

NEXT IAS

LOGICAL REASONING

(Analytical Ability & General Mental Ability)

Comprehensive Study Course

CIVIL SERVICES EXAMINATION 2024

Published by



**MADE EASY Publications**

Corporate Office: 44-A/4, Kalu Sarai
(Near Hauz Khas Metro Station), New Delhi-110016
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Logical Reasoning

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First Edition: 2018

Second Edition: 2019

Third Edition: 2020

Fourth Edition: 2021

Fifth Edition: 2022

Reprint: 2023

LOGICAL REASONING

(Analytical Ability & General Mental Ability)

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UPSC SYLLABUS FOR CSAT

Total Marks : 200

Duration : Two hours

- Comprehension;
- Interpersonal skills including communication skills;
- Logical reasoning and analytical ability;
- Decision making and problem solving;
- General mental ability;
- Basic numeracy (numbers and their relations, orders of magnitude, etc.) (Class X level), Data interpretation (charts, graphs, tables, data sufficiency etc. — Class X level);

Paper-II of the Civil Services (Preliminary) Examination will be a qualifying paper with minimum qualifying marks fixed at 33%. The questions will be of multiple choice, objective type.

01

Chapter

Linear & Matrix Arrangements

To solve these type of questions, we need to first deconstruct the question and extract as much information as possible. Then we should write down the information in the most recognizable manner on the paper. Making tables and charts and storing information in them comes quite handy in solving these types of questions.

Solved Examples

Questions based on Arrangements

Directions (Q.1-Q.4): Consider the given information and answer the four items that follow.

Ankit has joined Next IAS for civil services preparation. He has a busy schedule with 6 classes, each from Monday to Saturday. Sunday is a holiday. The classes are of Polity, Economy, Geography, History, Science and technology and Environment (not necessarily in the same order). Polity is either on Monday or Saturday. Environment is on the immediate next day of History. Science and technology is a day before Economy. History is neither on Monday nor on Saturday. Science and technology is on second day after polity.

Q.1 On what day classes of polity are held?

- (a) Monday (b) Tuesday
(c) Wednesday (d) Saturday

Ans. (a)

Q.2 Which class is held on a day immediately followed by class of Science and technology?

- (a) Geography (b) Economy
(c) History (d) Environment

Ans. (b)

Q.3 Which class is held on Saturday?

- (a) Geography
(b) Environment
(c) Economy
(d) Science and technology

Ans. (b)

Q.4 On what day classes of History are held?

- (a) Friday (b) Thursday
(c) Tuesday (d) Wednesday

Ans. (a)

For solving these types of questions we need to deconstruct the whole information given in then question. Let's go sentence by sentence while making the figure or chart and subsequently update it along with next information.

Information 1: Polity is either on Monday or Saturday.

Day	Subject
Monday	Polity
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	Polity

In the table we have inserted the possibilities that can be deduced from statement 1. Now let's move on to next information.

Information 2: Environment is on the immediate next day of History.

Remember this information by the following shorthand.

History → Environment

Information 3: Science and technology is a day before Economy.

Science and technology → Economy

Information 4: History is neither on Monday nor on Saturday.

Now this information can be updated in chart in the following way.

Put history against Monday and Saturday in the Not column.

This means that history class can be held on Tuesday, Wednesday, Thursday, Friday

Monday	Polity	History
Tuesday	History	
Wednesday	History	
Thursday	History	
Friday	History	
Saturday	Polity	History

Information 5: Science and Technology is on second day after polity.

Polity can be on Monday or Saturday. Information 5 implies that there has to be days after Polity class. This means polity cannot be held on Saturday. Therefore we can conclude that polity classes are held on Monday. Now we will add another column to our chart to add our final deductions. Our chart will now look like:

Day	Subject	Not	Final
Monday	Polity	History	Polity
Tuesday	History		
Wednesday	History		Science and Technology
Thursday	History		
Friday	History		
Saturday	Polity	History	

Now using information 3 (Science and technology Economy), we can further update our chart

Day	Subject	Not	Final
Monday	Polity	History	Polity
Tuesday	History		
Wednesday	History		Science and technology
Thursday	History		Economy
Friday	History		
Saturday	Polity	History	

Now using information 2 (History Environment) we can easily deduce that History classes will be held on Friday so that Environment can held on Saturday. Otherwise if History classes would have held on Tuesday, Wednesday is already occupied by Science and technology so there is no space for Environment. The only subject remaining is geography and only day left is Tuesday. Our updated chart will now look like this.

Day	Subject	Not	Final
Monday	Polity	History	Polity
Tuesday	History		Geography
Wednesday	History		Science and technology
Thursday	History		Economy
Friday	History		History
Saturday	Polity	History	Environment

Now we can easily solve the Questions.

QUESTIONS BASED ON CIRCULAR SITTING ARRANGEMENT

Directions (Q.5-Q.6): Consider the given information and answer the two items that follow.

Six persons *A, B, C, D, E*, and *F* are sitting around the round table. *A* is sitting on the opposite side of *C*, *D* is neighbour *B*, *E* is sitting on the right hand side of *A* and *C* sits in between *B* and *F*.

Q.5 Who is sitting on the opposite side of *F*?

- (a) *D* (b) *B*
(c) *E* (d) *C*

Ans. (a)

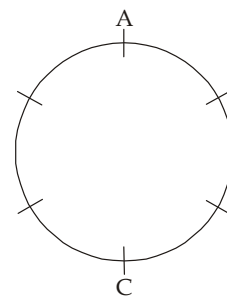
Q.6 Who among the following is the neighbour of *F*?

- (a) *E* (b) *C*
(c) Both *E* and *C* (d) Neither *E* nor *C*

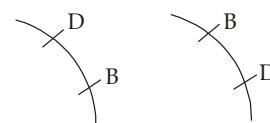
Ans. (c)

We will deconstruct the question using the information given and we will try to draw a circular arrangement based on this.

Information 1: *A* is sitting on the opposite side of *C*

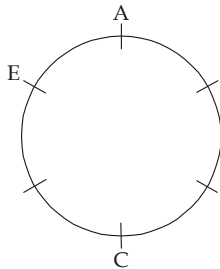


Information 2: *D* is neighbour *B*



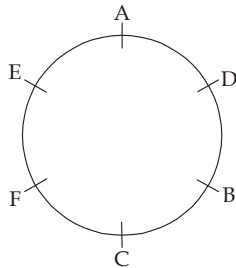
D can either be on the right hand side or left hand side of *B*. This is represented in the above figure.

Information 3: *E* is sitting on the right hand side of *A*
We can update our Figure.



Information 4: *C* sits in between *B* and *F*

From information 2, *B* always sits next to *D*. Therefore information 4 gives us only one sitting pattern for the arrangement.



From figure 12, we can easily find out the answers to the question.

Directions (Q.7-Q.11): Consider the given information and answer the five items that follow.

There are five persons in a group — *P*, *Q*, *R*, *S* and *T*. The group has one doctor, one lawyer and one artist. *P* and *S* are unmarried students. *T* is a man married to one of the group members. *Q* is the brother of *P* and is neither doctor nor artist. *R* is not doctor.

Q.7 Who is the doctor?

- (a) *T* (b) *P*
(c) *Q* (d) *R*

Ans. (a)

Q.8 Who is the artist?

- (a) *P* (b) *Q*
(c) *R* (d) *T*

Ans. (c)

Q.9 Who is the spouse of *R*?

- (a) *P* (b) *T*
(c) *Q* (d) *S*

Ans. (b)

Q.10 Who is the lawyer?

- (a) *P* (b) *Q*
(c) *R* (d) *S*

Ans. (b)

Q.11 Who of the following is definitely a man?

- (a) *P* (b) *S*
(c) *Q* (d) None of the above

Ans. (c)

Again we will deconstruct the information given in the question and try to make a table.

Information 1: The group has one doctor, one lawyer and one artist.

Information 2: *P* and *S* are unmarried students.

We will construct a table and will keep updating it.

Name	Sex	Occupation	Marital Status
P		Student	Unmarried
Q			
R			
S		Student	Unmarried
T			

Information 3: *T* is a man married to one of the group members.

Name	Sex	Occupation	Marital Status
P		Student	Unmarried
Q			
R			
S		Student	Unmarried
T	Man		Married in the group

Information 4: *Q* is the brother of *P* and is neither doctor nor artist.

As *Q* is brother of *P*, this means that *Q* is man.

Also as *Q* is neither doctor nor artist, only occupation left for him is lawyer.

Name	Sex	Occupation	Marital Status
P		Student	Unmarried
Q	Man	Lawyer	
R			
S		Student	Unmarried
T	Man		Married in the group

Information 5: *R* is not doctor. If *R* is not a doctor, only profession left for him is artist. Therefore, the doctor must be *T*.

Name	Sex	Occupation	Marital Status
P		Student	Unmarried
Q	Man	Lawyer	
R		Artist	
S		Student	Unmarried
T	Man	Doctor	Married in the group

All the questions can be answered from this table.

In Q.9 spouse of *R* is *T* because it is give in information 3 that *T* is married to one of the group members.

Q.12 Consider that:

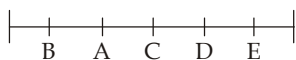
- A is taller than B.
- C is taller than A.
- D is taller than C.
- E is the tallest of all.

If they are made to sit in the above order of their height, who will occupy the mid position?

- (a) A (b) B
(c) C (d) D

Ans. (c)

These type of questions can be solved by drawing a number line



From this it can be seen that C will occupy mid position.



Previous Years Solved Questions

Directions (Q.1-Q.5) : Read the following statements and answer the five items that follow:

Guest lectures on five subjects viz., Economics, History, Statistics, English and Mathematics have to be arranged in a week from Monday to Friday. Only one lecture can be arranged on each day. Economics cannot be scheduled on Tuesday. Guest faculty for History is available only on Tuesday. Mathematics lecture has to be scheduled immediately after the day of Economics lecture. English lecture has to be scheduled immediately before the day of Economics lecture.

Q.1 Which lecture is scheduled on Monday?

- (a) History (b) Economics
(c) Mathematics (d) Statistics

[UPSC 2012]

Ans. (d)

Q.2 Which lecture is scheduled between Statistics and English?

- (a) Economics (b) History
(c) Mathematics (d) No lecture

[UPSC 2012]

Ans. (b)

Q.3 Which lecture is the last one in the week?

- (a) History (b) English
(c) Mathematics (d) Economics

[UPSC 2012]

Ans. (c)

Q.4 Which lecture is scheduled on Wednesday?

- (a) Statistics (b) Economics
(c) English (d) History

[UPSC 2012]

Ans. (c)

Q.5 Which lecture is scheduled before the Mathematics lecture?

- (a) Economics (b) History
(c) Statistics (d) English

[UPSC 2012]

Ans. (a)

From the information given in the Question, we can see that English, Economics and Mathematics will have to come on successive days. We can make the following table from the given information

Day	Subject
Monday	Statistics
Tuesday	History, No economics
Wednesday	English
Thursday	Economics
Friday	Mathematics

From the table given above, we can easily answer the questions.

Q.6 The music director of a film wants to select four persons to work on different aspects of the composition of a piece of music. Seven persons are available for this work; they are Rohit, Tanya, Shobha, Kaushal, Kunal, Mukesh and Jaswant. Rohit and Tanya will not work together. Kunal and Shobha will not work together. Mukesh and Kunal want to work together.

Which of the following is the most acceptable group of the people that can be selected by the music director?

- (a) Rohit, Shobha, Kunal and Kaushal
(b) Tanya, Kaushal, Shobha and Rohit
(c) Tanya, Mukesh, Kunal and Jaswant
(d) Shobha, Tanya, Rohit and Mukesh

[UPSC 2013]

Ans. (c)

3 conditions are given

Rohit and Tanya will not work together

Kunal and Shobha will not work together

Mukesh and Kunal want to work together.

The correct option satisfying these 3 conditions is C

Q.7 *A, B, C, D* and *E* belong to five different cities *P, Q, R, S* and *T* (not necessarily in that order). Each one of them comes from a different city. Further it is given that:

1. *B* and *C* do not belong to *Q*
2. *B* and *E* do not belong to *P* and *R*
3. *A* and *C* do not belong to *R, S* and *T*
4. *D* and *E* do not belong to *Q* and *T*

Which one of the following statement is not correct?

- (a) *C* belongs to *P* (b) *D* belongs to *R*
(c) *A* belongs to *Q* (d) *B* belongs to *S*

[UPSC 2013]

Ans. (d)

From the information:

Name	City
<i>A</i>	
<i>B</i>	
<i>C</i>	
<i>D</i>	
<i>E</i>	

Information 1 -*B* and *C* do not belong to *Q*

Information 3- *A* and *C* do not belong to *R, S* and *T*

So only one city left for *C*. *A* does not belong to *R, S* and *T* and *P*. So, *A* belongs to *Q*.

Name	City
<i>A</i>	<i>Q</i>
<i>B</i>	-
<i>C</i>	<i>P</i>
<i>D</i>	-
<i>E</i>	-

Information 2 -*B* and *E* do not belong to *P* and *R*

Information 4 -*D* and *E* do not belong to *Q* and *T*

Name	City
<i>A</i>	<i>Q</i>
<i>B</i>	<i>T</i>
<i>C</i>	<i>P</i>
<i>D</i>	<i>R</i>
<i>E</i>	<i>S</i>

Q.8 Seven men *A, B, C, D, E, F* and *G* are standing in a queue in that order. Each one is wearing a cap of different colour like violet, indigo, blue, green, yellow, orange and red. *D* is able to see in front of him green and blue, but not violet. *E* can see violet and yellow but not red. *G* can see caps of all colours other than orange. If *E* is wearing an indigo

coloured cap, then the colour of cap worn by *F* is

- (a) Blue (b) Violet
(c) Red (d) Orange

[UPSC 2013]

Ans. (c)

From the information given following are the possible combination of the person and cap colour.

- *A* - green/blue/yellow
- *B* - green/blue/yellow
- *C* - green/blue/yellow
- *D* - violet
- *E* - indigo
- *F* - red
- *G* - orange

Q.9 There are seven persons up on a ladder, *A, B, C, D, E, F* and *G* (not in that order). *A* is further up than *E* but is lower than *C*. *B* is in the middle. *G* is between *A* and *B*. *E* is between *B* and *F*. If *F* is between *E* and *D*, the person on the bottom step of the ladder will be

- (a) *B* (b) *F*
(c) *D* (d) *E* [UPSC 2013]

Ans. (c)

From the given information we can make the following diagram with the persons on ladder steps.

<i>C</i>
<i>A</i>
<i>G</i>
<i>B</i>
<i>E</i>
<i>F</i>
<i>D</i>

From this figure we can see that *D* is on the bottom step.

Q.10 Examine the following statements :

George attends Music Classes on Monday.
He attends Mathematics classes on Wednesday.
His Literature classes are not on Friday.
He attends History classes on the day following the day of his Mathematics classes.
On Tuesday, he attends his Sports classes.
If he attends just one subject in a day and his Sunday is free, then he is also free on

- (a) Monday (b) Thursday
(c) Saturday (d) Friday

[UPSC 2014]

Ans. (d)

We can make the following table from the above given information.

Monday	Music
Tuesday	Sports
Wednesday	Mathematics
Thursday	History
Friday	
Saturday	Literature

Therefore the free day is Friday.

- Q.11** Four children are sitting in a row. A is occupying the seat next to B but not next to C. If C is not sitting next to D, who is/are occupying seat/seats adjacent to D?

- (a) B (b) A
(c) B and A (d) Impossible to tell

[UPSC 2014]

Ans. (b)

For the above question, 2 seating arrangements are possible

D	A	B	C
---	---	---	---

C	B	A	D
---	---	---	---

In both the arrangements we can see that A is sitting adjacent to D.

- Q.12** In a box of marbles, there are three less white marbles than the red ones and five more white marbles than the green ones. If there are a total of 10 white marbles, how many marbles are there in the box?

- (a) 26 (b) 28
(c) 32 (d) 36

[UPSC 2015]

Ans. (b)

Suppose there are x white marbles

Then red marbles = $x + 3$

Green marbles = $x - 5$

So total marbles = $3x - 2$

If $x = 10$, then total marbles 28

- Q.13** 2015 In a group of persons travelling in a bus, 6 persons can speak Tamil, 15 can speak Hindi and 6 can speak Gujarati. In that group none can speak any other language. If 2 persons in the group can speak two languages only and one person can speak all the three languages, then how many persons are there in the group?

- (a) 21 (b) 22
(c) 23 (d) 24

[UPSC 2015]

Ans. (c)

Assume that two persons who can speak two languages speak hindi and gujarati

Number of persons who speak only hindi
= $15 - 1 - 2 = 12$

Number of persons who speak only Gujarati
= $6 - 1 - 2 = 3$

Number of persons who speak only Tamil
= $6 - 1 = 5$

Total number of persons who can speak only one language
= $12 + 3 + 5 = 20$

Total number of persons who speak two languages only = 2

Total number of persons who speak two languages only = 1

Total number of persons in the bus
= $20 + 2 + 1 = 23$

- Q.14** The letters L, M, N, O, P, Q, R, S and T in their order are substituted by nine integers 1 to 9 but not in that order. 4 is assigned to P. The difference between P and T is 5. The difference between N and T is 3. What is the integer assigned to N?

- (a) 7 (b) 5
(c) 4 (d) 6 [UPSC 2016]

Ans. (d)

As P is 4 and the difference between P and T is 5,

So, $T = 4 + 5 = 9$

And $N = 9 - 3 = 6$

Directions (Q.15-Q.17): Consider the given formation and answer the three items that follow.

Six boxes A, B, C, D, E and F have been painted with six different colours viz., violet, indigo, blue, green, yellow and orange and arranged from left to right (not necessarily either kept or painted with the colours in the same order). Each box contains a ball of any one of the following six games: cricket, hockey, tennis, golf, football and volleyball (not necessarily in the same order). The golf ball is in violet box and is not in the box D. The box A which contains tennis ball is orange in colour and is at the extreme right. The hockey ball is neither in box D nor in box E. The box C having cricket

ball is painted green. The hockey ball is neither in the box painted blue nor in the box painted yellow. The box C is fifth from right and next to box B. The box B contains volleyball. The box containing the hockey ball is between the boxes containing golf ball and volleyball.

Q.15 Which one of the following boxes contains the golf ball?

- (a) F (b) E
(c) D (d) None of the above

[UPSC 2016]

Ans. (b)

Q.16 Which of the following statements is/are correct?

- (a) D is painted yellow (b) F is painted indigo
(c) B is painted blue (d) All of the above

[UPSC 2016]

Ans. (b)

Q.17 The football is in the box of which colour?

- (a) Yellow
(b) Indigo
(c) Cannot be determined as data are inadequate
(d) Blue

[UPSC 2016]

Ans. (c)

For solving these types of questions we need to deconstruct the whole information given in then question. Let's go sentence by sentence while making the figure or chart and subsequently update it along with next information.

Information 1: The golf ball is in violet box and is not in the box D.

Box	Colour	Game
Not D	Violet	Golf

Information 2: The box A which contains tennis ball is orange in colour and is at the extreme right.

Box	Colour	Game
Not D	Violet	Golf
A	Orange	Tennis

Information 3: The hockey ball is neither in box D nor in box E.

Box	Colour	Game
Not D	Violet	Golf
A	Orange	Tennis
Not D & E	No Data	Hockey

Information 4: The box C having cricket ball is painted green.

Box	Colour	Game
Not D	Violet	Golf
A	Orange	Tennis
Not D & E		Hockey
C	Green	Cricket

Information 5: The hockey ball is neither in the box painted blue nor in the box painted yellow.

Box	Colour	Game
Not D	Violet	Golf
A	Orange	Tennis
Not D & E	Not Blue & Yellow	Hockey
C	Green	Cricket

Information 6: The box C is fifth from right and next to box B. The box B contains volleyball.

Box	Colour	Game
Not D	Violet	Golf
A	Orange	Tennis
Not D & E	Not Blue & Yellow	Hockey
C	Green	Cricket
B	No Data	Volleyball

Now, the box containing hockey ball is neither D nor E. So, it should be Box F. In that case, the violet coloured box containing Golf Ball becomes Box E and finally, Box D will contain Football.

Box	Colour	Game
E(Not D)	Violet	Golf
A	Orange	Tennis
F(Not D & E)	Not Blue & Yellow	Hockey
C	Green	Cricket
B	No Data	Volleyball
D	No Data	Football

Also, Positioning of Boxes will be _ _ _

Box A is at the extreme right while box C is fifth from right and next to box B.

_ C B _ _ A

Information 7: The box containing the hockey ball is between the boxes containing golf ball and volleyball.

As the box containing hockey ball is Box F and Box E contains Golf ball. So, positioning of Boxes will be _ _ _

_ C B F E A

Finally, D C B F E A

Now we can easily solve the questions.

Q.18 Consider the following:

A, B, C, D, E, F, G and H are standing in a row facing North.

B is not neighbour of G.

F is to the immediate right of G and neighbour of E.

G is not at the extreme end.

A is sixth to the left of E.

H is sixth to the right of C.

Which one of the following is correct in respect of the above?

- C is to the immediate left of A.
- D is immediate neighbour of B and F.
- G is to the immediate right of D.
- A and E are at the extreme ends.

[UPSC 2016]

Ans. (c)

For solving these types of questions we need to deconstruct the whole information given in then question. Let's go sentence by sentence while making the figure or chart and subsequently update it along with next information.

Information 1: B is not neighbour of G. F is to the immediate right of G and neighbour of E.

Not B G F E

Information 2: G is not at the extreme end. A is sixth to the left of E.

A _ _ Not B G F E _

Information 3: H is sixth to the right of C.

Now, for this to be true, H can only be at the extreme right with C at the second position.

A C _ Not B G F E H

This means that D is at the immediate left of G and B is at the immediate right of C.

A C B D G F E H

From this we can see that, G is to the immediate right of D.

Q.19 Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs.

- C is seated next to A
- A is seated two seats from D
- B is not seated next to A

On the basis of above information, which of the following must be true?

- D is seated next to B
- E is seated next to A
- D and C are separated by two seats

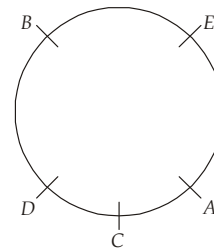
Select the correct answer using the code given below:

- 1 only
- 1 and 2 only
- 3 only
- Neither 1 nor 2 nor 3

[UPSC 2016]

Ans. (b)

From the information a round table can be constructed.



So, from the given figure the correct answer is b.

Directions (Q.20-Q.22): Consider the given information and answer the three items that follow.

When three friends A, B and C met, it was found that each of them wore an outer garment of a different colour. In random order, the garments are: jacket, sweater and tie; and the colours are: blue, white and black. Their surnames in random order Kumar and Singh.

Further, we know that :

- Neither B nor Ribeiro wore a white sweater
- C wore a tie
- Singh's garment was not white
- Kumar does not wear a jacket
- Ribeiro does not like to wear the black colour
- Each of the friends wore only one outer garment of only one colour

Q.20 What is C's surname?

- Riberio
- Kumar
- Singh
- Cannot be determined

[UPSC 2016]

Ans. (a)

Q.21 What is the colour of the tie ?

- (a) Black (b) Blue
(c) White (d) Cannot be determined

[UPSC 2016]

Ans. (b)

Q.22 Who wore the sweater ?

- (a) A (b) B
(c) C (d) Cannot be determined

[UPSC 2016]

Ans. (a)

From the given information following table could be made.

Information 1: neither *B* nor Ribeiro wore a white sweater.

Information 2: *C* wore a tie.

Name	Sur-name	Garment	Colour
A		Sweater	White
B			
C	Ribeiro	Tie	

Information 3: Singh's garment was not white

Information 4: Kumar does not wear a jacket

Information 5: Ribeiro does not like to wear the black colour

Name	Sur-name	Garment	Colour
A	Kumar	Sweater	White
B	Singh		
C	Ribeiro	Tie	Blue

Information 6: Each of the friends wore only one outer garment of only one colour

Name	Sur-name	Garment	Colour
A	Kumar	Sweater	White
B	Singh	Jacket	Black
C	Ribeiro	Tie	Blue

From the above table we can solve the Questions.

Directions (Q.23-Q.26): consider the given information and answer the four items that follow.

A, B, C, D, E, F and *G* are Lecturers from different cities- Hyderabad, Delhi, Shillong, Kanpur, Chennai, Mumbai and Srinagar (not necessarily in the same order) who participated in a conference. Each one of them is specialized in a different subject, viz., Economics,

Commerce, History, Sociology, Geography, Mathematics and Statistics (not necessarily in the same order). Further Lecturer from Kanpur is specialized in Geography. Lecturer *D* is from Shillong. Lecturer *C* from Delhi is specialized in Sociology. Lecturer *B* is specialized in neither History nor Mathematics. Lecturer *A* who is specialized in Economics does not belong to Hyderabad. Lecturer *F* who is specialized in Commerce belongs to Srinagar. Lecturer *G* who is specialized in Statistics belongs to Chennai

[UPSC 2017]

Q.23 Who is specialized in Geography?

- (a) *B* (b) *D*
(c) *E*
(d) Cannot be determined as data are inadequate

[UPSC 2017]

Ans. (a)

Q.24 To which city does the Lecturer specialized in Economics belong?

- (a) Hyderabad
(b) Mumbai
(c) Neither Hyderabad nor Mumbai
(d) Cannot be determined as data are inadequate

[UPSC 2017]

Ans. (b)

Q.25 Who of the following belongs to Hyderabad?

- (a) *B* (b) *E*
(c) Neither *B* nor *E*
(d) Cannot be determined as data are inadequate

[UPSC 2017]

Ans. (b)

Q.26 In which subjects does *E* specializes?

- (a) History
(b) Commerce
(c) Mathematics
(d) Cannot be determined as data are inadequate

[UPSC 2017]

Ans. (d)

In this type of question where three variables are given (person, city and subject), we cannot directly make the chart as we did in the last question. Here we will try to deconstruct the information in the match the following type manner

Information 1: Lecturer from Kanpur is specialized in Geography

A	Hyd	Eco
B	Dech.	Comm
C	Shi	His
D	Kan	Socio
E	Che	Geo
F	Mum	Math
G	Sri	Statistics

Information 2: Lecturer D is from Shillong.

We will just update the figure with this information.

A	Hyd	Eco
B	Dech.	Comm
C	Shi	His
D	Kan	Socio
E	Che	Geo
F	Mum	Math
G	Sri	Statistics

Information 3: Lecturer C from Delhi is specialized in Sociology.

A	Hyd	Eco
B	Dech.	Comm
C	Shi	His
D	Kan	Socio
E	Che	Geo
F	Mum	Math
G	Sri	Statistics

Information 4: Lecturer B is specialized in neither History nor Mathematics.

Just write this information in rough and remember it.

$B = X \text{ history, } X \text{ Mathematics}$

X implies that not

Information 5: Lecturer A who is specialized in Economics does not belong to Hyderabad.

$A = X \text{ Hyderabad}$

Simultaneously we can update the figure

A	→ Hyd	Eco
B	Del.	Comm
C	Shi	His
D	Kan	Socio
E	Che	Geo
F	Mum	Math
G	Sri	Statistics

Information 6: Lecturer F who is specialized in Commerce belongs to Srinagar.

Update the figure

A	→ Hyd	Eco
B	Del	Comm
C	Shi	His
D	Kan	Socio
E	Che	Geo
F	Mum	Math
G	Sri	Statistics

Information 7: Lecturer G who is specialized in Statistics belongs to Chennai

Update the figure

A	→ Hyd	Eco
B	Del	Comm
C	Shi	His
D	Kan	Socio
E	Che	Geo
F	Mum	Math
G	Sri	Statistics

Now using the above information we will try to fill the gaps in the figure.

For A it is given in information 4 that he does not belong to Hyderabad. This leaves us with two places- Mumbai and Kanpur. It is also given that he specializes in economics. This leaves us with one option only- Mumbai, because person who specializes in geography lives in Kanpur.

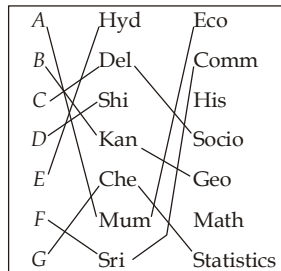
We can now update the figure

A	Hyd	Eco
B	Del	Comm
C	Shi	His
D	Kan	Socio
E	Che	Geo
F	Mum	Math
G	Sri	Statistics

Now from information 4, B is neither specialized in history nor in Mathematics. This leaves us with only one option that B is specialized in geography. As the person who is specialized in the geography is from Kanpur, this means that B is also from Kanpur.

The only place remained is Hyderabad and the only person remaining is E. Therefore E is from Hyderabad.

Updating the figure,



Directions (Q.27-Q.31): Consider the given information and answer the five items that follow.

There are five persons in a group - *P*, *Q*, *R*, *S* and *T*. The group has one doctor, one lawyer and one artist. *P* and *S* are unmarried students. *T* is a man married to one of the group members. *Q* is the brother of *P* and is neither doctor nor artist. *R* is not doctor.

Q.27 Who is the doctor?

- (a) *T* (b) *P*
(c) *Q* (d) *R* [UPSC 2017]

Ans. (a)

Q.28 Who is the artist?

- (a) *P* (b) *Q*
(c) *R* (d) *T* [UPSC 2017]

Ans. (c)

Q.29 Who is the spouse of *R*?

- (a) *P* (b) *T*
(c) *Q* (d) *S* [UPSC 2017]

Ans. (b)

Q.30 Who is the lawyer?

- (a) *P* (b) *Q*
(c) *R* (d) *S*
[UPSC 2017]

Ans. (b)

Q.31 Who of the following is definitely a man?

- (a) *P* (b) *S*
(c) *Q* (d) None of the above
[UPSC 2017]

Ans. (c)

Again we will deconstruct the information given in the question and try to make a table.

Information 1: The group has one doctor, one lawyer and one artist.

Information 2: *P* and *S* are unmarried students. We will construct a table and will keep updating it.

Name	Sex	Occupation	Marital status
<i>P</i>		Student	Unmarried
<i>Q</i>			
<i>R</i>			
<i>S</i>		Student	Unmarried
<i>T</i>			

Information 3: *T* is a man married to one of the group members.

Name	Sex	Occupation	Marital status
<i>P</i>		Student	Unmarried
<i>Q</i>			
<i>R</i>			
<i>S</i>		Student	Unmarried
<i>T</i>	Man		Married in the group

Information 4: *Q* is the brother of *P* and is neither doctor nor artist.

As *Q* is brother of *P*, this means that *Q* is man.

Also as *Q* is neither doctor nor artist, only occupation left for him is lawyer.

Name	Sex	Occupation	Marital status
<i>P</i>		Student	Unmarried
<i>Q</i>	Man	Lawyer	
<i>R</i>			
<i>S</i>		Student	Unmarried
<i>T</i>	Man		Married in the group

Information 5: *R* is not doctor.

If *R* is not a doctor, only profession left for him is artist. Therefore, the doctor must be *T*.

Name	Sex	Occupation	Marital status
<i>P</i>		Student	Unmarried
<i>Q</i>	Man	Lawyer	
<i>R</i>		Artist	
<i>S</i>		Student	Unmarried
<i>T</i>	Man	Doctor	Married in the group

All the questions can be answered from this table.

In Q.29 spouse of *R* is *T* because it is given in information 3 that *T* is married to one of the group members.

Q.32 There are three pillars X, Y and Z of different heights. Three spiders A, B and C start to climb on these pillars simultaneously. In one chance, A climbs on X by 6 cm but slips down 1 cm. B climbs on Y by 7 cm but slips down 3 cm. C climbs on Z by 6.5 cm but slips down 2 cm. If each of them requires 40 chances to reach the top of the pillars, what is the height of the shortest pillar?

- (a) 161 cm (b) 163 cm
(c) 182 cm (d) 210 cm

[UPSC 2017]

Ans. (b)

In one chance, the effective height climbed by each one of them is:

A - 5 cm

B - 4 cm

C - 4.5 cm

So, in 39 chances, total height climbed by them will be

A - 195 cm

B - 156 cm

C - 175.5 cm

In the last chance, they will reach the top of their respective pillars without slipping down. As a result,

The total height of their pillars will be -

A - $195 + 6 = 201$ cm

B - $156 + 7 = 163$ cm

C - $175.5 + 6.5 = 182$ cm

So, the shortest pillar is 163 cm high.

Q.33 In a group of six women, there are four tennis players, four postgraduates in Sociology, one postgraduate in Commerce and three bank employees. Vimala and Kamla are the bank employees while Amala and Komala are unemployed. Komala and Nirmala are among the tennis players. Amala, Kamla, Komala and Nirmala are postgraduates in Sociology of whom two are bank employees. If Shyamala is a postgraduate in Commerce, who among the following is both a tennis player and a bank employee?

- (a) Amala (b) Komala
(c) Nirmala (d) Shyamala

[UPSC 2017]

Ans. (c)

For solving these types of questions we need to deconstruct the whole information given in then question. Let's go sentence by sentence while making the figure or chart and subsequently update it along with next information.

Sr. No	Information	Comment	Vimala	Kamla	Amala	Komala	Komala	Shyamal
Information 1	Vimala and Kamla are the bank employees		Bank	Bank				
Information 2	Amala and Komala are unemployed		Bank	Bank	Unemployed	Unemployed		
Information 3	Komala and Nirmala are among the tennis players		Bank	Bank	Unemployed	Unemployed Tennis Player		
Information 4	Amala, Kamla, Komala and Nirmala are postgraduates in Sociology of whom two are bank employees.	Since Amala and Komala are unemployed, this means Nirmala is also a bank employees	Bank	Bank Sociology	Unemployed Sociology	Unemployed Tennis Player Sociology	Bank Sociology	
Information 5	Shyamala is a postgraduate in Commerce		Bank	Bank Sociology	Unemployed Sociology	Unemployed Tennis Player Sociology	Bank Sociology	Commerce

So, from this we get that Amala, Komala and Shyamala are not bank employees.

Directions for the following 2 (two items):

Read the following information and answer the two items that follow:

The plan of an office block for six officers A, B, C, D, E and F is as follows : Both B and C occupy office to the right of the corridor (a one enters the office block) and A occupies on the left of the corridor. E and F occupy office on opposite sides of the corridor but their offices do not face each other. The offices of C and D face each other. E does not have a corner office. F's office is further down the corridor than A's, but on the same side.

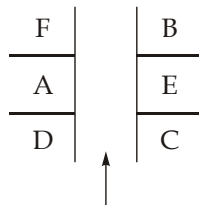
Q.34 If E sits in his office and faces the corridor, whose office is to his left?

- (a) A (b) B
(c) C (d) D

[UPSC 2018]

Ans. (c)

Final plan



Q.35 Who is/are F's immediate neighbour/neighbours?

- (a) A only (b) A and D
(c) C only (d) B and C

[UPSC 2018]

Ans. (a)

Directions for the following 6 (six) items:

Read the information given below and answer the six items that follow.

A, B, C and D are students. They are studying in four different cities, viz., P, Q, R and S (not necessarily in that order). They are studying in Science college, Arts college, Commerce college and Engineering college (not necessarily in that order), which are situated in four different States, viz., Gujarat, Rajasthan, Assam and Kerala (not necessarily in that order). Further, it is given that —

- (i) D is studying in Assam
- (ii) Arts college is located in city S which is in Rajasthan
- (iii) A is studying in Commerce college
- (iv) B is studying in city Q
- (v) Science college is located in Kerala

Q.36 A is studying in

- (a) Rajasthan (b) Gujarat
(c) city Q (d) Kerala

[UPSC-2018]

Ans. (a)

The correct pairing is

City

- A → P → Commerce → Gujarat
B → Q → Since → Kerala
C → S → Arts → Rajasthan
D → R → Engineering → Assam

Q.37 Science college is located in

- (a) city Q (b) city S
(c) city R (d) city P

[UPSC-2018]

Ans. (a)

The correct pairing is

City

- A → P → Commerce → Gujarat
B → Q → Science → Kerala
C → S → Arts → Rajasthan
D → R → Engineering → Assam

Q.38 C is studying in

- (a) Science college (b) Rajasthan
(c) Gujarat (d) city Q

[UPSC-2018]

Ans. (b)

The correct pairing is

City

- A → P → Commerce → Gujarat
B → Q → Since → Kerala
C → S → Arts → Rajasthan
D → R → Engineering → Assam

Q.39 Which one of the following statements is correct?

- (a) D is not studying in city S.
(b) A is studying in Science college.
(c) A is studying in Kerala.
(d) Engineering college is located in Gujarat.

[UPSC-2018]

Ans. (a)

The correct pairing is

City

- A → P → Commerce → Gujarat
B → Q → Since → Kerala
C → S → Arts → Rajasthan
D → R → Engineering → Assam

Q.40 Which one of the following statements is correct regarding Engineering college?

- (a) C is studying there.
(b) B is studying there.
(c) It is located in Gujarat.
(d) D is studying there.

[UPSC-2018]

Ans. (d)

The correct pairing is

City

- A → P → Commerce → Gujarat

B → Q → Since → Kerala
 C → S → Arts → Rajasthan
 D → R → Engineering → Assam

Q.41 Which one of the following statements is correct?

- (a) Engineering college is located in Assam.
- (b) City Q is situated in Assam.
- (c) C is studying in Kerala
- (d) B is studying in Gujarat.

[UPSC-2018]

Ans. (a)

The correct pairing is

City

A → P → Commerce → Gujarat
 B → Q → Since → Kerala
 C → S → Arts → Rajasthan
 D → R → Engineering → Assam

Q.42 A five-storeyed building with floors from I to V is painted using four different colours and only one colour is used to paint a floor.

Consider the following statements:

1. The middle three floors are painted in different colours.
2. The second (II) and the fourth (IV) floors are painted in different colours.
3. The first (I) and the fifth (V) floors are painted red.

To ensure that any two consecutive floors have different colours

- (a) Only statement 2 is sufficient
- (b) Only statement 3 is sufficient
- (c) Statement 1 is not sufficient, but statement 1 along with statement 2 is sufficient
- (d) Statement 3 is not sufficient, but statement 3 along with statement 2 is sufficient

[UPSC 2019]

Ans. (b)

Statement 2 – floor 1 and 2 or 2 and 3 can be of same colour. So, statement 2 is insufficient

Statement 1 – floor 1 and 2 or 4 and 5 can be of same colour. So, statement 1 is insufficient

Statement 3 – floor 1 and 5 are red so floor 2,3,4 are different colours. So, statement 3 is alone sufficient

Hence (b)

Directions for the following 3 (three) items:

Read the following information and answer the three items that follow:

Six students A, B, C, D, E and F appeared in several tests. Either C or F scores the highest. Whenever C scores the highest, then E scores the least. Whenever F scores the highest, B scores the least. In all the tests they got different marks; D scores higher than A, but they are close competitors; A scores higher than B; C scores higher than A.

Q.43 If F stands second in the ranking, then the position of B is

- (a) Third
- (b) Fourth
- (c) Fifth
- (d) Sixth

[UPSC 2019]

Ans. (c)

D > A

A > B

C > A

F is 2nd highest so C will be highest and E lowest

Sequence will be : C F D A B E

Hence (c)

Q.44 If B scores the least, the rank of C will be

- (a) Second
- (b) Third
- (c) Fourth
- (d) Second or third

[UPSC 2019]

Ans. (d)

D > A

A > B

C > A

If B is lowest, F is highest

Therefore, C can be 2nd or 3rd

Hence (d)

Q.45 If E is ranked third, then which one of the following is correct?

- (a) E gets more marks than C
- (b) C gets more marks than E
- (c) A is ranked fourth
- (d) D is ranked fifth

[UPSC 2019]

Ans. (b)

D > A

A > B

C > A

If E is 3rd, F must be 1st and B last

F _ E _ _ B

So, C can be 2nd or 3rd

Since E is 3rd, C is 2nd

Hence (b)

Q.46 Consider two Statements and a Question:

Statement-1: Each of A and D is heavier than each of B, E and F, but none of them is the heaviest.

Statement-2: A is heavier than D, but is lighter than C.

Question: Who is the heaviest among A, B, C, D and E?

Which one of the following is correct in respect of the Statements and the Question?

- (a) Statement-1 alone is sufficient to answer the Question
- (b) Statement-2 alone is sufficient to answer the Question
- (c) Both Statement-1 and Statement-2 are required to answer the Question
- (d) Neither Statement-1 alone nor Statement-2 alone is sufficient to answer the Question

[UPSC 2021]

Ans. (a)

Statement 1 - A & D > B, E & F

As none of them is the heaviest, we can conclude that C must be the heaviest.

So, statement 1 alone is sufficient.

Statement 2 - C > A > D

Statement 2 alone cannot determine the heaviest item.

Q.47 Seven books P, Q, R, S, T, U and V are placed side by side. R, Q and T have blue covers and other books have red covers. Only S and U are new books and the rest are old. P, R and S are law reports; the rest are Gazetteers. Books of old Gazetteers with blue covers are

- (a) Q and R
- (b) Q and U
- (c) Q and T
- (d) T and U

[UPSC 2021]

Ans. (c)

The above data is given in table as:

	P	Q	R	S	T	U	V
Colour	Red	Blue	Blue	Red	Blue	Red	Red
Old/New	Old	Old	Old	New	Old	New	Old
Law/gazetters	L	G	L	L	G	G	G

Old gazetters with blue cover – Q and T

Q.48 Eight students A, B, C, D, E, F, G and H sit around a circular table, equidistant from each other, facing

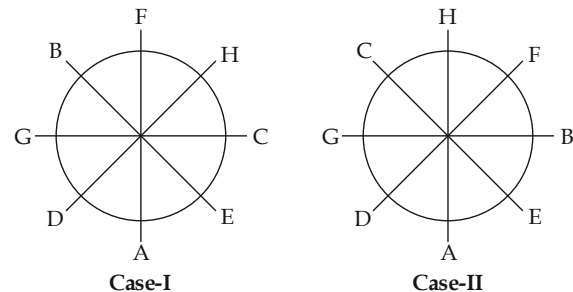
the centre of the table, not necessarily in the same order. B and D sit neither adjacent to C nor opposite to C. A sits in between E and D. and sits in between B and H. Which one of the following is definitely correct?

- (a) B sits in between A and G
- (b) C sits opposite to G
- (c) E sits opposite to F
- (d) None of the above

[UPSC 2022]

Ans. (d)

There are two possible cases as shown below, none of which is correct



PRACTICE SET : QUESTIONS

Directions (Q.1-Q.3): Read the following passage and answer the three items that follow:

Five professors A, B, C, D, E lives on 5 different floors of a building. Each floor is numbered from 0 (ground floor) to 4th floor. Each professor teaches one of the subjects from Physics, Chemistry, Mathematics, Hindi and English. The Mathematics professor lives on the top floor. E lives on 3rd floor and teaches Hindi. C lives on floor immediate above B and he does not teach Mathematics, English and physics. D teaches English and lives after a gap of one floor below A.

Q.1 What Subject does B teaches?

- (a) Physics
- (b) Chemistry
- (c) Mathematics
- (d) Hindi

Q.2 Who lives on the top floor?

- (a) A
- (b) B
- (c) C
- (d) D

Q.3 Who lives just below D?

- (a) A
- (b) C
- (c) B
- (d) A