulnerability to extreme events like <u>glacial outbursts</u> and <u>flash floods</u>. ⊙ Rising <u>disaster management</u> costs - <u>fiscal burden</u> on society. ⊙ <u>Rehabilitation</u> & <u>livelihood</u> concerns. |
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① Environmental Impact and Mitigation

(i) International cooperation through COP under UNFCCC with Nationally Determined Contributions (NDCs) under Paris Agreement to tackle global warming.

(ii) Effective mitigation strategies & strong disaster management force (NDRF, SDRF).

(iii) Rehabilitation and adaptation through infrastructure development, planned housing and climate-change sensitive urban/rural planning.

melting glaciers are like a ticking time bomb which can explode and cause great human and environmental misery. All efforts must help backtrack this development.

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Q6)

White Revolution was the milk and cooperative revolution of India that drastically increased not just milk production but also farmers' supplementary income.

Why successful in Western India:

(i) It was initiated in a small village of Gujarat (Anand) so the momentum was greatest in the region.

(ii) Government support through regional focus, only later it was expanded to the country.

(iii) Greater willingness to cooperate amongst the farmers.

(iv) Fewer land rivalries due to effective implementation of land reforms in Gujarat in early 1950s and 1960s.

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(v) lower caste-based rigidity/discrimination due to ~~effects~~ efforts during National Independence movement

eg: Bardoli Satyagraha, Vyali Panaj, Kati Panaj issue.

(vi) Business mindset (many early capitalists of India were Gujrati descendants) → allowed people to think in terms of profit and not caste/class divisions.

(vii) Other regions in India lacked

- profit (capitalist mindset)
- unity in class divisions (too rigid)
- government support (infrastructure)
- extreme dependence on agriculture (crop production).

White Revolution was a stark example of the benefits of cooperativization in agricultural sector.

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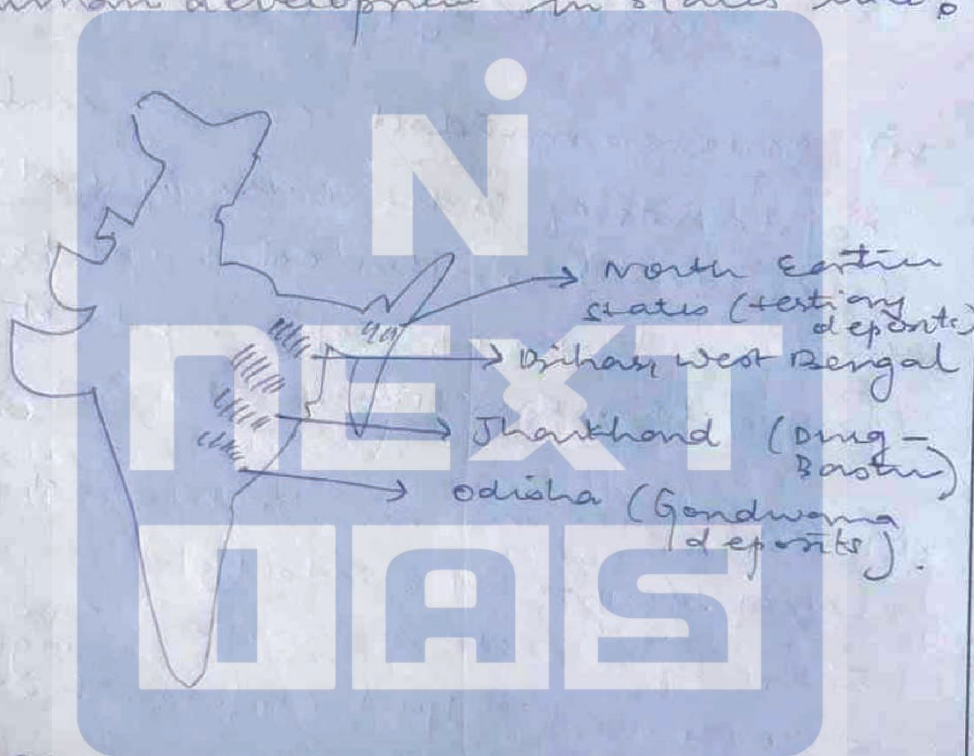
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47)

As India looks to be Carbon Neutral by 2070 as per its Panch Amrit goals, shifting away from coal-based power to renewable energy can impact human development in states like:



Disadvantages of Shift from Coal to Renewables:

(i) Employment loss: coal mine workers and downstream industries like transport, storage, ~~etc~~ coal power plants will be laid off.



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(ii) Social impact: Laying off of workers will impinge on their ability to afford education and healthcare.

(iii) Lack of skill will reduce their economic mobility - may lead to migration and internal displacement.

Benefits

(i) With adequate government support like unemployment benefits, upskilling of workers, social security, these workers can get sustainable alternatives.

(ii) Rehiring in mechanical jobs under renewable energy plants.

(iii) Reduced pollution, coal mine deaths, environmental waste (coal sludge) etc.

Overall, shifting to renewables is becoming essential, but human impact must be balanced with this shift.

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(48).

Soil is a non-living element that is essential for plant growth. Soil properties are determined by various elements, most important being temperature and precipitation.

Temperature's
Impact on Soil

- ⊙ High temperatures allow bacteria / other decomposers to speed up their chemical processes
eg: break down of soil. Earthworms move in soil and make it porous → eg: alluvial soil.
- ⊙ low temperatures reduce organic activity causing soil to be hard, non-porous and unlikely for plant growth.

Precipitation's
Impact on Soil

- ⊙ Higher precipitation is both good and bad.
 - (i) good: it adds moisture, allowing more bacteria and animals to burrow.
 - (ii) bad: it may cause run-off, soil erosion.
eg: laterite soil.
- ⊙ low precipitation leads to sandy, dry soil with distinct particles
eg: Red and Yellow soil.

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However other factors affect soil properties too:

(i) minerals in soil are determined by Parent Rock

eg: Red and yellow soils consist of iron.

(ii) work of river erosion, process of deposition:

eg. alluvial soils on flood plains deposited by rivers.

(iii) types of plants found in soil:

eg: tropical plants and trees have low nutrient soils because plants quickly absorb all nutrients due to high rate of growth.

Thus, soil is an element that both affects and is affected by other factors like temperature, precipitation, climate, living things, etc.

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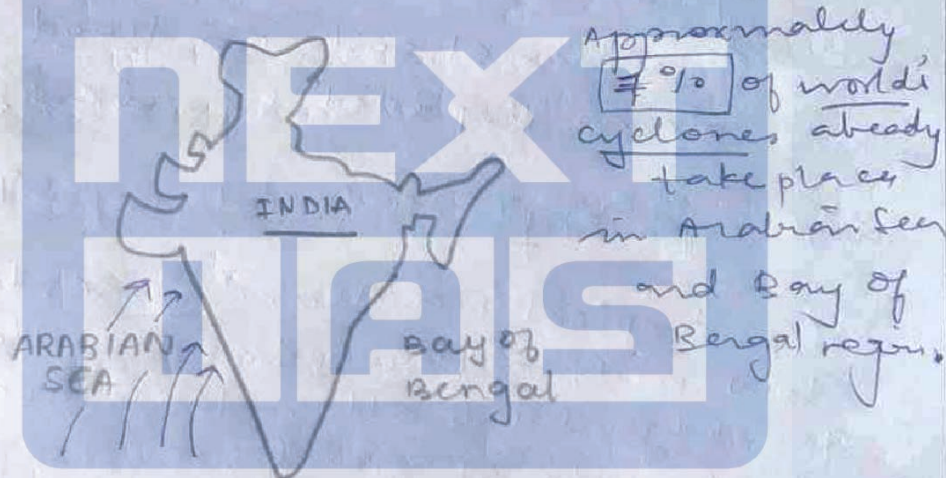
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(99)

As global warming is rising rapidly, severity and frequency of disasters of weather are increasing - one of them being cyclones, the most recent one being Cyclone Biparjoy that hit the state of Gujarat.

Causes of cyclones in Arabian Sea



- (i) Rising sea temperatures due to rising surface temperatures on earth.
- (ii) Severe developments of low pressure zones in oceans.
- (iii) global warming is adding to the heat in tropical regions.

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(iv) longer, more intense summers (again due to climate change)

(v) Rising sea levels are pushing waters farther inland, allowing cyclones to travel further inside and keep dragging power from the ocean.

(vi) winds are unstable. This allowed Bipartyoj to move back and forth between land and ocean and thus allowed it to gain more and more strength instead of dying out.

This instability of winds, development of low pressure zones and rising temperatures along with sea levels are causing cyclones like Amphan and Bipartyoj to be more disastrous.

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910)

England's Industrial Revolution began in the late 1760s due to the abundance of coal, a stable market economy and a growing agricultural sector. As much as it revolutionized the economy, it had certain disastrous socio-cultural impacts.

Economy

- (i) Capitalist economy : sudden rise in output because now agriculture was supplemented with industry.
- (ii) Rise in income - more people employed.
- (iii) Support to colonialism.
- (iv) Growth of international trade as output expanded and raw material import started coming in.

However, the social and cultural impacts were disadvantages to England's growth:

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(i) Exploitation of workers : this eventually led to the Luddism movement - demand for workers rights.

(ii) Child Labour : Little bodies could fit through machines - forcing children out of school and into dreaded tasks.

(iii) Gender Inequality - women were paid less than men for same task.

(iv) Capitalist profiteering at the expense of labourers led to deepset inequality and a rise in socialist demands.

Thus, the Industrial Revolution was not a true revolution when seen through the lens of society and culture of 18th century England.

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Q11)

India gained Independence with the zeal to establish a peaceful, democratic and friendly regime. However, the wars of 1962 and 1965 between India and its neighbours served as a rude shock of real-politik to a naive India.

Causes of war

(i) Territorial dispute:

a) In 1962, China was claiming regions of the Himalayan north.

b) In 1965, Pakistan was aving for Kashmir.

c) In 1970, Pakistan was undergoing civil strife in today's Bangladesh region.

(ii) Communal disharmony:

Pakistan had been formed on the basis of the 2-nation theory, and this hatred often led into violence.

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(iii) Lack of trust and unwillingness to practice peaceful deliberation

(iv) Inadequate international support - vague overlooking by the international community (Busy in Cold War).

Impacts of Indo-Pak and Indo-China Wars

(i) Served as a reminder to Indian leaders that neighbours are to be kept close but handled carefully.

(ii) Negative economic impact, drain on treasury, burden on people.

(iii) Coming to various agreements

eg: Panchsheel

Qujrat Doctrine

Shimla Agreement

Indus ^{River} Valley Treaty under WB.

(iv) Showed India's strength in managing external threats:

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eg: Indira Gandhi's immediate action in Bangladesh liberation.

(v) depicts conscience of the nation: India gave Bangladesh support for freedom and did not take over the weak territory - respect for international law.

Thus, these wars were brutal reminders of geopolitical realities but they also led J. Nehru to form the basis of India's foreign policy: "The main aim must be what benefits the people of the nation."

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(12)

The Green Revolution, led by M.S. Swaminathan was one of the most essential technological breakthroughs of Independent India. Though it had overall benefits, it also led to inequalities in development.

Contribution to Agricultural Productivity

- (i) Enhanced output per acre of crops due to stronger, more resilient hybridized seeds.
- (ii) Inbuilt pest resistance and weed resistance allowed more crops to survive, even in unfavorable conditions.
- (iii) Small farmers also benefitted because growth on small farms was increased (more input per land).
- (iv) Greater income to farmers allowed them to employ capital like tractors for better tilling and harvesting.

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Geography of Uneven Development

- (i) Government focussed on regions of established agriculture and success of land reforms;
eg: Punjab, Haryana, Western UP.
- (ii) Irrigation channels (canals) were already in place so it made growth of Green Revolution more easy here.
- (iii) Other regions were ignored and given less infrastructure, less hand-holding to farmers.
- (iv) Existence of divided land (highly fragmented) led to inadequate implementation of green revolution.
- (v) Lack of formal credit mechanism created burden on peasants in buying GM seeds (high interest by moneylenders).

All these factors lead to regional economic inequalities.

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Apart from social inequalities, there were also some "reverse" inequalities of environment caused by Green Revolution.

(i) greater water scarcity in Punjab.

eg: Sathij-Yamuna Crisis of irrigation interlinking - supranational disputes.

(ii) wheat-rice cropping pattern becoming unsustainable.

(iii) soil degradation, overuse of chemical fertilizers.

With increased focus on sustainable development, and equitable development the social & environmental wrongs are being corrected by aiming for an Evergreen Revolution based on schemes like PM PRANAM and PM FBY.

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913)

World War I was a result of domino effect where one country's rivalry ~~ted~~ dragged in country after country, resulting in devastation and retrogression of the world's economies.

causes of World War I

- (i) clashing demands for colonies.
- (ii) Colonies were a symbol of economic and political power
- (iii) Balkan crisis and colonial disputes over rights over territories as the Turkish Caliphate crumbled.

Thus, geopolitical rivalries and a race for raw materials lead to a war in which 3rd world nations were not just onlookers but also the unfortunate victims of exploitation.

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Aftermath and Effect on Asia & Africa

- (i) WWI came to an end with US President Wilson's 14 points, the Treaty of Versailles negotiating peace and the League of Nations establishment.
- (ii) While England, France and other colonialists were unharmed, countries under colonial rule were brutally damaged.
eg: distribution of food from famine hit regions to soldiers caused widespread death.
Raw material moved out rapidly from Asian and African nations to feed English and French industries to help war continue → DRAIN OF WEALTH.
- (iii) Colonized nations realized that they had been used as pawns in the great power game → adding fuel to the fire of nationalism.

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(iv) India, South East Asian Nations & African Nations demanded Independence.

(v) Socialist ideals from Russian Revolution 1917 spread to revolting nations.

(vi) NonCooperation Movement & Civil Disobedience Movement was started as nations demanded independence and a right to rule their own country.

Thus, WWI hastened the demise of the very powers that were seeking to consolidate themselves in the early 20th century.

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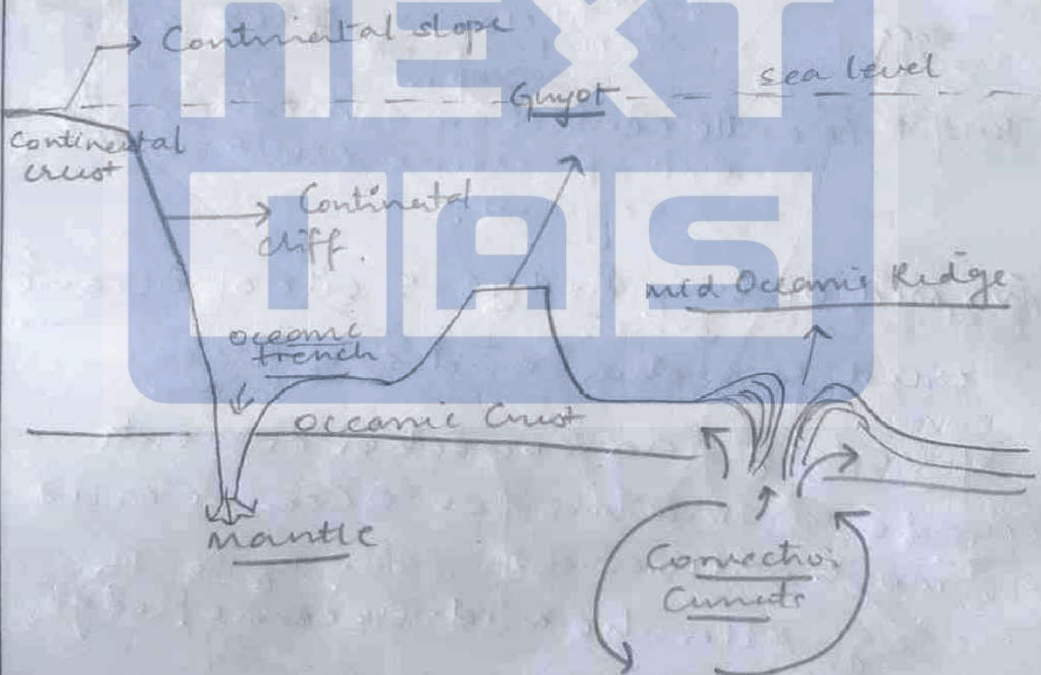
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Q14)

Ocean floor is a terrain almost equally as diverse as the land surface and provides insights into geological processes like sea-floor spreading, plate tectonics, volcanism and orogeny.

Major features of the Ocean floor:



(i) Continental slope is the shallow part of the area where continent meets ocean (coastal region).

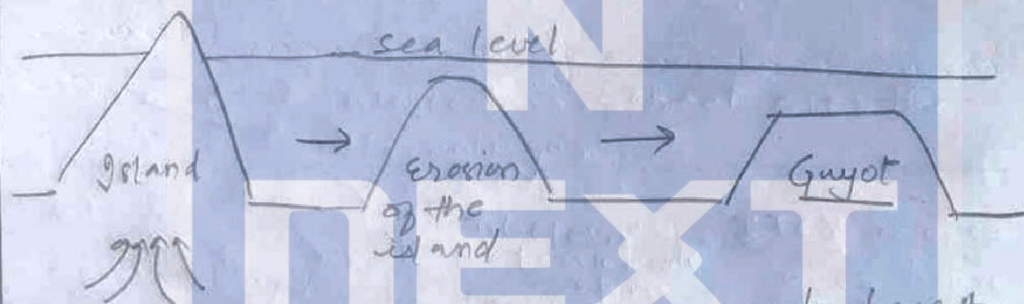
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(ii) The continental cliff is where there is a sudden fall in the surface level leading to the ocean floor.

(iii) Guyot: this is an eroded oceanic mountain



Hotspot (mantle convection currents burst out of oceanic crust in these regions).

(iv) mid oceanic Ridge: site of oceanic crust formation and sea floor

spreading, as convection currents create momentum for oceanic crust to move outwards.

eg: Atlantic mid-Oceanic Ridge.

(v) Oceanic trench: site of meeting of oceanic and continental plates.

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Oceanography :

(i) oceanic trench provides evidence of sinking of denser plate (sima, oceanic crust) under less dense plate (si, Al, continental crust).

It also gives evidence for volcanoes in plate boundary regions as friction causes magma to rise onto Earth's surface.

eg: Pacific Ring of Fire

(ii) mid-oceanic ridge provides evidence of sea floor spread while guyots and Hawaiian island chains provide evidence of hotspot formation due to mantle activities.

Thus, the ocean floor is a source of much knowledge of both the Earth's surface and its interior.

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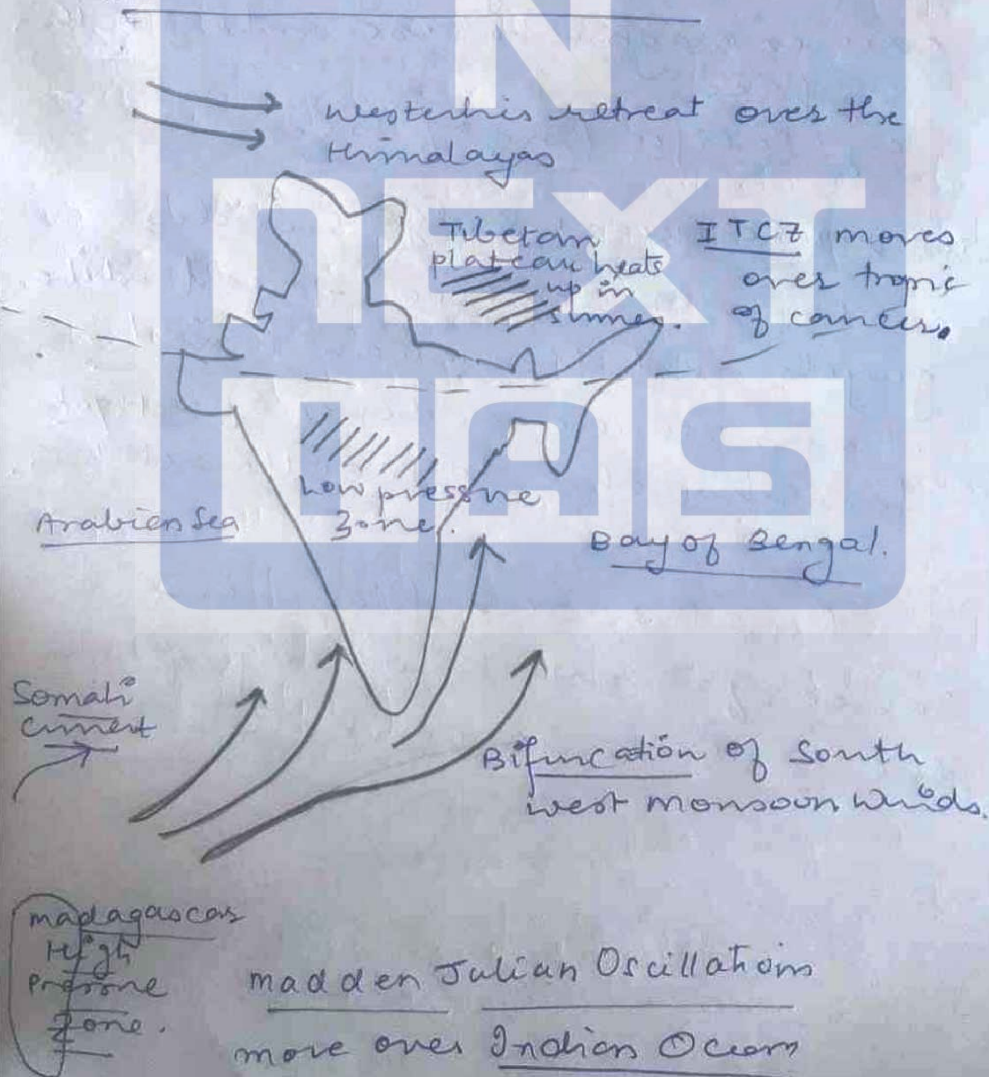
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Q15)

The Monsoons are a unique atmospheric phenomena limited to the Indian subcontinent. They are influenced by both oceanic and atmospheric factors.

Indian Monsoon Mechanisms



उम्मीदवारों को इस दृष्टिकोण में इसी लिखना चाहिए।
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Role of Oceanic Factors ?

(i) In summers, oceans heat up, allowing for rapid evaporation and formation of rain clouds.

(ii) Oceanic currents like the Somali current push the monsoon winds towards India.

(iii) High temperatures and vast open space allow for low pressure systems to develop.

Atmospheric Factors' Role

(i) Shift of Inter-tropical Convergence zone (ITCZ) to northern hemisphere, direct sun rays on Indian mainland leading to low pressure development.

(ii) Tibetan plateau heats up due to direct sunlight incidence → strengthens low pressure.

(iii) Westerlies shift up and out of Indian mainland, allowing heat to remain in Indian mainland.

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(iv) Madden Julian Oscillation (30-60 day atmospheric cycle) creates favourable conditions for wind to come into India.

(v) Strong high pressure zone in Madagascar region pushes monsoon winds further into India helping distribution in northern regions like Delhi, Punjab, etc.

(vi) El Niño reduces winds and diverts winds to Eastern Pacific while La Niña enhances strength of wind movement to inland India.

(vii) North Eastern (retreating monsoons) are affected by similar factors, picking up moisture from Bay of Bengal and helping saturate Tamil Nadu region.

Thus, ocean and atmosphere work together to give Indian sub-continent a unique rainfall pattern and distribution.

संशोधन के क्षेत्र में

दिनांक नहीं लिखना

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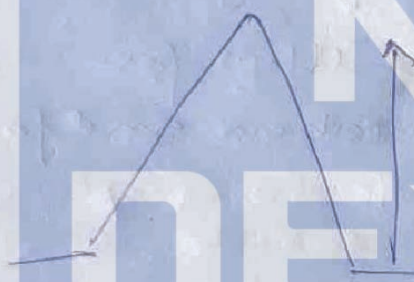
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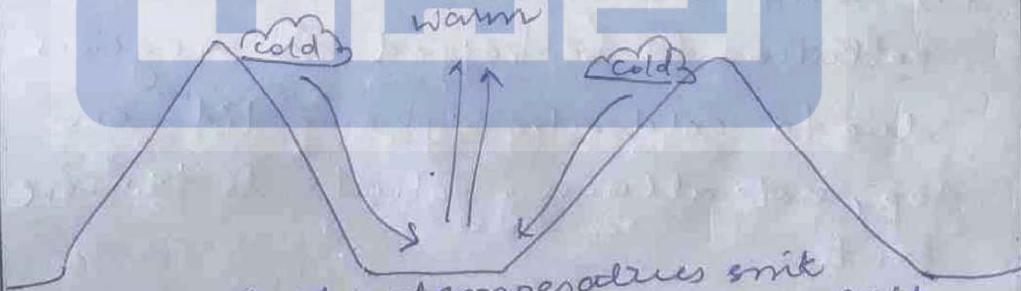
Temperature inversion refers to the turning around of natural temperature-altitude conditions. It occurs mainly in hilly areas.

Normal Condition



With greater altitude there is a fall in average temperature.

Temperature Inversion



- ① Colder temperatures sink to valley floor between hills.
- ② warmer air shifts up and over the colder air.

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Local weather patterns:

- (i) Colder valley bottoms, warmer hilltops.
- (ii) At night, there are mountain breezes that cause frost harm to plants in valley region.
- (iii) Preference for hilltops for agricultural plantation and for living conditions.

Air Pollution:

- (i) Temperature inversion causes pollution to be trapped in regions due to cold atmospheric "lid" on top, not allowing pollutants to move out.
- (ii) This raises levels of atmospheric pollutants like PM_{2.5} and PM₁₀ in areas with temperature inversion, creating health impacts and environmental damage.

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Temperature inversion is a phenomenon that must be understood to gauge the environmental, economic and human health impacts involved and provide proper mitigation for the same.



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Q17)

Recently, India discovered a store of lithium in its Jammu and Kashmir region, raising talks on extraction and use in output generation.

Growing Demand of Rare Earth Elements (REE),

(i) use of REE in semiconductor industry.

eg: downstream industries include mobile phones, laptops, other electronic gadgets.

(ii) growing digitalization of sectors

eg: online education, telemedicine, increases demands for REE - intensive gadgets -

(iii) use in electric vehicles,

eg: lithium ion batteries

As users become more climate-conscious, demand for these vehicles will rise over diesel powered fuel.

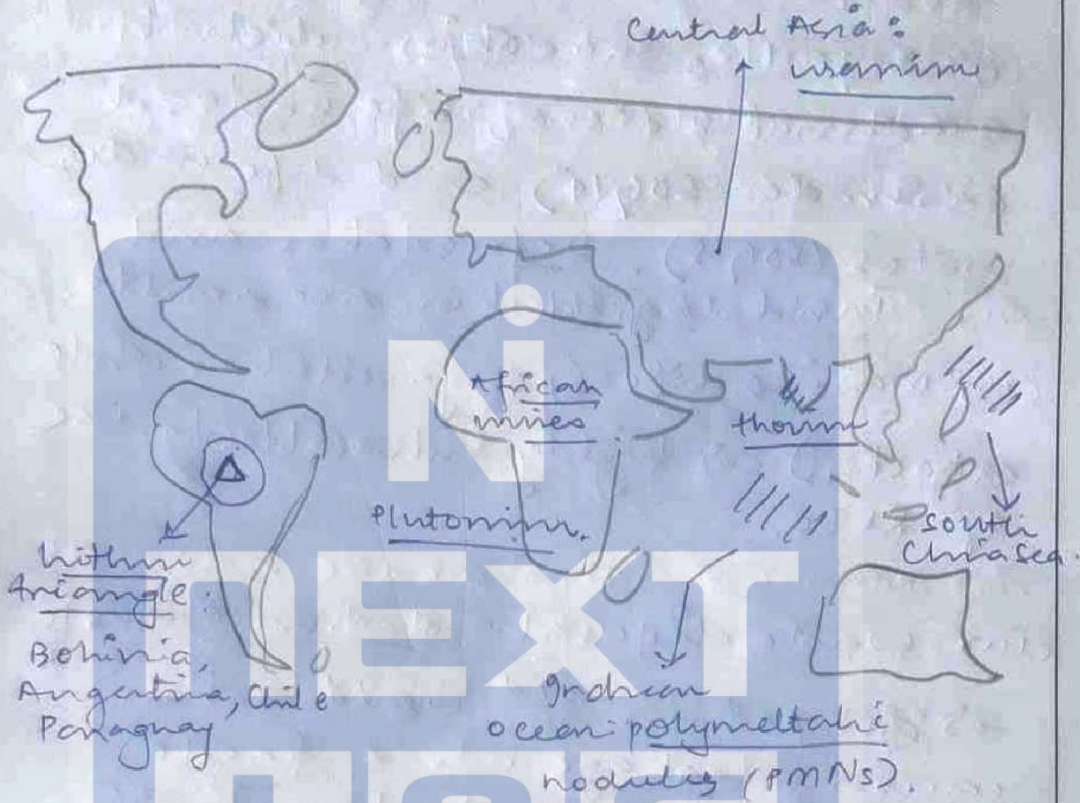
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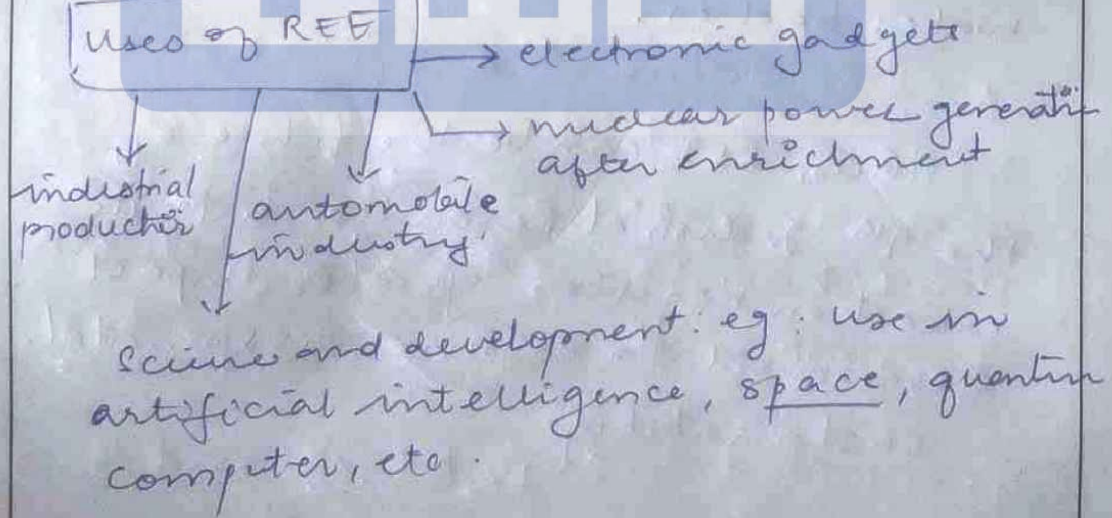
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Distribution of REE



Uses of REE



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Environmental Impacts :

- (i) Impact of Extraction: disturbs natural state of life on land (as under SDG14) and life under water (SDG15). Deforestation and land degradation are results.
- (ii) marine life (polymetallic nodule extraction) is highly vulnerable to use of REEs.
- (iii) waste disposal - electronic waste is dumped in 3rd world nations causing leakage into a fragile environment, leading to toxicity of water bodies.

Thus, REE can be the future of the 4th Industrial Revolution but its extraction requires greater impact assessment to ensure environmental sustainability.

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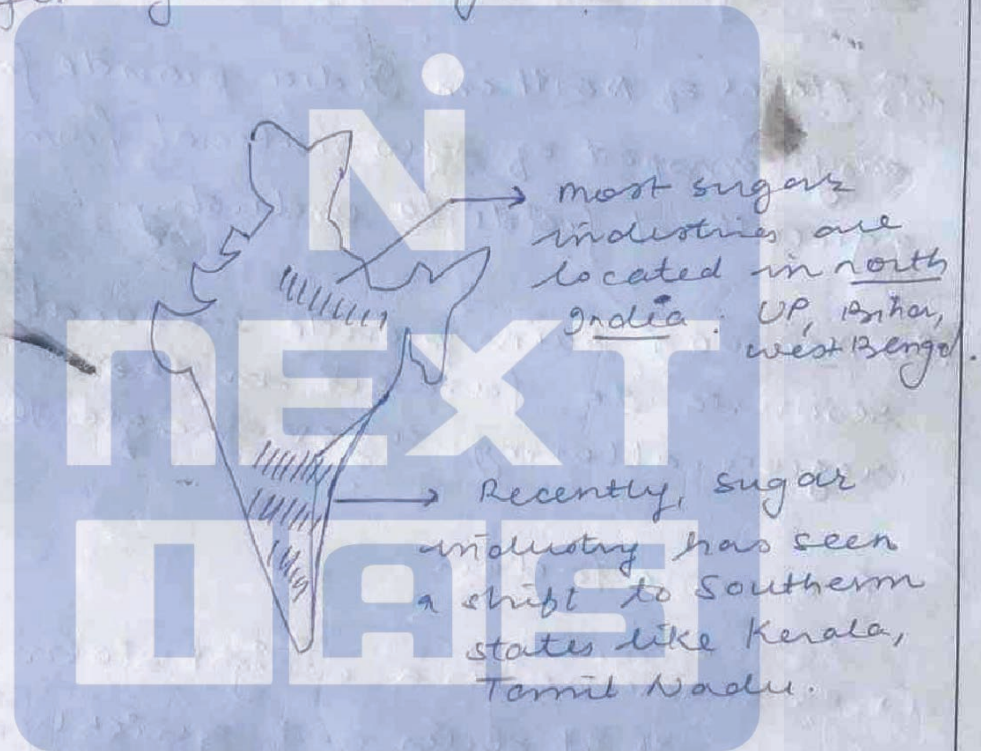
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Q13)

Any industry's location is determined by various economic, geographic, demographic and even political factors. In India, the same applies for sugar industry location.



Geographical Factors

(i) growth of sugarcane takes place in these regions due to adequate precipitation (and hence irrigation) and insolation.

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(ii) Rivers availability signals water availability. Since sugarcane are water-intensive crops, sugar industries are usually found near rivers, canal systems.

(iii) Plains of Northern India provide for easy transport of raw material from agricultural fields to industry.

(iv) monsoon rains provide seasonal resource to farmers in the region, allowing sugarcane growth.

Economic factors

(i) As sugarcane is a weight losing crop, and it dries out quickly, industries are located near the plantations to reduce lag between harvest and sugar manufacture.

(ii) Reduced transport costs and thus lower logistical considerations.



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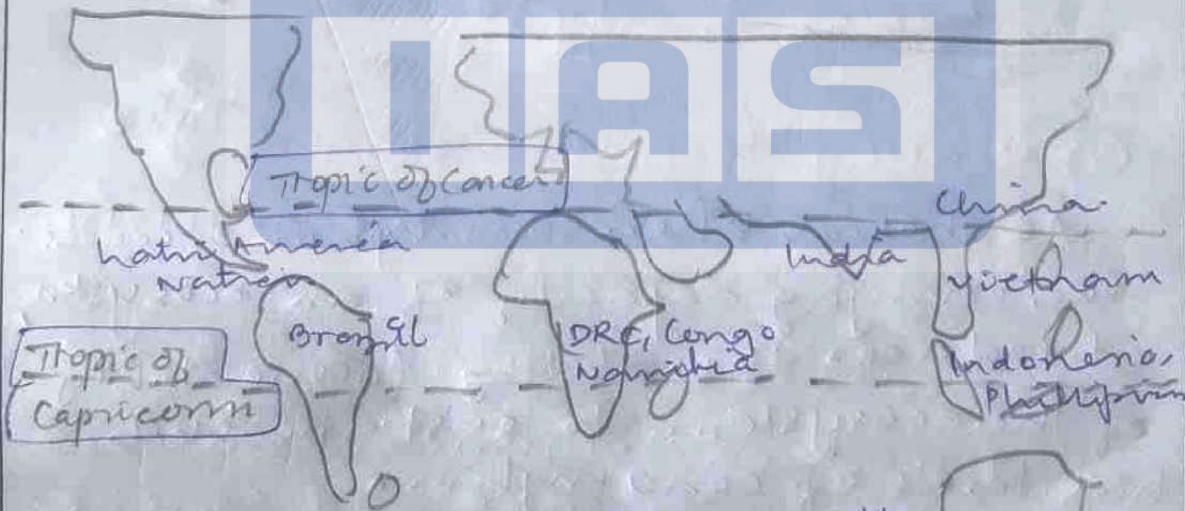
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(11) Govt. based economic reasons:

eg: provision of fair and remunerative pricing by Centre (FRP) and State Advised Price (SAP) by state incentives sugar producers.

eg: infrastructure like canals, roads, linkage between farm and industry reduce logistics costs for industries.

World Distribution of Sugar Industry:-



sugar industries lie mostly where sugarcane is produced: tropical regions with high rainfall and high temperatures.

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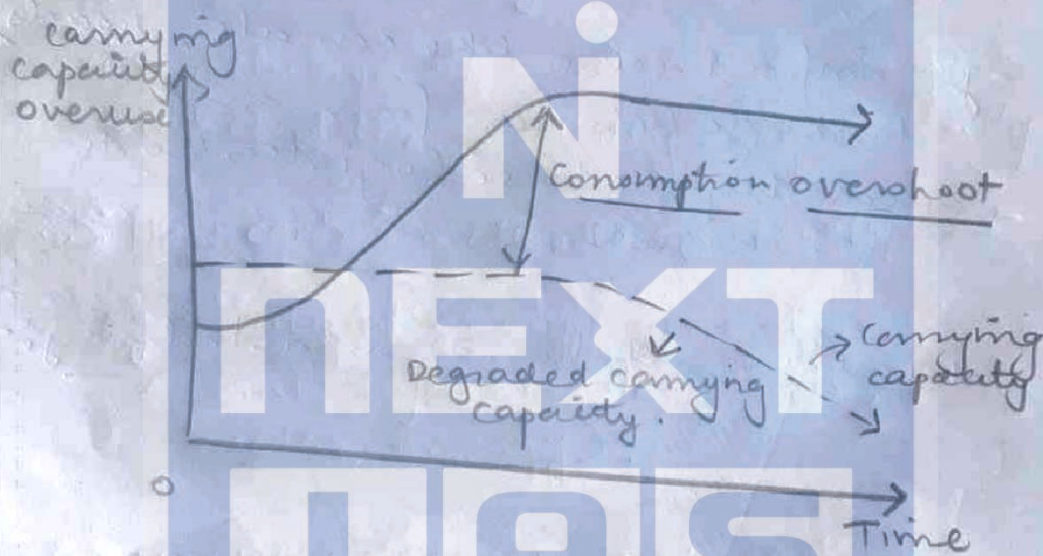
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Q19)

The ecological carrying capacity of a region is defined as the ability of an ecosystem to carry or sustain a group of individuals and also assimilate its wastes.



As shown, when consumption exceeds the carrying capacity of an ecosystem, it reduces the ability future ability of the ecosystem to sustain such high levels of consumption.

In India, unhealthy and un-
thoughtful tourism is an example of consumption overshoot:-

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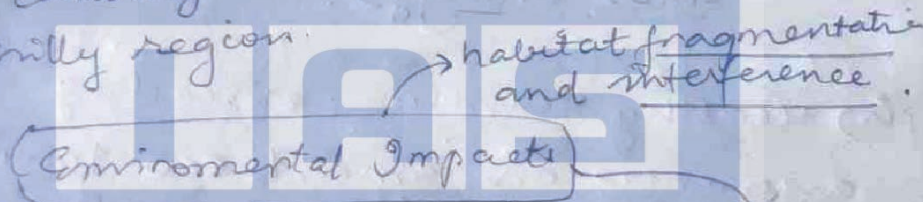
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(i) High levels of settlements in the form of hotels, resorts create pressure on geological systems.

(ii) Pollution by tourists in the form of plastic, other non-degradable material creates waste that hurts biodiversity. (soil and water pollution).

(iii) Rising case of market development leading to mini-urbanization causing air pollution.

(iv) Riding through with diesel vehicles causing more pollutant density in hilly region.



soil, water, air pollution

incidence of land subsidence

(eg: Uttarakhand)

pressure on land causing shifting of river paths, mini earthquakes and landslides in mountainous regions.

high pollution hurting nocturnal animals.

loss of biodiversity due to pressure on habitats

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measures to ensure Environmental Sustainability :-

- (i) Harnessing geospatial technology for disaster zonation mapping and effective hill planning.
- (ii) Inclusion of environment as a stakeholder in hilly region development.
- (iii) Eco-centric methods of development
eg: natural energy generation (mini-hydroelectric plants, solar energy).
- (iv) Healthy tourism - spreading awareness on smart eco-tourism.

Schemes like Vibrant Villages Programme must work on tourism enhancement with a view to save and conserve the environment of the world's 3rd pole i.e. the Himalayas.

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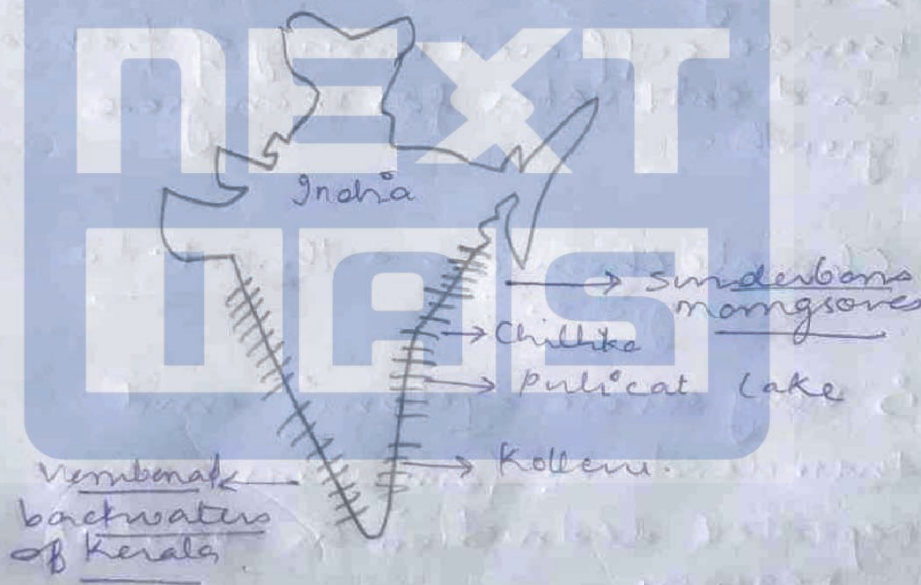
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Q20)

mangroves are a biome found in almost all regions of the world, characterized by growth in regions where salt water and fresh water interact creating an ecotone with high levels of biodiversity.

Geographical factors for Mangrove Vegetation:



(i) Coastal region: mixing of fresh water and sea water provides suitable conditions for mangroves.

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कृपया इस स्थान में प्रश्न संख्या के अतिरिक्त कुछ न लिखें।

UPSC

Answer Questions in NOT MORE THAN the Word Limit specified for each in the Parenthesis.
(Specimen Answer Booklet - For Practice Purpose Only)

उम्मीदवारों को इस हार्शिए में नहीं लिखना चाहिए
Candidates must not write on this margin

- (ii) At the mouth of rivers:
eg: Ganga, Brahmaputra, Mahanadi, Krishna mouths and deltas hold most mangroves.
- (iii) Submergent coastline (eastern portion of Indian coast) has more mangroves due to slower slope - allowing for root development.
- (iv) Heavy rains and constant tides provide sufficient mixing of freshwater and saltwater for mangrove growth.
- Climate Change - a threat to mangroves:
- (i) Very severe cyclonic and thunderstorm formations cause repeated destruction in coastal regions.
- (ii) Rising sea levels are pushing mangroves inland and causing some patches to drown.

(Please do not write anything except the question number in this space)
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- (iii) High temperatures cause higher evapo-transpiration hurting the internal balance of mangrove trees.
- (iv) Shifts in ocean currents and marine life patterns is causing unwanted changes in co-dependent populations and affecting ecosystem balance.
- (v) Biom shifts are threatening upward shift (in northern hemisphere) of mangrove ecosystems.
- (vi) Biodiversity loss due to climate pressure is causing disturbance.
- Climate change poses a severe threat to the mangrove vegetation in India. Programmes like MISHTI are essential to create sustainable mangrove populations.