

Table of Contents

<i>Logical Reasoning Handout</i>	3
<i>Logical Reasoning Handout Homework</i>	9
<i>Data Interpretation</i>	15
1) <i>The Bar Chart</i>	15
2) <i>The Line Chart</i>	16
3) <i>The Pie Chart</i>	18
<i>Data Interpretation Solution:</i>	35
<i>Logical Reasoning</i>	48
01) <i>Alphabet Test</i>	48
02 <i>Coding And Decoding:</i>	50
03 <i>Blood Relation</i>	53
04 <i>Number Series</i>	56
05 <i>Letter Series</i>	58
06 <i>Clock & Calendar:</i>	59
07 <i>Ranking</i>	61
08 <i>Direction Sense Test</i>	64
09 <i>Eligibility Test</i>	68
10 <i>Seating Arrangement</i>	70
11 <i>Syllogism</i>	73
12 <i>Venn Diagram</i>	76
13 <i>Puzzle</i>	78
14 <i>Inference</i>	82
15 <i>Cause & Effect</i>	84
16 <i>Coded Inequalities</i>	86
17 <i>Input-Output</i>	88
18 <i>Statement And Assumptions</i>	92
19 <i>Course Of Action</i>	94
20 <i>Arguments</i>	98
21 NON VERBAL REASONING	101
<i>Logical reasoning Solutions:</i>	105
01) <i>Alphabet Test</i>	105
02 <i>Coding And Decoding:</i>	106
03 <i>Blood Relation</i>	107
04 <i>Number Series</i>	109
05 <i>Letter Series</i>	110
06 <i>Clock :</i>	112

07 Ranking.....	113
08 Direction Sense Test.....	114
09 Eligibility Test	117
10 Sitting Arrangement	118
11 Syllogism	119
12 Venn Diagram	121
13 Puzzle	122
14 Inference.....	122
15 Cause & Effect	123
16 Coded Inequalities.....	124
17 Input Output	125
18 Statement And Assumptions	127
19 Course Of Action.....	128
20 Arguments.....	130
21 Non Verbal Reasoning	131
Logical Reasoning Handout Homework- Solution	133

Logical Reasoning Handout

Data Sufficiency

Directions for questions

Each problem contain a question and two statements 1 and 2 giving certain data. You have to select the correct answer from options 'a' to 'e' depending on the sufficiency of the data given in the statements to answer the question. Mark your answer as.

- a) If statement 1 alone is sufficient to answer the question but not 2 alone.
- b) If statement 2 alone is sufficient to answer the question but not 1 alone.
- c) If each statement alone is sufficient to answer the question.
- d) Both statements together are required to answer the question but not 1 and 2 alone
- e) If 1 and 2 together are not sufficient to answer the question and additional data is required.

Quant Data Sufficiency

1) Will the sum becomes eight times of itself within fifteen years?

- i) The sum becomes twice of itself in two years.
- ii) The type of interest is compound interest, compounded annually.

2) Mr. Bipin divided his property among Vineeth, Vipin, and Vikram. Who got the least share of property?

- i) Vineeth's share is Rs.80000 more than of Vipin.
- ii) Vipin's share is Rs. 50000 less than that of Vikram

3) Is 500 the average (Arithmetic mean) score on the GMAT?

- i) Half of the people who take GMAT score above 500 and half of the people score below 500.
- ii) The highest GMAT score is 800 and the lowest score is 200.

4) What is the area of the rectangle?

- i) When the length is increase by 20% and the breadth is decrease by 10% then the area increases by 8%.
- ii) The length of rectangle is 14 cm.

5) Which of the two trains, A or B is faster?

- i) The ratio of the time taken by the trains A and B in crossing a platform is 5:6
- ii) The length of the trains A and B are in the ratio of 7:6

6) Is $x=y$?

- i) $(x+y)\left(\frac{1}{x} + \frac{1}{y}\right) = 4$
- ii) $(x-50)^2 = (y-50)^2$

7) What are the values of M and N?

- i) N is an even positive integer, M is an odd positive integer and M is greater than N.
- ii) Product of M and N is 30.

8) One side of a rectangle is 9 cm. Find the area of the rectangle?

- i) One side is square of the another side.
- ii) Length of rectangle is 9 cm.

9) Distance between point A and B is 9 cm and point B and C is 5 cm. What is the Distance between point A and C?

- i) Point A, B and C are collinear.
- ii) Point A, B and C are non-collinear.

10) Is $x^3 > x^2$?

- i) $x > 0$
- ii) $x < 1$

LR Data Sufficiency

1) Is X is a leap year?

- i) Four years after X there is a leap year.
- ii) Four years before X there is a leap year

2) K, L, M, N and P are standing in a queue. Who stand exactly in the middle or the queue?

- i) M and N stand between L and P.
- ii) N stand just behind K

3) A, B, C, D and E live in an apartment (ground floor is named as first floor, the floor above ground floor is named as second floor and so on). On which floor does E live? (Note: Only one person is living on one floor)

- i) D lives on the bottom floor. C does not live on the top floor.
- ii) The number of floors above B's floor is equal to the number of floors below A's floor.

4) K, L, M, N, O and P are sitting around circular table facing towards centre and all person are sitting equidistance, Who sits second to the left of O?

- i) L and P are sitting opposite to each other. N is two places away from M.
- ii) M and L are immediate neighbours.

5) What is the code for 'or' in the code language?

- i) 'nik sa te' means 'right or wrong', 'ro da nik' means 'he is right' and 'fe te ro' means 'that is wrong'.
- ii) 'pa nik la' means 'that right man', 'sa ne pa' means 'this or that' and 'ne ka re' means 'tell this there'.

6) Madan is elder than Kamal and Sharad is younger than Arvind. Who among them is the youngest?

- i) Sharad is younger than Madan.
- ii) Arvind is younger than Kamal.

7) On which date in August was Kapil born?

- i) Kapil's mother remembers that Kapil was born before nineteenth but after fifteenth.
- ii) Kapil's brother remembers that Kapil was born before seventeenth but after twelfth.

8) Amol is in which direction if Amit?

- i) Amol is to the north of Vikas, Vikas is to the west of Naman and Naman is to the south of Amit
- ii) Distance between Amol and Vikas, Vikas and Naman and Naman and Amit is same.

9) How many persons are there in the row if Ram is 10th from the left and shyam is 6th from the right?

- (Note : All the persons in the row are facing toward north)
- i) In between Ram and Shyam 10 persons are there.

- ii) In between Ram and Shyam 3 persons are there.
- 10) How is A related to B?
- i) B is A's father's only brother's wife.
- ii) B is the wife of X who is brother of Y who is father of A.

Puzzles

Directions for Questions 1 to 5

Study the following information and answer the questions given below.

A, B, C, D, E, F, G and H are eight students of a school. They study in Std VI, VII and VIII with not more than three in any Std. Each of them has a favourite subject from Physics, Geography, English, Marathi, Mathematics, Chemistry, Biology and Economics not necessarily in the same order.

D likes Chemistry and studies in Std VIII with only H. B does not study in Std VII. E and A study in the same Std but not with B. C and F study in the same Std. Those who study in Std VI do not like Mathematics or Biology. F likes Physics. The one who studies in Std VIII likes English. C does not like Geography. A's favourite subject is Marathi and G does not like Biology.

1) Which subject does H like?

- a) English b) Marathi c) Science
d) Data inadequate e) None of these

2) What is G's favourite subject?

- a) Biology b) Physics c) Marathi
d) Data inadequate e) None of these

3) What is C's favourite subject?

- a) Economics b) Biology c) English
d) Geography e) Data inadequate

4) Which of the following combinations of student-Std Subject is correct?

- a) C-VII-Economics b) D-VI-Chemistry
c) G-VII-Physics d) B-VIII-Mathematic
e) None of these

5) Which of the following groups of students study in Std VII?

- a) EAF b) ECG c) EAG
d) Data inadequate e) None of these

Directions for Questions 6 to 10

Answer the questions on the basis of the information given below.

Seven people P, Q, R, S, T, U and V live on separate floors of a 7-floor building. Ground floor is numbered 1, first floor is numbered 2 and so on until the topmost floor are numbered 7. Each one of these is travelling to a different city, namely Delhi, Mumbai, Patna, Chennai, Kolkata, Bangalore and Lucknow but not necessarily in the same order. Only three people live above the floor on which P lives. Only one person lives between P and the one travelling to Bangalore. U lives immediately below the one travelling to Mumbai. The one travelling to Mumbai lives on an even-numbered floor. Only three people live between the ones travelling to Bangalore and Patna. T lives immediately above R. T is not travelling to Patna. Only two people live between Q and the one travelling to Kolkata. The one travelling to Kolkata lives below the floor on which Q lives. The one travelling to Delhi does not live immediately above or immediately below Q. S does not live immediately above or immediately below P. V does not travel to Chennai.

6) Which of the following is true with respect to V as per the given information?

- a) The one who lives immediately below V is travelling to Mumbai
b) V lives on floor no. 7
c) V lives immediately below T
d) V lives on the lowermost floor
e) V is travelling to Bangalore

7) Who among the following lives on floor no number 3?

- a) The one travelling to Chennai
b) The one travelling to Kolkata
c) R d) V e) T

8) Who lives on the floor immediately above T?

- a) P b) Q c) S d) V e) U

9) To which of the following cities is S travelling?

- a) Mumbai b) Bangalore c) Patna
d) Kolkata e) Chennai

10) How many people live between the floors on which S and the one travelling to Mumbai live?

- a) None b) Two c) One
d) More than three e) Three

Directions for questions 11 to 13

Answer the questions on the basis of the information given below.

Five women decided to go shopping to M.G. Road, Bangalore. They arrived at the designated meeting place in the following order: 1. Archana, 2. Chellamma, 3. Dhenuka, 4. Helen, and 5. Shahnaz. Each woman spent at least Rs. 1000. Below are some additional facts about how much they spent during their shopping spree.

i. The woman who spent Rs. 2234 arrived before the lady who spent Rs. 1193.

ii. One woman spent Rs. 1340 and she was not Dhenuka.

iii. One woman spent Rs. 1378 more than Chellamma.

iv. One woman spent Rs. 2517 and she was not Archana.

v. Helen spent more than Dhenuka.

vi. Shahnaz spent the largest amount and Chellamma the smallest.

11) What was the amount spent by Helen?

- a) Rs. 1193 b) Rs. 1340 c) Rs. 2234 d) Rs. 2517

12) Which of the following amounts was spent by one of them?

- a) Rs. 1139 b) Rs. 1378 c) Rs. 2571 d) Rs. 2718

13) The woman who spent Rs. 1193 is

- a) Archana b) Chellamma c) Dhenuka d) Helen

Directions for questions 14 to 16

Study the following information and answer the questions given below.

Five persons - A, B, C, D and E - have collected some money. After counting all the money it is found that B has more money than D, who has more money than C but less than E, who has more money than A but less than B.

14) Who has the highest amount of money?

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

15) Who among the following can have least amount of money?

- a) A b) D c) B d) None of these

16) What is the maximum possible number of persons who can have more money than A?

- a) 3 b) 4 c) 2 d) 1

Directions for questions 17 to 19

Study the following information and answer the questions given below.

Seven persons - P, Q, R, S, T, U and V - are sitting in a row not necessarily in the same order. They are sitting left to right in the decreasing order of their heights. No two among them are of equal height.

V is not the tallest but taller than R. S and V are adjacent to each other. S is taller than U, who is shorter than P, who is not the tallest. R and V are taller than Q, who is not the shortest. P and R are adjacent to each other. T is the second shortest. The one who is tallest is 180 cm. Q's height is 160 cm.

17) Which of the following could possibly be the T's height?

- a) 170 cm b) 160 cm c) 172 cm d) 159 cm

18) Which of the following is true with respect to the given information?

a) Q and U are adjacent to each other.

b) S's height is 180 cm

c) V is the shortest.

d) Q is the tallest.

19) If the shortest persons height is 14 cm less than that of Q. Which of the following can be T's height?

- a) 140 cm b) 145 cm c) 146 cm d) 149 cm

Directions for questions 20 to 22

Study the following information and answer the questions given below.

Age and experience of five people - Vinay, Palak, Sunil, Bipin and Jayesh - working for an organization are compared. The following information is known.

a) The second oldest person has the least experience and the oldest person is senior most.

b) No two people are of the same age or have the same experience.

c) The age of Vinay is more than that of Jayesh 's and the experience of Sunil is more than that of Bipin 's

d) The age of each person is more than his experience.

e) The age and experience of Bipin 's is more than age and experience of Jayesh.

f) The age of Palak is less than experience of Jayesh.

20) Who is older than exactly two other people?

- a) Sunil b) Vinay c) Bipin d) Jayesh

21) Who is the most experienced?

- a) Sunil b) Palak c) Vinay d) Bipin

22) Who is the youngest?

- a) Palak b) Vinay c) Bipin d) Jayesh

Directions for questions 23 and 24

Study the following information and answer the questions given below.

Study the following information and answer the questions given below.

X, Y and Z often eat dinner out.

1. Each orders either coffee or tea after dinner.

2. If X orders coffee, then Y orders the drink that Z orders.

3. If Y orders coffee, the X orders the drink that Z doesn't order.

4. If Z orders tea, then X orders the drink that Y orders.

23) Who do you know always orders the same drink after dinner?

- a) X b) Y c) Z d) Cannot be determine

24) In the above question which drink that is always ordered?

- a) Either Tea or Coffee b) Both Tea and Coffee

- c) Only Tea d) Only Coffee

Seating Arrangement

Directions for questions 1 to 5

Directions: Study the following information to answer the given questions:

Eight people are sitting in two parallel rows containing four people each, in such a way that there is an equal distance between adjacent persons. In row- 1, Asha, Bheem, Chelsi and Deep are seated (but not necessarily in the same order) and all of them are facing South. In row-2, Preet, Qureshi, Raunit and Sana are seated (but not necessarily in the same order) and all of them are facing North. Therefore, in the given seating arrangement each member seated in a row faces another member of the other row. Raunit sits second to left of the person who faces Asha. Sana is an immediate neighbour of Raunit. Only one person sits between Asha and Deep. One of the immediate neighbours of Chelsi faces Qureshi. Bheem does not sit at any of the extreme ends of the line.

1) Who amongst the following faces Bheem?

- a) Preet b) Qureshi c) Raunit
d) Sana e) Cannot be determine

2) Who amongst the following faces Raunit?

- a) Asha b) Bheem c) Chelsi
d) Deep e) Cannot be determine

3) Which of the following is true regarding Chelsi?

- a) Chelsi sits second to right of Deep
b) Asha sit immediate right of Chelsi
c) Sana faces Chelsi

d) Deep is an immediate neighbour of Chelsi

e) The person who faces Chelsi is an immediate neighbour of Raunit

4) Four of the following five are alike in certain way based on the given seating arrangement and thus form a group. Which is the one that does not belong to the group?

- a) Qureshi b) Raunit c) Chelsi
d) Preet e) Cannot be determine

5) Who amongst the following sits second to the right of the person who faces Preet?

- a) Asha b) Bheem c) Chelsi
d) Deep e) Cannot be determine

Directions for questions 6 to 10

These questions are based on the following information.

Seven persons A, B, C, D, E, F and G are sitting around a circular table facing either the centre or outside. Each one of them belongs to a different city viz, Hyderabad, Mumbai, Delhi, Pune,

Bangalore, Gujarat and Chennai but not necessarily in the same order. G does not belong to Pune. C sits third to the right of G. G faces the centre. Only one person sits between D and F. Both F and D face the centre. Only one person sits between C and the person who belongs to Pune. Immediate neighbours of C face outside. A belongs to Gujarat and faces the centre. The person who belongs to Bangalore sits to the immediate left of E. Two persons sit between the persons who belongs to Gujarat and Mumbai. The person who belongs to Delhi sits to the immediate left of the person who belongs to Chennai..

6) To which of the following cities does B belong?

- a) Hyderabad b) Mumbai c) Pune
d) Bangalore e) Chennai

7) who among the following sit exactly between C and the person who belongs to Pune?

a) The person who belongs to Chennai

b) B c) The person who belongs to Mumbai

d) G e) D

8) How many persons sit between the person who belongs to Chennai and A, when counted from the right hand side of A?

a) One b) Two c) Three

d) Four e) More than four

9) Who among the following sit between the persons who belongs to Mumbai and Gujarat when counted from the left hand side of the person who belongs Mumbai?

a) B and D b) G and F c) C and E

d) D and F e) B and C

10) Four of the following five are alike in a certain way based on their position in the given arrangement and so form a group.

Which is the one that does not belong to that group?

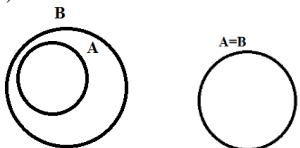
a) Delhi b) Gujarat c) Pune

d) Chennai e) Bangalore

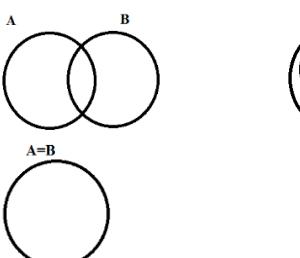
Deduction

Positive statements :

1) All A's are B's.

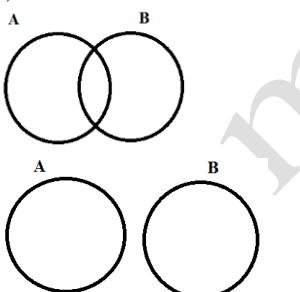


2) Some A's are B's.

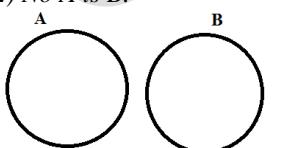


Negative Statements :

1) Some A's are not B's.



2) No A is B.

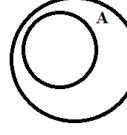
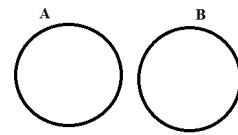
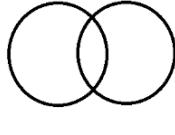
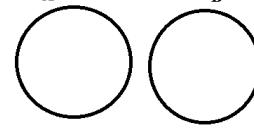


➤ "All A's are B's" and "Some A's are not B's" are opposite to each other.

➤ "Some A's are B's" and "No A is B" are opposite to each other.

Basic Diagram - Basic Diagram is Diagram with minimum intersection.

Basic Diagram for all the Statements.

Positive statements	Negative Statements
All A's are B's. 	Some A's are not B's. 
Some A's are B's. 	No A is B. 

Rules to solve the Questions of Deduction:

1) Conclusions are results which are true in all cases.

2) Always draw the Basic Diagram i.e. diagram with minimum intersection.

3) If Conclusion is Positive, Directly check from the Basic Diagram. If it is true then it follows, else not.

4) If Conclusion is Negative, Check its opposite conclusion. If opposite is true under any case then required conclusion does not follows and if opposite never becomes true then required conclusion follows.

5) If there are exactly two opposite conclusions and neither of them individually follows then mark "Either...or" as the answer.

Directions for the question 1 to 15:

The question below has either two or three Statements followed by two conclusions I and II. You have to take the two or three given Statements to be true and then decide which of the given conclusions logically follows from the two/three given Statements, disregarding the commonly known facts.

Give your Answer as,

1) If only conclusion I follows

2) If only conclusion II follows

3) If either I or II follows

4) If neither I nor II follows

5) If both I and II follow.

Q1 Statements : All hats are men. All men are taps.

Conclusions : I. Some taps are hats.

II. Some taps are men.

Q2 Statements : All wine is divine. All divine are tales.

Conclusions : I. All wine is tale.

II. All tales are wine.

Q3 Statements : All cabs are cats. All fish are cats

Conclusions : I. All cabs are fish.

II. Some fish are cabs.

Q4 Statements : All pans are chicks. All chairs are chicks.

Conclusions : I. Some pans are chairs.

II. Some chicks are pans.

Q5 Statements : All goods are worms. All worms eat well.

Conclusions : I. All those who eat well are goods.

II. All goods eat well.

Q6 Statements : Every mine is a stupid. Every stupid is idiot.

Conclusions : I. Every mine is idiot.

II. Some idiot are stupid.

Q7 Statements : All tanks are hens. No cups are hen

Conclusions : I. No cups are tanks

II. Some hens are not cups.

Q8 Statements : All books are cakes. No locks are cakes.

Conclusions : I. Some locks are not books

II. No lock is book.

Q9 Statements : All rods are metals. Some metals are books.

Conclusions : I. Some books are rods

II. All metals are books.

Q10 Statements : All jug are tigers. Some tigers are hosts.

Conclusions : I. Some hosts are jugs

II. No host is jug.

Q11 Statements : All boards are tall. Some tall are hooks.

Conclusions : I. Some boards are hooks

II. Some hooks are tall.

Q12 Statements : All artists are actors. No actor is drum.

Conclusions : I. All actors are artists

II. Some drums are not actors.

Q13 Statements : Some hens are crows. All crows are horses

Conclusions : I. Some horses are hens

II. Some hens are horses.

Q14 Statements : Some parts are toffees. All toffees are chicks.

Conclusions : I. Some chicks are toffees

II. Some toffees are not parts.

Q15 Statements : Some kings are quarts. All quarts are beautiful.

Conclusions : I. All kings are beautiful

II. All quarts are kings.

Directions for Questions 16 to 21

In each question below are given Some statements followed by conclusions. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read the conclusion and then decide which of the given conclusions logically follows from the given statements, disregarding commonly known facts.

16) Statements:

1. Some plants are roots. 2. Some roots are Leaves.

3. All leaves are branches.

Conclusions:

I. Some plants are branches. II Some roots are branches.

III. Some plants are leaves. IV. No plant is branch.

a) Only II is true b) Only III is true

c) all are true d) None of these

e) Only II and Either I or IV

17) Statements:

1. All shirts are Trousers. 2. Some Trousers are Jackets.

3. Some Jackets are clothes.

Conclusions:

I. Some Trousers are shirts.

II. Some Jackets are Trousers.

III. Some clothes are Jackets.

a) I and II are true b) I and III are true

c) II and III are true d) all are true

e) None of these

18) Statements:

1. Some needles are blades. 2. All blades are knives.

3. No blade is pin.

Conclusion:

I. Some pins are blade

II. Some needles are pins.

III. All needles are knifes.

IV. No pin is blade.

a) EITHER I or IV b) only II and III true

c) Only III and IV true d) Only I and IV true

e) Only IV true

19) Statements:

1. Some parrots are sparrows. 2. Some sparrows are peacocks.

3. No parrot is crow.

Conclusions:

I. Some sparrows are parrots.

II Some crows are sparrows.

III. Some peacocks are crows.

a) Only I is true b) Only II is true

c) Only III is true d) All are true

e) None of these

20) Statements:

1. All greens are plants. 2. All bloods are red.

3. Some bloods are green.

Conclusions:

I. Some reds are blood. II. All red are plants.

III. All blood are green. IV. Some plants are green.

a) only I is true b) only II is true

c) only III and IV true d) Only I and III true

e) Only I and IV true

21) Statements:

1. Some blankets are Towels. 2. All Towels are cloths.

3. No blanket is kerchief.

Conclusions:

I. Some kerchiefs are cloths.

II. Some blankets are cloths.

III. All kerchiefs are towels.

IV. No kerchief is cloth

a) Only I is true b) Only II is true Either I or IV

c) only III is true d) Only I and II are true

e) only II and III are true

Data Interpretation

Directions for questions 1 to 5

These questions are based on the following information.

The total population of village Satana is 3550, out of which 36% people are below poverty line. The total population of Satana is 11 1/4% less than the total population of Amin, while there are 29% people in Amin who lives below poverty line. In Nilokheri the people living below poverty line are 40 more than that in Amin which is 40% of the total population of this village. The average population of Gharaunda and Samalkha is equal to the average population of Amin and Nilokheri, while the difference between their population is 1800 (Village Samalkha is more populated). 47% of the population of Gharaunda are below poverty line. Overall 46% of the population of all villages; together lives below poverty line.

1) What percentage of population of Samalkha lives above poverty line? (Approximate)

- a) 26% b) 27% c) 28%
- d) 29% e) 30%

2) Find the approximate average number of people below poverty line in the given villages.

- a) 1610 b) 1620 c) 1615
- d) 1320 e) 1730

3) If 35% of the BPL population of Nilokheri are children, while 30% of the overall population of this village are children. Then what percent of population above poverty line are children?

- a) 25% b) 30% c) 26 1/3 %
- d) 26 2/3 % e) None of these

4) What is the difference between total population of Nilokheri and that of Gharaunda?

- a) 300 b) 200 c) 250
- d) 400 e) None of these

5) If in the next year the total population of Amin would increase by 20%, while BPL population would decrease by 25%, then what percent of population in next year would be below poverty line?

- a) 18.125% b) 18.325% c) 18.225%
- d) 18.525% e) None of these

Directions for questions 6 to 10

These questions are based on the following data.

The following tables gives the information about the number of students applied, appeared and passed from various schools in different years.

Year	2000			2001			2002			2003		
	School	X	Y	Z	X	Y	Z	X	Y	Z	X	Y
A	200	180	160	240	200	175	280	270	250	300	240	235
B	300	250	240	360	300	240	400	370	350	500	400	380
C	250	250	200	200	180	180	250	210	190	300	270	240
D	240	230	200	180	150	105	200	190	180	240	160	90
E	160	150	125	300	260	240	250	220	200	300	230	220

X - Applied; Y - Appeared; Z - Passed

$$\text{Passed Percentage} = \frac{\text{No.of students passed}}{\text{No.of students Appeared}} \times 100$$

$$\text{Percentage of Attendance} = \frac{\text{No.of Students Appeared}}{\text{No.of students Applied}} \times 100$$

6) In 2001, which school has the least pass percentage?

- a) A b) B c) C d) D e) E

7) For B, in which year the percentage of attendance the least?

- a) 2000 b) 2001 c) 2002

d) 2003 e) Cannot be determined

8) The ratio of total number o students who passed in 2000 to that in 2003 in all the schools is.

- a) 104:132 b) 185:233 c) 4:7
- d) 7:11 e) None of these

9) In how many instances is the pass percentage of any school in any year less than 80%?

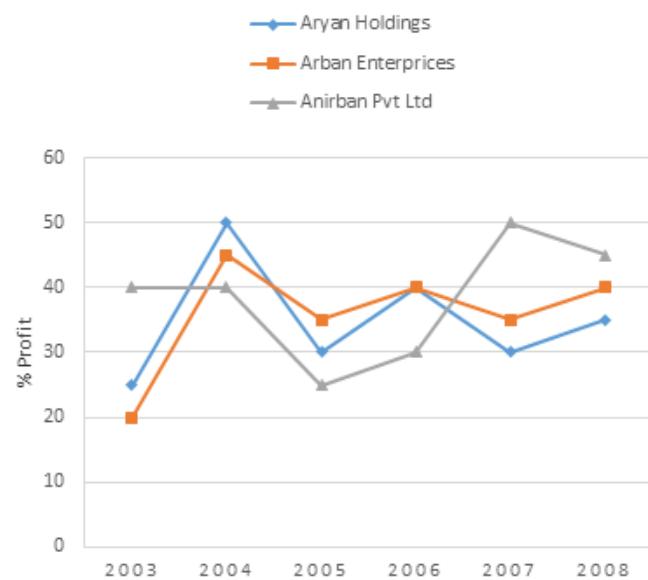
- a) 0 b) 1 c) 2 d) 3 e) 4

10) The number of students who passed in 2002 from school B is approximately how many times that in 2000 from A?

- a) 2 b) 2.2 c) 3 d) 2.6 e) 1.8

Directions for questions 11 to 15

The following graph shows the profit percentage earned by three companies Aryan Holding, Arban Enterprises and Anirban Pvt Ltd over the given years.



Note : Formula for % Profit is given bellow,

$$\% \text{ Profit} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$

11) If the income of Arban Enterprises in 2005 was Rs. 12 lakh, what was the approximate profit earned, in lakh rupees, in that year?

- a) 8 b) 3 c) 16 d) 11.5 e) 2.5

12) If the expenditure of Arban Enterprises in 2007 is equal to that of Anirban Pvt Ltd in 2008, what was the ratio of the income of Arban Enterprises in 2007 to that of Anirban Pvt Ltd in 2008?

- a) 4:5 b) 39:40 c) 27:29
- d) 3:4 e) None of these

13) Income of Anirban Pvt Ltd in 2003 and 2005 were equal. What was ratio of its expenditure in 2003 to that in 2005?

- a) 28:25 b) 1:5 c) 16:23
- d) 9:7 e) 25:28

14) Income of Aryan Holdings in 2006 is equal to its expenditure in 2007. What is the ratio of its income in 2007 to that in 2005?

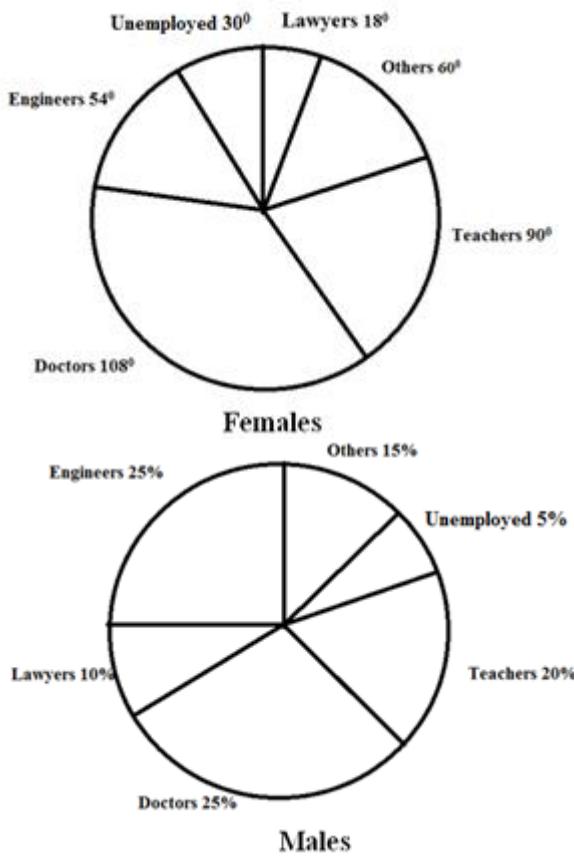
- a) 3:7 b) 1:1 c) 91:50
- d) 10:13 e) Cannot be determined

15) In which year is the percentage rise /fall in the percentage of profit earned by Aryan Holdings the best?

- a) 2004 b) 2006 c) 2008
- d) 2005 e) 2007

Directions for questions 16 to 20

This questions are based on the pie-charts given below.



The above two pie chart gives the distribution of the adults in the city .

The total number of adults = 98000

The ratio of number of males to that of females among the adults in the city is 25:24.

16) What is the difference between the number of male lawyers and female lawyers?

- a) 2600 b) 2400 c) 2480
- d) 2530 e) 2440

17) What is the number of females lawyers in the city?

- a) 1200 b) 1800 c) 2400
- d) 1250 e) 1600

18) What is the total number of engineers in the city?

- a) 12500 b) 7200 c) 19500
- d) 20700 e) None of these

19) The number of males who are unemployed as the percentage of total unemployed person in the city is.

- a) 40% b) 50.5% c) 56.5%
- d) 38.5% e) 34.5%

20) What is the ratio of total number of engineers to that of teachers in the city?

- a) 146:201 b) 79:84 c) 35:43
- d) 197:220 e) 211:233

Logical Reasoning Handout Homework

Blood Relation

Q) 1) How is Kanchan's sister's only brother's wife's mother - in-law related to Kanchan?

- a) Sister b) Mother c) wife
- d) Aunt e) Mother-in-law

2) A met B in a train and B recognise A as the person who is the daughter of his mother's only brother's father's daughter-in-law. How is B related to A?

- a) cousin b) Niece c) Nephew
- d) uncle e) brother

3) Ajay and Vijay are looking at wedding photograph of Namita, who is daughter of their paternal uncle. In that photograph Vijay is standing with Namita's only brother Anuj and Anuj's wife Pallavi. How is Pallavi's father-in-law related to Ajay?

- a) Father b) Father-in-law c) uncle
- d) Grandfather e) Not Related

4) Ms. Vidya's boss Mr. Gupta is the only child of his parents and he has two sons, who are the siblings of Vidya. How is Ms. Vidya's related to Mr. Gupta?

- a) Niece b) Daughter c) Cousin
- d) Wife e) Granddaughter

5) Sana and Vinay went for shopping in a mall and there they meet Bipin who is husband of Sana's mother's father-in-law's only daughter, who is mother of Vinay. How is Bipin related to Vinay?

- a) Uncle b) Father c) Brother
- d) Nephew e) Son

Directions for Questions 1 to 5

Study the following information and answer the questions given below.

A, B, C, D, E, F, G and H are eight members of a family. They belong to three different generations. There are three married couples. All of them are sitting around a circular table, facing the centre but not necessarily in the same order.

D and F are married couples. D, the wife of F, sit second to the left of her husband.

C and A are offspring of D. A is not an immediate neighbour of his mother.

There is only one person sitting between C and his niece G, but that person is not G's father.

E, a bachelor, sits third to the right of his uncle A, but neither to the opposite nor to the immediate left of his father.

G is not an immediate neighbour of her aunt B. No three females are sitting together.

C and his sister-in-law are immediate neighbour.

1) Who among the following is G's father?

- a) F b) A c) H d) B e) Can't be determine

2) How many females are there in the family?

- a) 2

- b) 3
 c) 5
 d) Can't be determine
 e) None of these
 3) What is the position of D with respect to her granddaughter?
 a) 2nd to the left
 b) 4th to the right
 c) 3rd to the right
 4) 4th to the left
 e) Immediate Left

- 4) Who among the following is the aunt of D?
 a) B
 b) D
 c) G
 d) H
 e) Can't be determine

- 5) Which of the following represent the male member in the family?
 a) EB
 b) FG
 c) CG
 d) FA
 e) Can't be determine

Direction Sense

1) A person starts walking in east direction and walks 20m. After that he turn to his right and walks 10m and then turn to his left and walks 15m and reached at a point A. Find the distance between A and initial point.

- a) $5\sqrt{51}$
 b) $5\sqrt{53}$
 c) $5\sqrt{57}$
 d) $5\sqrt{59}$
 e) None of these

2) Neeru started from her friend's house and travel 5 km towards the east followed by 6 km towards the south and 5 km towards the east before travelling another 6 km towards the south, she then travelled 25 km towards the east and finally 24 km towards the north and reached her house. What is the shortest distance between Neeru's house and her friend's house?

- a) 35 km
 b) 37 km
 c) 24 km
 d) 47 km
 e) 25 km

3) A wall clock is place in such a way that at 12 o'clock the minute hand points towards the south. In which direction does the hour hand point at 3 o'clock?
 a) East
 b) West
 c) North
 d) North-West
 e) South-West

- 4) One evening, Bipin and Lalit were standing facing each other, it was observed that the shadow of Bipin was falling to his left. Which direction was Lalit Facing?
 a) South
 b) North
 c) East
 d) West
 e) Cannot be determine

- 5) Akash walked 30 ft towards north, then took a left turn and walked 15 ft. He again took a left turn and walked 30 ft. How far and in which direction is Akash from the starting point?
 a) 15 ft to the West
 b) 45 ft to the South
 c) 30 ft to the East
 d) 15 ft to the North

Clocks

- 1) What is the angle between the two hands of a clock when the time shown by the clock is 6:30 p.m.?
 a) 0^0
 b) 50^0
 c) 30^0
 d) 15^0

2) What is the angle between the two hands of a clock when the time shown by the clock is 2:34 p.m.?

- a) 144^0 b) 172^0 c) 127^0 d) 90^0
 3) At what time between 3 and 4 o'clock will the minute hand and the hour hand are on the same straight line but facing opposite directions.

- a) 3:49 b) 3:15 c) $3:39 \frac{1}{11}$ d) $3:49 \frac{1}{11}$
 4) By how many degrees does the minute hand move in the same time, in which the hour hand move by 28^0 ?

- a) 168^0 b) 336^0 c) 196^0 d) 376^0

5) what time between 8 and 9 o'clock will the angle between minute hand and the hour hand is 36^0 ?

- a) $8:50 \frac{2}{11}$ b) $8:36 \frac{3}{11}$ c) $8:37 \frac{1}{11}$
 d) Both a and c

Calendar

1) Given that on 27th February 2003 is Thursday. What was the day on 27th February 1603?

- a) Monday b) Thursday
 c) Sunday d) Tuesday

2) January 1, 2005 was Saturday. What day of the week lies on Jan. 1, 2006?

- a) Wednesday b) Tuesday
 c) Saturday d) Sunday

3) It was Monday on Jan 1, 2007. What was the day of the week Jan 1, 2011?

- a) Monday b) Friday
 c) Saturday d) Wednesday

4) Today is Friday. After 57 days, it will be:
 a) Monday b) Tuesday

- c) Saturday d) Sunday
- 5) Today is Sunday. After 94 days, it will be:
 a) Wednesday b) Sunday
 c) Tuesday d) Saturday
- 6) Which of the following is not a leap year?
 a) 500 b) 400 c) 1600 d) 2000
- 7) On 16th Nov, 2010 Thursday falls. What day of the week was it on 16th Nov, 2009?
 a) Monday b) Friday
 c) Wednesday d) Tuesday
- 8) January 1, 2010 was Friday. What day of the week lies on Jan. 1, 2011?
 a) Monday b) Sunday
 c) Saturday d) Wednesday
- 9) On 14th Feb, 2009 it was Saturday. What was the day of the week on 14th Feb, 2008?
 a) Friday b) Sunday
 c) Tuesday d) Thursday
- 10) January 1, 2008 is Tuesday. What day of the week lies on Jan 1, 2009?
 a) Monday b) Wednesday
 c) Thursday d) Sunday
- 11) The calendar for the year 2011 will be the same for the year:
 a) 2015 b) 2020 c) 2021 d) 2022
- 12) Which of the following is not a leap year?
 a) 500 b) 400 c) 1600 d) 2000
- 13) On 5th December 1993, Nirmala and Raju celebrated their anniversary on Sunday. What will be the day on their anniversary in 1997?
 a) Wednesday b) Thursday
 c) Friday d) Tuesday

Coding Decoding

Direction for questions 1 to 5

These questions are based on the following information.

In the table given below, a group of words written in column 1 and their respective codes are written in column 2 against each group. Each word has a unique code. Compare the groups of words and their respective codes and answer the following questions.

Column 1	Column 2
This is not too good	pa ni si la ri
You are not bad	ka la ma bi
It is too hot	da ri ta ni
We are not good	ka fa pa la
This is not you	la bi ni si

- 1) What is the code for 'you'?
 a) la b) ma c) bi d) si e) ka
- 2) What is the code for 'hot'?
 a) ri b) ta c) da d) ni e) Cannot be determine
- 3) Which word is coded as 'ri'?
 a) this b) too c) is d) it e) hot

- 4) What is the code for 'too bad'?
 a) la ka b) la bi c) ma ni d) fa ri e) ma ri
- 5) What can be the code for 'this is cold'?
 a) si ri ta b) si ni da c) si gi fa
 d) ni ma ga e) si ni ga

Direction for questions 6 to 10

6) In a certain code ALPHABET is written as YJNFYZCR, then how will CHILDREN be written in the same language?

- a) EJKNFTGP b) AFGJBPC
 c) DIJMESFO d) AFJGBPCL

7) In a certain code BUSINESS is written as FSWGRCWQ, then how will BANGALORE be written in the same language?

- a) FYREEJSPI b) ZELKXPMVC
 c) YFERJEPSI d) DCPICNQTG

8) In a certain code GUNPOWDER is written as DEGNOPRUW, then how will HOSTPITAL be written in the same language?

- a) AIOHLPST b) HLPSTAIO
 c) TSPOLIHA d) AHILOPST

9) In a certain code REASONING is written as ASREONGNI, then how will FRIZZLING be written in the same language?

- a) GNILZZIRF b) ZIRFZGNIL
 c) IZFRZNGLI d) FIRZZLNIG

10) In a certain code SENSITIVE is written as HVMHRGREV, then how will HYDROGEN be written in the same language?

- a) SBWILTVM b) MVTLIWBS
 c) IZESPHFO d) SBWLITVM

11) In a certain code BIOLOGY is written as XFNKNHA , then how will CHEMISTRY be written in the same language?

- a) XQSRLHDB b) WPRGQKCA
 c) WPRQGKCA d) XQSRHLDB

12) If QKKQUGQL is the code for OMISSION, which word is coded as RYVIWZB?

- a) PATKUBZ b) BZWIVYR
 c) BZWVIYR d) PTAKBZU e) BZIWYVR

Decision Making

Following are the criteria to be fulfilled to get admission into MBA course in college X , in Maharashtra.

The candidate should

- (a) Have been born and brought up in the state of Maharashtra.
 (b) Have scored at least 65% marks in graduation.
 (c) Have scored at least 60% marks in the entrance examination conducted by the collage.
 (d) Not be more than 22 years old , as on 1st June 2014. If all the criteria (a) to (d) are fulfilled, then a candidate may get admitted in to the course.

If a candidate satisfies all the criteria except,

(e) Criterion (a)only, but if the candidate has done his graduation in Maharashtra, then he\she is to be referred to the Chairman of the college.

(f) Criterion (d)only, but if the candidate has experience of at least six months as a team leader in any corporate company, then he\she is to be referred to the Principal of the college.

Based on above criteria and the data given in each question decide the action to be taken in each case. Do not assume anything beyond given information. If you feel that given information is not sufficient to decide any action, then mark your answer as data inadequate.

Mark your answer as,

- 1) If candidate may be admitted in to the course.
- 2) If candidate is to be referred to the Chairman of the college.
- 3) If the candidate is to be referred to the Principal of the college.
- 4) If the candidate would not get admission.
- 5) If the data is inadequate.

Questions :

1) Girish is born and brought up in the state of Kerala. He scored 70% marks in the entrance examination conducted by the college as well as in his graduation. Girish was born in 1994 and he did his graduation in the state of Delhi.

2) Prachi is born and brought up in Mumbai(Capital of Maharashtra). She scored 80% marks in her graduation as well as in the entrance examination conducted by the college. Her date of birth is 22nd June, 1993.

3) The date of birth of Arun is August 7th, 1993. He is born and brought up in Maharashtra. He has scored 70% marks in his graduation and 80% marks in the entrance examination conducted by the college.

4) Romeo has work experience of one year in a corporate company as a Team Leader. He is born and brought up in the Maharashtra. He scored 65% marks in his graduation and 80% marks in the entrance examination conducted by the college.

5) Sarathi was born in the state of Uttar Pradesh in the year 1994. He did his graduation in the state of Maharashtra. He scored 70% marks in graduation and 85% marks in the entrance examination conducted by college X.

Inequality

Directions for Question Number 1 to 5

Study the following information to answer the given questions
A\\$B means A is not smaller than B

A@B means A is neither smaller than nor equal to B

A#B means A is neither greater than nor equal to B

A&B means A is neither greater than nor smaller than B

A*B means A is not greater than B

1) Statements: O & A, A \\$ R, R # S, S * Q

Conclusions:

- | | | | |
|-------------------|---------------------|--------------------|-----------------------------|
| I. Q @ R | II. S @ O | III. R & O | IV. R # O |
| A. Only I is true | B. Only III is true | C. Only IV is true | D. Either III or IV is true |

- | | |
|------------------------------------|-----------------------------|
| C. Only IV is true | D. Either III or IV is true |
| E. Either III or IV and I are true | |

2) Statements: A * E, E \$ F, F # O, O @ L

Conclusions:

- | | | | |
|--------------------|-------------------|--------------------|---------------------|
| I. L # F | II. E @ O | III. A # O | IV. E @ L |
| A. None is true | B. Only I is true | C. Only II is true | D. Only III is true |
| E. Only IV is true | | | |

3) Statements: B @ Q, Q # A, A & L, L * N

Conclusions:

- | | | | |
|---------------------------|--------------------------|---------------------------|---------------------------|
| I. N \$ A | II. L @ Q | III. B @ N | IV. Q # N |
| A. I, II and III are true | B. I, II and IV are true | C. I, III and IV are true | D. I, III and IV are true |
| E. All are true | | | |

4) Statements:

E # M, M * N, N @ O, O \$ P

Conclusions:

- | | | | |
|------------------------|-----------------------|------------------------|-----------------------|
| I. P # M | II. P # N | III. M # O | IV. N @ E |
| A. II and III are true | B. II and IV are true | C. III and IV are true | D. I, and IV are true |
| E. All are true | | | |

5) Statements: A \$ E, E @ F, F * G, G # H

Conclusions:

- | | | | |
|--------------------|-------------------|--------------------|---------------------|
| I. H @ E | II. A \$ G | III. E @ H | IV. A @ F |
| A. None is true | B. Only I is true | C. Only II is true | D. Only III is true |
| E. Only IV is true | | | |

Input Output

Directions for questions

These questions are based on the following information
A word and number arrangement machines when given an input line of words and numbers, arranges them following a particular rule. Following is an illustration of an input and its arrangement.

Input : we 16 93 you people quest 29 63 45 lack

Step 1 : you we 16 93 people quest 29 63 45 lack

Step 2 : you we 16 people quest 29 63 45 lack 93

Step 3 : we you 16 people quest 29 63 45 lack 93

Step 4 : we you 16 people quest 29 45 lack 63 93

Step 5 : quest we you 16 people 29 45 lack 63 93

Step 6 : quest we you 16 people 29 lack 45 63 93

Step 7 : people quest we you 16 29 lack 45 63 93

Step 8 : people quest we you 16 lack 29 45 63 93

Step 9 : lack people quest we you 16 29 45 63 93

Step 9 is the last step.

Based on the rules followed in the above steps, find the appropriate steps for the following input and answer the questions followed.

Input for the questions:

53 54 29 jam can man ban 15 86 90 63 van tan den

(All the numbers in the arrangement are two-digit numbers)

Questions:

- 1) Which of the following is the last step for the given input?
- a) Step 10 b) Step 9c) Step 11

- d) Step 13 e) None of these
 2) Which is the fourth element from the left end in step 7?
 a) can b) tan c) van
 d) 53 e) 54
 3) How many elements are there between 'tan' and 'can' in step 10 of the given input?
 a) two b) five c) seven
 d) nine e) None of these
 4) Which step number is the following rearrangement?
 'jam man tan van 53 54 29 can ban 15 den 63 86 90'
 a) Step 5 b) Step 7c) Step 8
 d) Step 9e) No such step
 5) In the second last step, in a certain way 'den' is related to '86' and 'tan' is related to '53' in the same way, 'van' is related to.
 a) 54 b) man c) 29 d) 15 e) ban

Letter and Number Series

Direction for Questions 1 to 5

Find Out the Missing number in the following series.

- 1) 343, 64, 81, 100, 1331, 144, 2197, 196, ____
 a) 215 b) 625 c) 225 d) 285 e) 345
- 2) 2000, 1996, 1980, 1944, 1880, ____
 a) 1680 b) 1600 c) 1750
 d) 1780 e) None of these.
- 3) 2, 10, 24, 98, 200, ____, 1608
 a) 802 b) 815 c) 928
 d) 718 e) None of these.
- 4) NQF, LOD, JMB, HKZ, ____
 a) FGY b) FIX c) GJX
 d) IGY e) GIY
- 5) TMCI, VJGD, XGKY, ZDOT, ____
 a) BYSQb) BATOC) BASP
 d) BASQe) BATP

Direction for Questions 6 and 7

Each of these Questions consist a series with one wrong number. Find the wrong number.

- 6) 16, 24, 40, 64, 98, 136
 a) 98 b) 64 c) 40 d) 24 e) None of these
- 7) 78, 81, 86, 93, 102, 117
 a) 78 b) 86 c) 117 d) 102 e) 93

Questions 8 to 10

- 8) Ajay is sitting in a row of thirty six people. He shifted seven places towards the left end. Now he becomes sixth from the left end. What is his present position from the right end?
 a) 30 b) 31 c) 24 d) 25 e) 23
- 9) In a row of boys facing south, Ravi is 8th from the left end and Raghav is 5th to the left of Ravi and 16th from the right end of the row. What is the total number of boys in the row?
 a) 27 b) 25 c) 23 d) 18 e) 16

- 10) In a queue, nine members are standing behind Anjali, seven members are ahead of Meena and six members are in between Anjali and Meena. How many members are standing in the queue?
 a) 20 b) 10 c) 24 d) 22 e) Cannot be determine

Venn Diagram

Direction for the questions 1 to 5

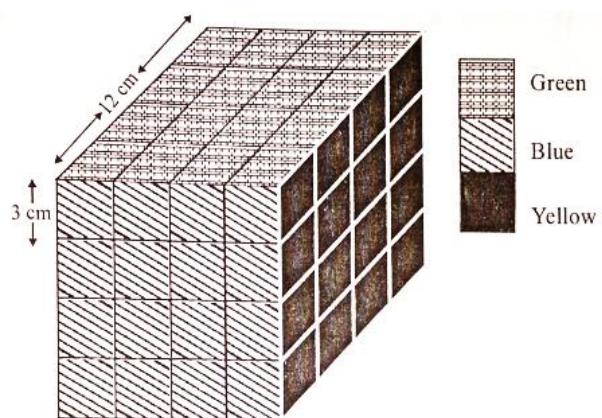
Read the following information carefully and answer the following question.

In a batch of 300 candidates, 45% of the candidates are appearing for SSC exam, 43% of the candidates are appearing for PO exam and 40% of the candidates are appearing for UPSC exam. 10% candidates are appearing for both SSC and PO, 12% candidates are appearing for both UPSC and PO, 15% candidates are appearing for both SSC and UPSC. 5% candidates are not appearing for any exam.

- 1) How many candidates are appearing for all the three exams?
 a) 12 b) 13 c) 14 d) 15 e) 16
- 2) How candidates are appearing for exactly one exam?
 a) 200 b) 216 c) 198 d) 194 e) 208
- 3) What is the percentage change in number of candidates appearing for exactly two exams when total changes from 300 to 450?
 a) 10% b) 20% c) 30% d) 40% e) 50%
- 4) What is the ratio of the number of candidates appearing for SSC but not for PO to the number of candidates appearing for PO but not for SSC?
 a) 33:35 b) 35:33 c) 31:33
 d) 33:31 e) 35:31
- 5) What percent of candidates are appearing for at least two exams?
 a) 25% b) 29% c) 27%
 d) 31% e) 26%
- 6) How many candidates are appearing for at most two exams?
 a) 94% b) 91% c) 90%
 d) 71% e) 95%

Cubes

Direction : A solid cube of 12 cm been painted green, blue and yellow on pairs of opposite faces. It is then cut in cubical blocks of each side 3 cm.



1. How many cubes have only one face painted?

- 1) 8 2) 16 3) 24 4) 28

2. How many cubes have only two faces painted?

- 1) 8 2) 16 3) 20 4) 24

3. How many cubes have only three faces painted?

- 1) 0 2) 4 3) 6 4) 8

4. How many cubes have no face painted?

- 1) 0 2) 4 3) 8 4) 12

5. How many cubes have at most one face painted?

- 1) 24 2) 32 3) 30 4) 36

6. How many cubes have two faces painted yellow and green and all other faces unpainted?

- 1) 4 2) 8 3) 16 4) 24

Data Interpretation

Data Interpretation deals with the understanding, organizing and interpreting of the given data so as to arrive at meaningful conclusions.

Data Interpretation skills are important to an IAS aspirant, as day in and out, a civil service officer is expected to have a good control over the analysis of data and deduction of meaningful conclusions from the myriad representations of information. Honing your skills in Data Interpretation is a three step process

1) Understanding the different modes of representation of data and linking of information across two or more graphs.

2) Improving your calculation speed

3) Practice to perfection so that you learn to pick the right questions and maximize your attempts with good accuracy.

Types of representation of data

Data can be represented in multitude ways, including tables and different charts. We will look at the different representations of data in this section.

1) The Bar Chart

A bar chart or bar graph is a chart with rectangular bars with lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally. Bar charts are used for plotting discrete (or 'discontinuous') data which has discrete values and is not continuous

1a) Simple Bar graph

Look at the example below. The Y axis denotes the points scored by Teams A, B & C over the years 2003-2006. For eg, Team A scores 25 points in the year 2004.

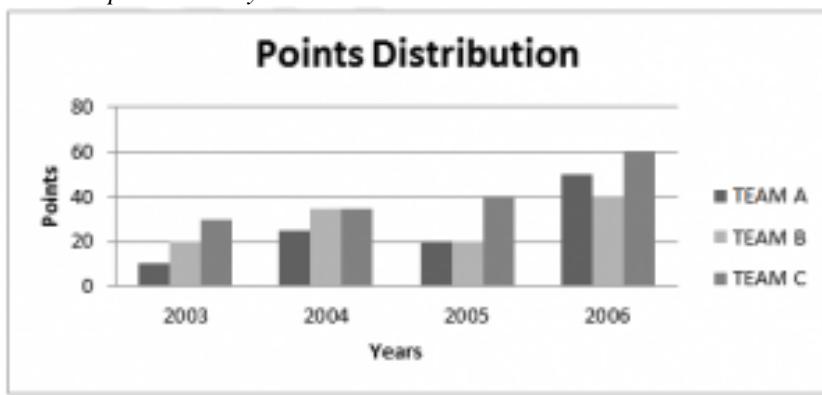


Figure 1 Simple Bar Graph plotted vertically

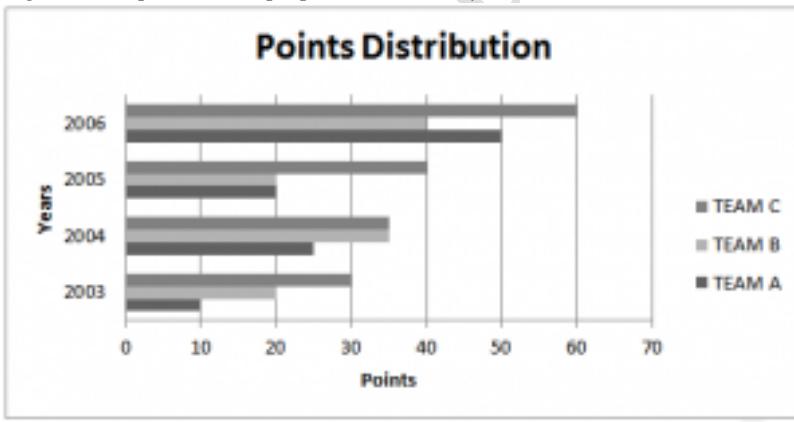


Figure 2 Simple Bar Graph plotted horizontally

1b) Cumulative/Stacked Bar Graph

Stacked bar graph is a graph that is used to compare the parts to the whole. The bars in a stacked bar graph are divided into categories. Each bar represents a total.

In the example below, in the year 2005, team A scores 20% of the available points, team B scores 20% of the points and Team C scores 60% of the points.

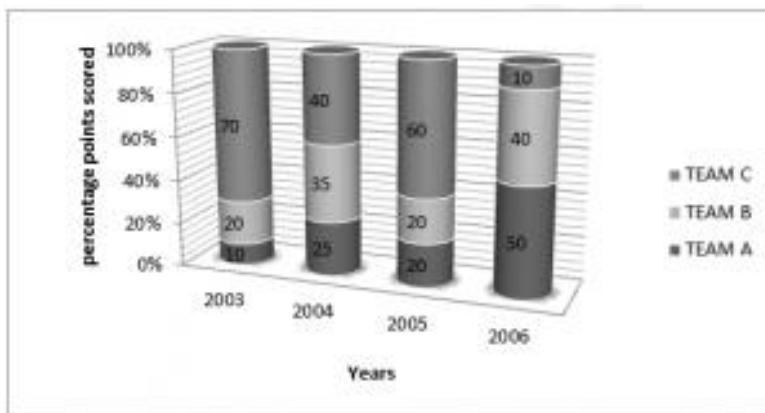


Figure 3 Cumulative Bar Graph (percentage based)

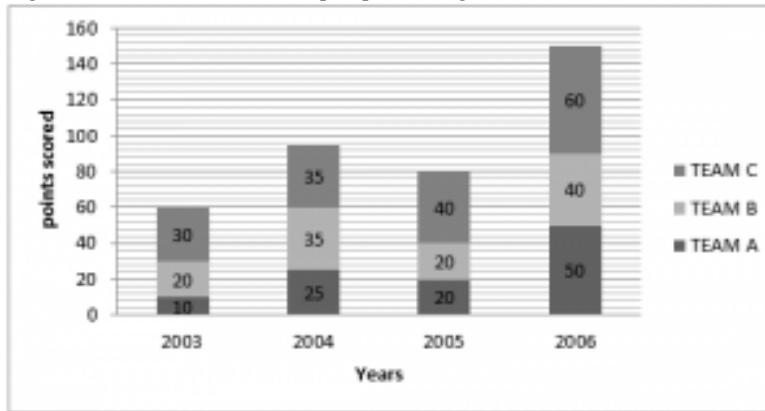


Figure 4 Cumulative Bar graph-Value Based

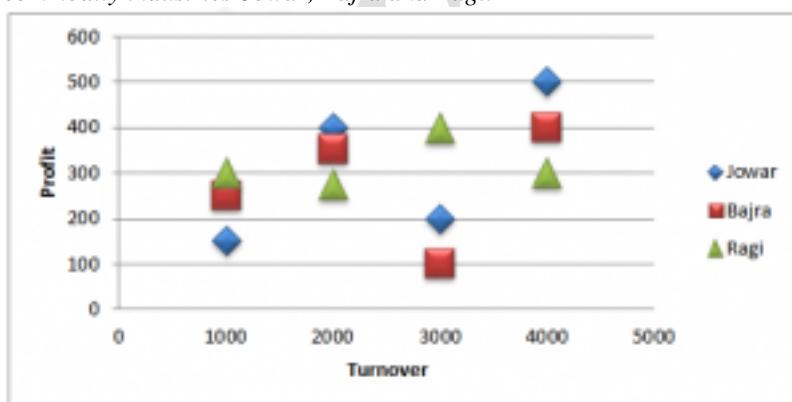
2) The Line Chart

A line chart or line graph is a type of graph, which displays information as a series of data points connected by straight line segments. It is a basic type of chart common in many fields. It is an extension of a scatter graph (see Figure 5 below), and is created by connecting a series of points that represent individual measurements with line segments. A line chart is often used to visualize a trend in data over intervals of time – a time series – thus the line is often drawn chronologically.

2a) Scatter Graph

A scatter plot or scatter graph is a type of mathematical diagram using Cartesian co-ordinates to display values for two variables for a set of data. The data is displayed as a collection of points, each having the value of one variable determining the position on the horizontal axis and the value of the other variable determining the position on the vertical axis

Each point in the graph below shows the profit and turnover data for a company. Each company belongs to one of the three food commodity industries-Jowar, Bajra and Ragi.



2b) Simple Line Graph

In the example below, it can be seen that Team A scores 10 points in 2003, 25 points in 2004, 20 points in 2005 and 50 points in 2006

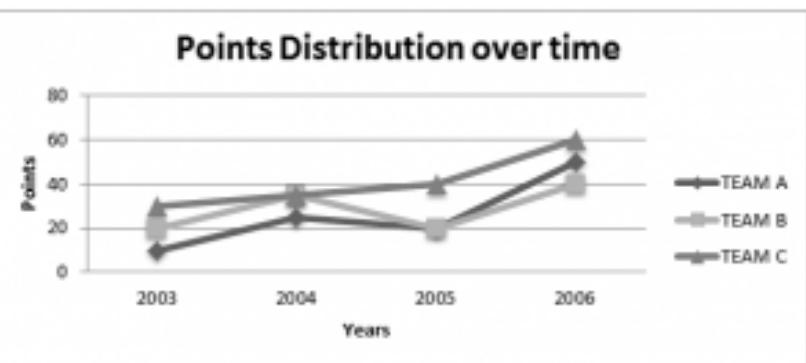


Figure 6 Simple Line Graph

2c) Stacked Line Graph/ Band Diagram

A stacked line graph or a Band Diagram is a line chart in which lines do not overlap because they are cumulative at each point. A stacked line chart displays series as a set of points connected by a line. Values are represented on the y-axis and categories are displayed on the x-axis. You can read it similar to a stacked bar graph

In the example below, Team A scores 10 points in 2003, Team B scores (30-10) 20 points in 2003 and Team C scores (60-20-10) 30 points in 2003.

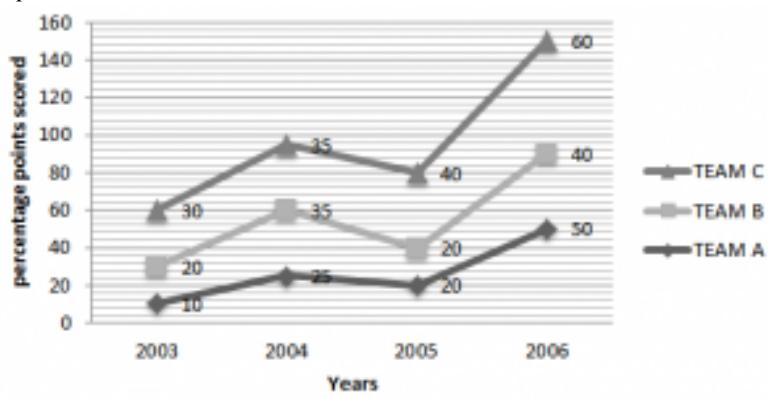


Figure 7 Stacked line Graph

The same data, for clearer understanding is represented in a stacked bar graph as follows

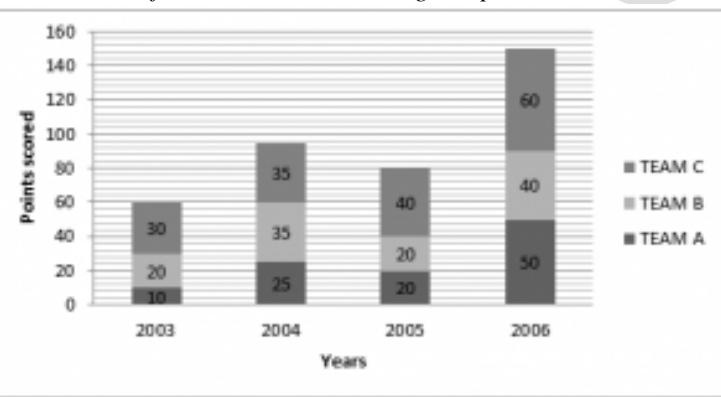


Figure 8 Stacked bar Graph

2d) Cumulative Line Graph

To read a cumulative line chart, the values are “Accumulated” or “Added on” to those of the previous data point in the chart. Look at the example below. In the first quarter, both Primary and Secondary education comprise 10% of the budget allocation. In the second quarter, the budget allocation for Primary Education becomes 20% (30-10) and the budget allocation for Secondary Education becomes 10% (40-30)

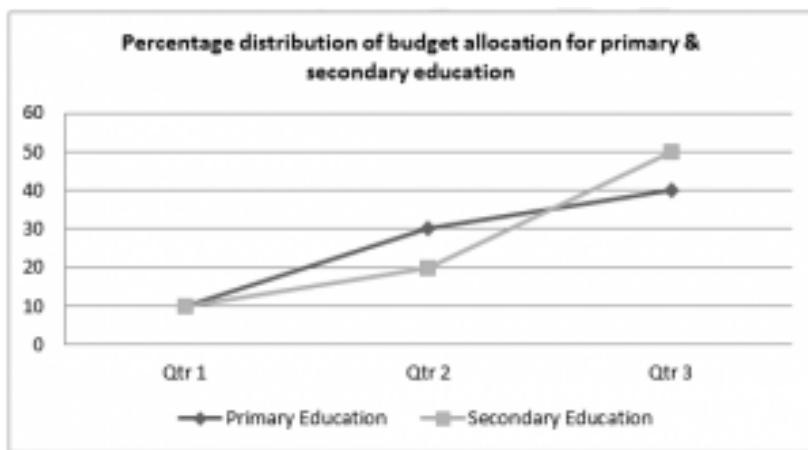


Figure 9 Cumulative Line Graph

3) The Pie Chart

A pie chart (or a circle graph) is a circular chart divided into sectors, illustrating proportion. In a pie chart, the arc length of each sector (and consequently its central angle and area), is proportional to the quantity it represents. Together, the sectors create a full disk. The pie chart is perhaps the most ubiquitous statistical chart in the business world and the mass media. Pie charts can be an effective way of displaying information in some cases, in particular if the intent is to compare the size of a slice with the whole pie, rather than comparing the slices among them

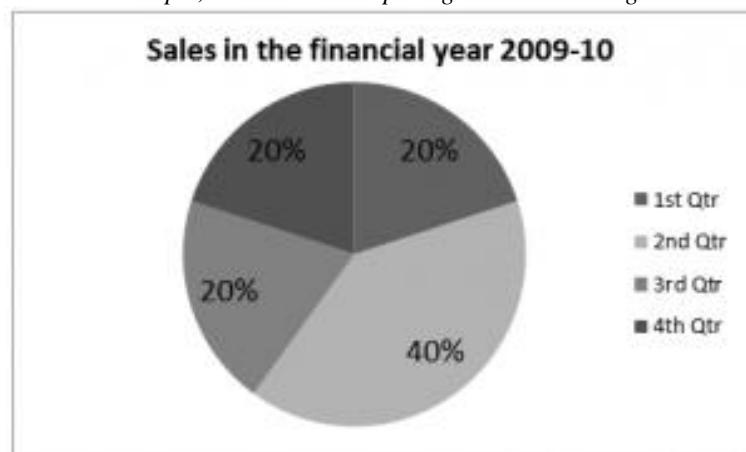
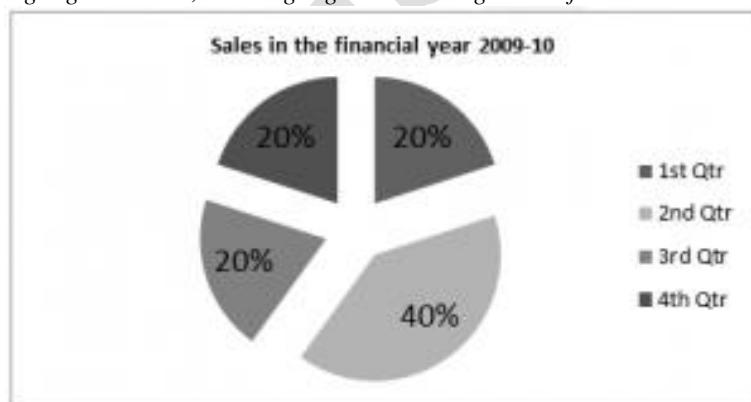


Figure 10 Pie chart depicting sales across quarters

3a) Exploded Pie Chart

A chart with one or more sectors separated from the rest of the disk is known as an exploded pie chart. This effect is used to either highlight a sector, or to highlight smaller segments of the chart with small proportion.



3b) Doughnut Chart:

A doughnut chart (also spelled donut) is functionally identical to a pie chart, with the exception of a blank center and the ability to support multiple statistics as one. There are 2 types of doughnut charts, doughnut and exploded doughnut.

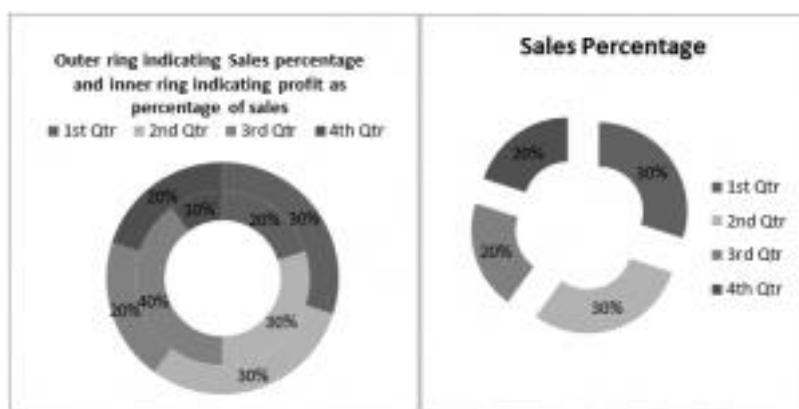
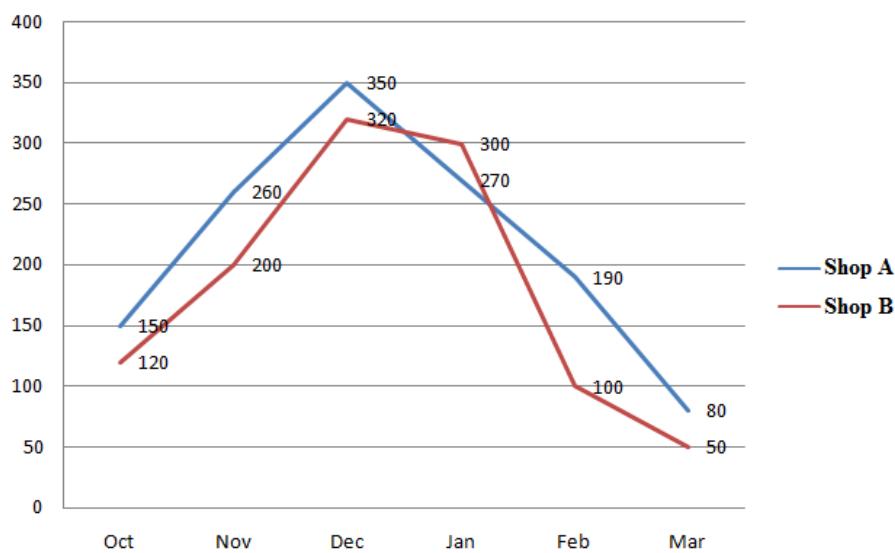


Figure 11 (A) Donut chart with multiple statistics

Figure 11 (B) Exploded Donut Chart

Directions for Questions 1 to 5

Refer to the Line Graph and answer the given questions. Number of Shirts of 'X' brand sold in Shop "A" and Shop "B" in 6 different months.



1) The number of Shirts sold in Shop "B" increased by what percent from November to December?

1. 50% 2. 40% 3. 10% 4. 60% 5. None of the Above

2) What is the difference between the total number of Shirts sold in both the shops together in October, February & March and the total number of Shirts sold in both the shops together in January, November and December?

1. 1060 2. 1070 3. 1020 4. 1010 5. 1050

3) The number of shirts sold in shop "A" in October, November and December is what % more than the number of shirts sold in Shop "B" in the same months?

1. 25/4% 2. 45/4 % 3. 55/4 % 4. 75/4 % 5. None of the Above

4) What is the average number of Shirts in Shop "A" in October, November, December, February and March?

1. 205 2. 215 3. 207 4. 210 5. 206

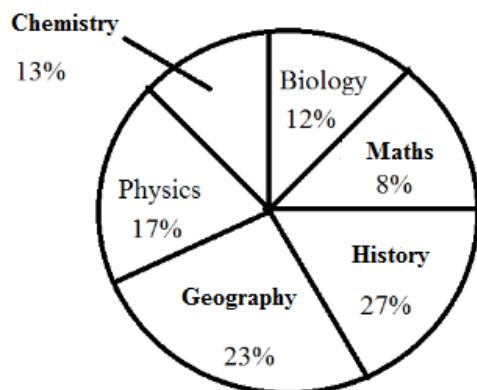
5) The total number of shirts sold in Shop "B" in September is 20% less than the number of shirts sold in same town in October. The total number of shirts sold in Shop "B" in April is 20% more than the number of shirts sold in same town in March. what is the respective ratio between the number of shirts sold in September and those sold in April in the same shop?

1. 2:9 2. 1:5 3. 4:9 4. 2:7 5. 8:5

Directions for Questions 6 to 10

Study the following information carefully and answer the questions that follow:

Percentagewise distribution of teachers who teach six different subjects



Total Number of Teachers = 1800

- 6) If two-ninth of the teachers who teach Physics are females, then the number of male Physics teachers is approximately what percent of the total number of teachers who teach Geography?
1. 57% 2. 42% 3. 63% 4. 69% 5. None of these
- 7) In History, number of male teachers and female teachers are in the ratio of 1:1. If one-third of the teachers who teach Geography are females and the percentage of female teachers in History equals to the percentage of female teachers in Biology then what is the total number of male teachers who teach Geography, History and Biology?
1. 624 2. 627 3. 776 4. 798 5. None of these
- 8) What is the difference between the total number of teachers who teach History and Physics together and total number of teachers who teach Chemistry and Biology together?
1. 352 2. 362 3. 342 4. 353 5. None of these
- 9) If one – third of the teachers who teach Chemistry are females and the percentage of male teachers in Maths is 50%. What is the ratio of the male teachers who teach Chemistry to the number of female teachers who teach Maths?
1. 13 : 7 2. 7 : 13 3. 7 : 26 4. 13 : 6 5. None of these
- 10) If the percentage of Chemistry teachers is increased by 50% and percentage of Maths teachers is decreased by 25%, what will be the total number of Chemistry and Maths teachers together?
1. 390 2. 379 3. 469 4. 480 5. 459

Directions for Questions 11 to 15

Study the following table carefully and answer the questions given below.

Number of students and percentage of female students in six departments in seven colleges

Dept College \	CSE		EC		EEE		CE		ME		MME	
	N	P	N	P	N	P	N	P	N	P	N	P
P	180	45	120	40	60	35	60	40	120	50	60	35
Q	120	35	180	35	150	40	60	45	180	35	160	25
R	60	40	150	50	120	45	180	40	150	40	60	30
S	90	50	60	45	90	50	120	35	60	50	120	40
T	180	35	120	35	60	35	90	40	90	40	180	35
U	60	40	90	40	150	40	60	35	180	35	150	50
V	180	35	60	45	180	35	180	50	120	50	120	35

N: Number of students

P: Percentage of female students

- 11) What is the total number of female students studying in the college R in the given six departments together?
1. 293 2. 303 3. 313 4. 323 5. None of these
- 12) What is the ratio of total number of male students of the college Q in the departments CSE and EC to the total number of female students in the departments EEE and CE of the college U?
1. 55 : 19 2. 60 : 23 3. 65 : 27 4. 70 : 31 5. None of these
- 13) What is the total number of male students of the colleges P, Q and R in CSE department and the total number of male students of the colleges T, U, and V in ME departments?
1. 444 2. 464 3. 484 4. 504 5. None of these
- 14) What approximate percentage of students in CSE of all the colleges together are males?
1. 50.49% 2. 55.89% 3. 60.69% 4. 65.29% 5. 70.09%

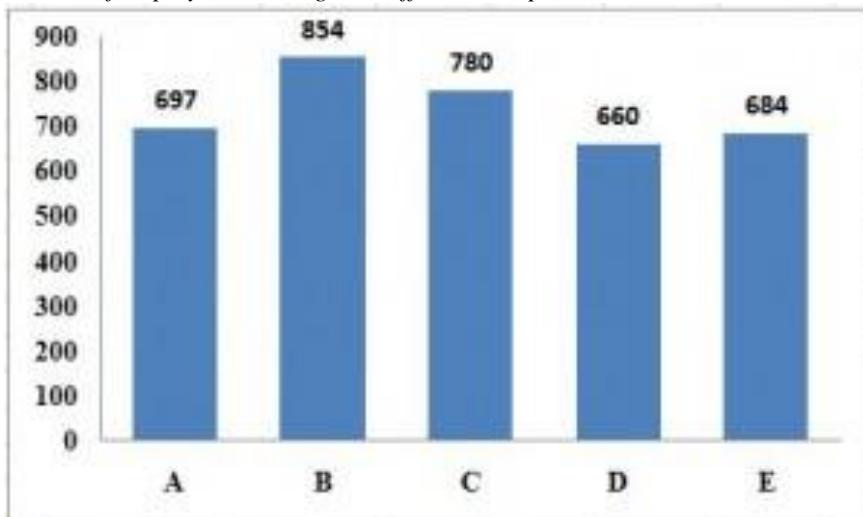
15) In which one of the given colleges are there the highest number of female students?

1. V 2. U 3. T 4. R 5. None of these

Directions for Questions 16 to 20

Study the following graph and table carefully to answer the given questions.

Number of employees working in 5 different Companies



Ratio of Male and Female ratio		
Company	Male	Female
A	12	5
B	4	3
C	7	8
D	9	11
E	20	18

16) What is the total number of male employee in all the companies together ?

1. 2010 2. 2001 3. 2100 4. 2140 5. None of these

17) What is the average number of female employee taking all the years together ?

1. 432 2. 278 3. 384 4. 335 5. None of these

18) What is the ratio of male and female employee working in companies D and E together ?

1. 217:221 2. 43:47 3. 124:127 4. 219:229 5. None of these

19) By what % is the no of total employees of company C more than that of Company D ?

1. 18.18% 2. 16.75% 3. 22.65% 4. 7.25% 5. None of these

20) By what % is the no of employees working in companies A and C more than that of female employees working in companies B and D ?

1. 112.5% 2. 96.2% 3. 102.6% 4. 124.5% 5. None of these

Table Set 1: Directions for Questions 1 to 5

Study the following table and answer the questions based on it.

Expenditures of a Company (in Pesetas) per Annum Over the given Years.

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

1) What is the average amount of interest per year which the company had to pay during this period?

- A. 32.43 B. 33.72 C. 34.18 D. 36.66

- 2) The total amount of bonus paid by the company during the given period is approximately what percent of the total amount of salary paid during this period?
- A. 0.1% B. 0.5% C. 1.0% D. 1.25%
- 3) Total expenditure on all these items in 1998 was approximately what percent of the total expenditure in 2002?
- A. 62% B. 66% C. 69% D. 71%
- 4) The total expenditure of the company over these items during the year 2000 is?
- A. 544.44 B. 501.11 C. 446.46 D. 478.87
- 5) The ratio between the total expenditure on Taxes for all the years and the total expenditure on Fuel and Transport for all the years respectively is approximately?
- A. 4:7 B. 10:13 C. 15:18 D. 5:8

Table Set 2: Directions for Questions 1 to 6

Study the following table and answer the questions.

Number of Candidates Appeared and Qualified in a Competitive Examination from Different States Over the Years.

State	Year									
	1997		1998		1999		2000		2001	
	App.	Qual.								
M	5200	720	8500	980	7400	850	6800	775	9500	1125
N	7500	840	9200	1050	8450	920	9200	980	8800	1020
P	6400	780	8800	1020	7800	890	8750	1010	9750	1250
Q	8100	950	9500	1240	8700	980	9700	1200	8950	995
R	7800	870	7600	940	9800	1350	7600	945	7990	885

1) Total number of candidates qualified from all the states together in 1997 is approximately what percentage of the total number of candidates qualified from all the states together in 1998?

- A. 72% B. 77% C. 80% D. 83%

2) What is the average candidates who appeared from State Q during the given years?

- A. 8700 B. 8760 C. 8990 D. 8920

3) In which of the given years the number of candidates appeared from State P has maximum percentage of qualified candidates?

- A. 1997 B. 1998 C. 1999 D. 2001

4) What is the percentage of candidates qualified from State N for all the years together, over the candidates appeared from State N during all the years together?

- A. 12.36% B. 12.16% C. 11.47% D. 11.15%

5) The percentage of total number of qualified candidates to the total number of appeared candidates among all the five states in 1999 is?

- A. 11.49% B. 11.84% C. 12.21% D. 12.57%

6) Combining the states P and Q together in 1998, what is the percentage of the candidates qualified to that of the candidate appeared?

- A. 10.87% B. 11.49% C. 12.35% D. 12.54%

Table Set 3: Directions for Questions 1 to 5

The following table gives the percentage of marks obtained by seven students in six different subjects in an examination.

The Numbers in the Brackets give the Maximum Marks in Each Subject.

Student	Subject (Max. Marks)					
	Maths	Chemistry	Physics	Geography	History	Computer Science
	(150)	(130)	(120)	(100)	(60)	(40)
Ayush	90	50	90	60	70	80
Aman	100	80	80	40	80	70
Sajal	90	60	70	70	90	70
Rohit	80	65	80	80	60	60
Muskan	80	65	85	95	50	90
Tanvi	70	75	65	85	40	60
Tarun	65	35	50	77	80	80

1) What are the average marks obtained by all the seven students in Physics? (rounded off to two digit after decimal)

- A. 77.26% B. 89.14 C. 91.37 D. 96.11

2) The number of students who obtained 60% and above marks in all subjects is?

- A. 1 B. 2 C. 3 D. none

3) What was the aggregate of marks obtained by Sajal in all the six subjects?

- A. 409 B. 419 C. 429 D. 449

4) In which subject is the overall percentage the best?

- A. Maths B. Chemistry C. Physics D. History

5) What is the overall percentage of Tarun?

- A. 52.5% B. 55% C. 60% D. 63%

Table Set 4: Directions for Questions 1 to 5

Study the following table chart and answer the questions.

Classification of 100 Students Based on the Marks Obtained by them in Physics and Chemistry in an Examination.

Subject	Marks out of 50				
	40 and above	30 and above	20 and above	10 and above	0 and above
Physics	9	32	80	92	100
Chemistry	4	21	66	81	100
Average (Aggregate)	7	27	73	87	100

1) What is the different between the number of students passed with 30 as cut-off marks in Chemistry and those passed with 30 as cut-off marks in aggregate?

- A. 3 B. 4 C. 5 D. 6

2) If at least 60% marks in Physics are required for pursuing higher studies in Physics, how many students will be eligible to pursue higher studies in Physics?

- A. 27 B. 32 C. 34 D. 41

3) The percentage of number of students getting at least 60% marks in Chemistry over those getting at least 40% marks in aggregate, is approximately what according to the table chart?

- A. 21% B. 27% C. 29% D. 31%

4) The number of students scoring less than 40% marks in aggregate is?

- A. 13 B. 19 C. 20 D. 27

5) If it is known that at least 23 students were eligible for a Symposium on Chemistry, then the minimum qualifying marks in Chemistry for eligibility to Symposium would lie in the range?

- A. 40-45 B. 30-40 C. 20-30 D. Below 20

Table Set 5: Directions for Questions 1 to 6

Study the following table and answer the questions based on it.

Number of Candidates Appeared, Qualified and Scheduled in a Competitive Examination from Five States Delhi, H.P, U.P, Punjab and Haryana Over the Years 1994 to 1998

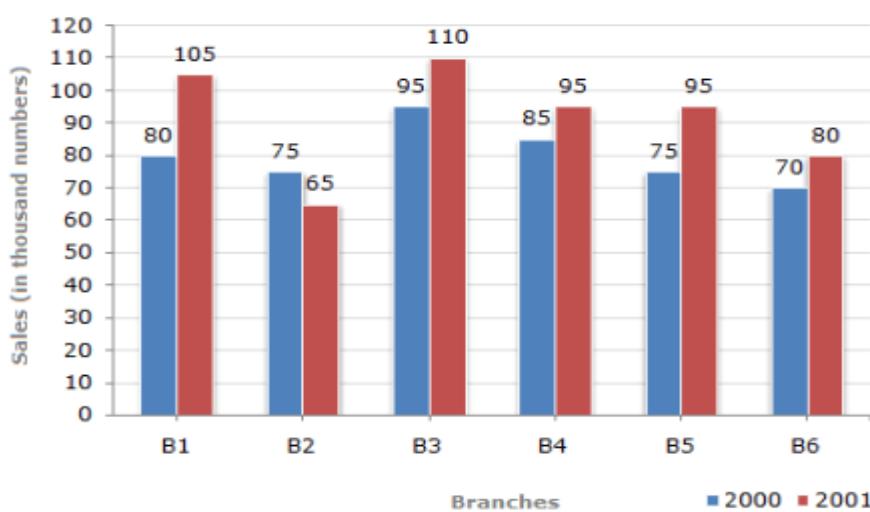
Year	Delhi			H.P			U.P			Punjab			Haryana		
	App	Qual	Sel	App	Qual	Sel	App	Qual	Sel	App	Qual	Sel	App	Qual	Sel
1997	8000	850	94	7800	810	82	7500	720	78	8200	680	85	6400	700	75
1998	4800	500	48	7500	800	65	5600	620	85	6800	600	70	7100	650	75
1999	7500	640	82	7400	560	70	4800	400	48	6500	525	65	5200	350	55
2000	9500	850	90	8800	920	86	7000	650	70	7800	720	84	6400	540	60
2001	9000	800	70	7200	850	75	8500	950	80	5700	485	60	4500	600	75

- 1) For which state the average number of candidates selected over the years is the maximum?
 A. Delhi B. H.P C. U.P D. Punjab
- 2) The percentage of candidates qualified from Punjab over those appeared from Punjab is highest in the year?
 A. 1997 B. 1998 C. 1999 D. 2000
- 3) In the year 1997, which state had the lowest percentage of candidates selected over the candidates appeared?
 A. Delhi B. H.P C. U.P D. Punjab
- 4) The number of candidates selected from Haryana during the period under review is approximately what percent of the number selected from Delhi during this period?
 A. 79.5% B. 81% C. 84.5% D. 88.5%
- 5) The percentage of candidates selected from U.P over those qualified from U.P is highest in the year?
 A. 1997 B. 1998 C. 1999 D. 2001
- 6) What is the approximate percentage of total number of candidates selected to the total number of candidates qualified for all five states together during the year 1999?
 A. 10% B. 11% C. 12% D. 13%

Bar chart Set 1: Direction for the question 1 to 5:

The bar graph given below shows the sales of books (in thousand numbers) from six branches of a publishing company during two consecutive years 2000 and 2001.

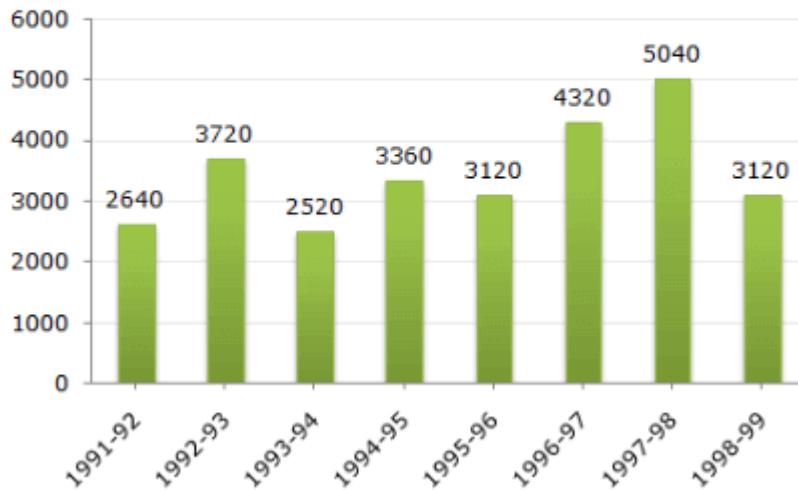
Sales of Books (in thousand numbers) from Six Branches - B1, B2, B3, B4, B5 and B6 of a publishing Company in 2000 and 2001.



- 1) What is the ratio of the total sales of branch B2 for both years to the total sales of branch B4 for both years?
 A. 2:3 B. 3:5 C. 4:5 D. 7:9
- 2) Total sales of branch B6 for both the years is what percent of the total sales of branches B3 for both the years?
 A. 68.54% B. 71.11% C. 73.17% D. 75.55%
- 3) What percent of the average sales of branches B1, B2 and B3 in 2001 is the average sales of branches B1, B3 and B6 in 2000?
 A. 75% B. 77.5% C. 82.5% D. 87.5%
- 4) What is the average sales of all the branches (in thousand numbers) for the year 2000?
 A. 73 B. 80 C. 83 D. 88
- 5) Total sales of branches B1, B3 and B5 together for both the years (in thousand numbers) is?
 A. 250 B. 310 C. 435 D. 560

Bar chart Set 2: Direction for the question 1 to 4:

The bar graph given below shows the foreign exchange reserves of a country (in million US \$) from 1991 - 1992 to 1998 - 1999.

Foreign Exchange Reserves Of a Country. (in million US \$)


- 1) The ratio of the number of years, in which the foreign exchange reserves are above the average reserves, to those in which the reserves are below the average reserves is?

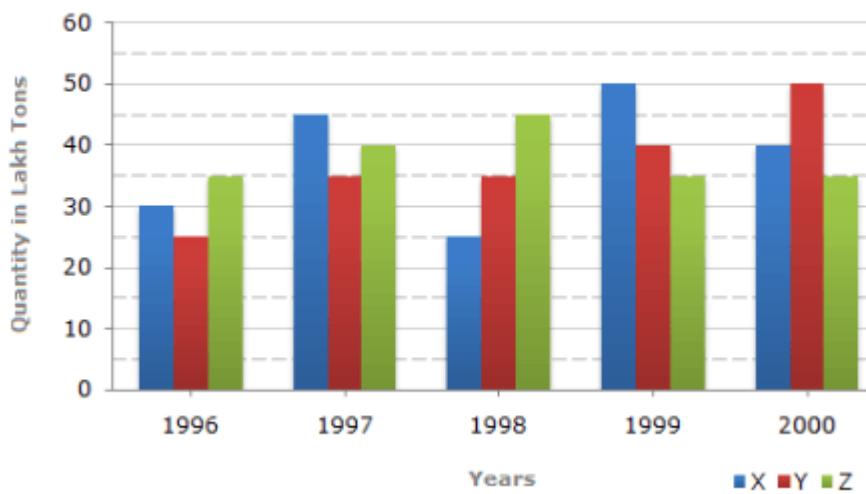
 A. 2:6 B. 3:4 C. 3:5 D. 4:4
- 2) The foreign exchange reserves in 1997-98 was how many times that in 1994-95?

 A. 0.7 B. 1.2 C. 1.4 D. 1.5
- 3) For which year, the percent increase of foreign exchange reserves over the previous year, is the highest?

 A. 1992-93 B. 1993-94 C. 1994-95 D. 1996-97
- 4) The foreign exchange reserves in 1996-97 were approximately what percent of the average foreign exchange reserves over the period under review?

 A. 95% B. 110% C. 115% D. 125%
- 5) What was the percentage increase in the foreign exchange reserves in 1997-98 over 1993-94?

 A. 100 B. 150 C. 200 D. 620

Bar chart Set 3: Direction for the question 1 to 6:
Production of Paper (in lakh tonnes) by Three Companies X, Y and Z over the Years.


- 1) For which of the following years, the percentage rise/fall in production from the previous year is the maximum for Company Y?

 A. 1997 B. 1998 C. 1999 D. 2000
- 2) What is the ratio of the average production of Company X in the period 1998-2000 to the average production of Company Y in the same period?

 A. 1:1 B. 15:17 C. 23:25 D. 27:29
- 3) The average production for five years was maximum for which company?

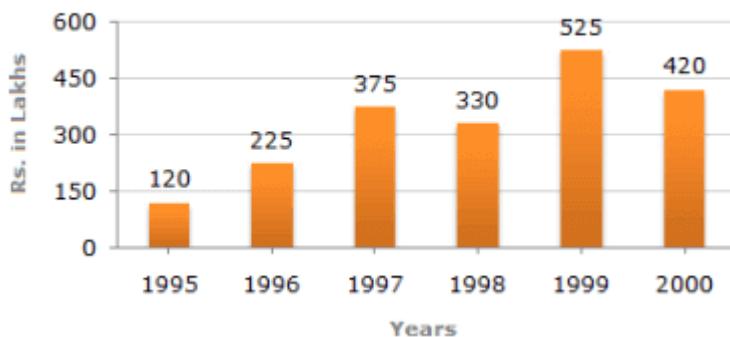
 A. X B. Y C. Z D. X and Z both

- 4) In which year was the percentage of production of Company Z to the production of Company Y the maximum?
 A. 1996 B. 1997 C. 1998 D. 1999
- 5) What is the percentage increase in the production of Company Y from 1996 to 1999?
 A. 30% B. 45% C. 50% D. 60%
- 6) What is the difference between the production of Company Z in 1998 and Company Y in 1996?
 A. 2,00,000 tons B. 20,00,000 tons C. 20,000 tons D. 2,00,00,000 tons

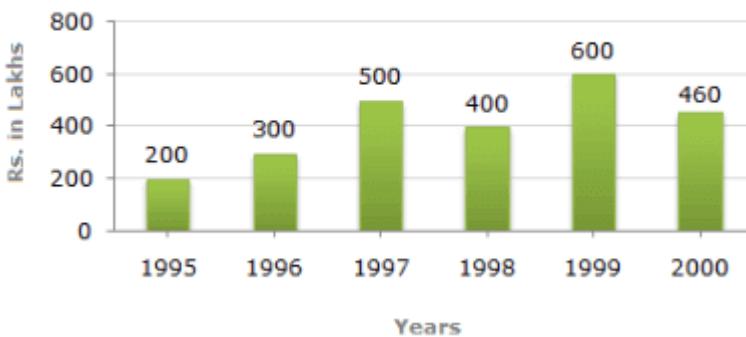
Bar chart Set 4: Direction for the question 1 to 5:

Out of the two bar graphs provided below, one shows the amounts (in Lakh Rs. = One Lakh is equal to One Hundred Thousand (100,000)) invested by a Company in purchasing raw materials over the years and the other shows the values (in Lakh Rs. = One Lakh is equal to One Hundred Thousand (100,000)) of finished goods sold by the Company over the years.

Amount invested in Raw Materials (Rs. in Lakhs)



Value of Sales of Finished Goods (Rs. in Lakhs)



1) Interpret the data and find the maximum difference between the amount invested in Raw materials and value of sales of finished goods was during the year?

- A. 1995 B. 1996 C. 1997 D. 1998

2) The value of sales of finished goods in 1999 was approximately what percent of the sum of amount invested in Raw materials in the years 1997, 1998 and 1999?

- A. 33% B. 37% C. 45% D. 49%

3) What was the difference between the average amount invested in Raw materials during the given period and the average value of sales of finished goods during this period?

- A. Rs. 62.5 lakhs B. Rs. 68.5 lakhs C. Rs. 71.5 lakhs D. Rs. 77.5 lakhs

4) In which year, the percentage change (compared to the previous year) in the investment on Raw materials is same as that in the value of sales of finished goods?

- A. 1996 B. 1997 C. 1998 D. 1999

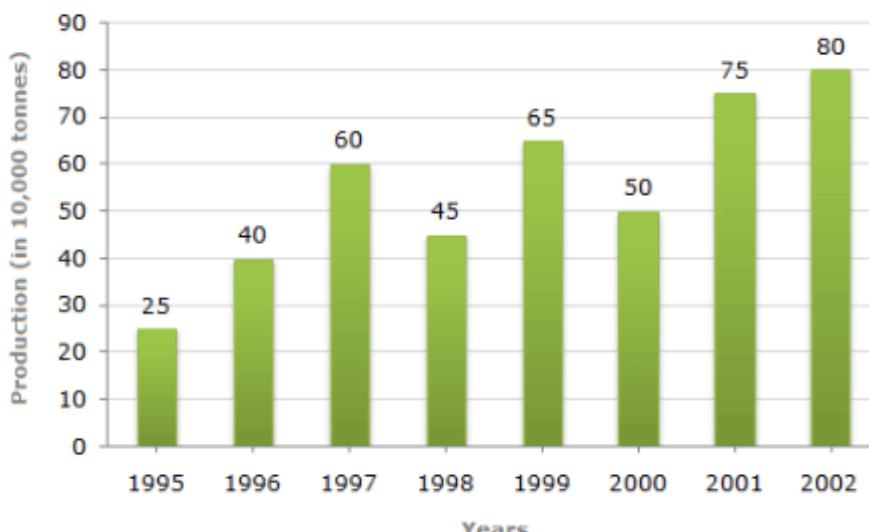
5) In which year, there has been a maximum percentage increase in the amount invested in Raw materials as compared to the year?

- A. 1996 B. 1997 C. 1998 D. 1999

Bar chart Set 5: Direction for the question 1 to 5:

Study the bar chart and answer the question based on it.

Production of Fertilizers by a Company (in 1000 tonnes) Over the Years

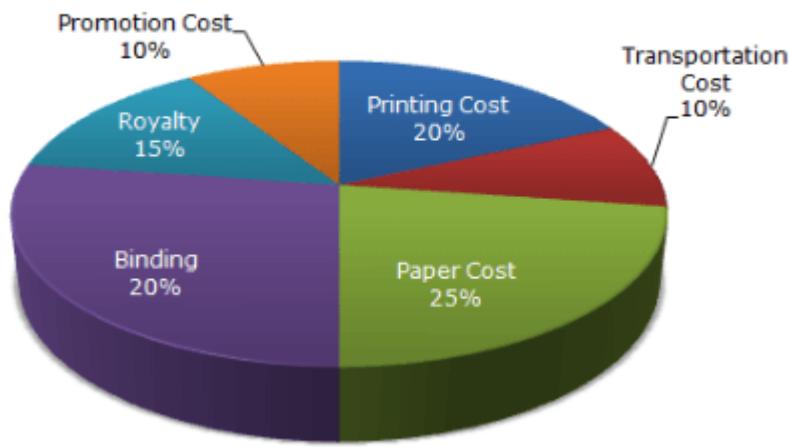


- 1) What was the percentage decline in the production of fertilizers from 1997 to 1998?
 A. $33(1/3)\%$ B. 20% C. 25% D. 21%
- 2) The average production of 1996 and 1997 was exactly equal to the average production of which of the following pairs of years?
 A. 2000 and 2001 B. 1999 and 2000 C. 1998 and 2000 D. 1995 and 2001
- 3) What was the percentage increase in production of fertilizers in 2002 compared to that in 1995?
 A. 320% B. 300% C. 220% D. 200%
- 4) In which year was the percentage increase in production as compared to the previous year the maximum?
 A. 2002 B. 2001 C. 1997 D. 1996
- 5) In how many of the given years was the production of fertilizers more than the average production of the given years?
 A. 1 B. 2 C. 3 D. 4

Pie Chart Set 1: Direction for the question 1 to 9:

The following pie-chart shows the percentage distribution of the expenditure incurred in publishing a book. Study the pie-chart and the answer the questions based on it.

Various Expenditures (in percentage) Incurred in Publishing a Book



- 1) If for a certain quantity of books, the publisher has to pay Rs. 30,600 as printing cost, then what will be amount of royalty to be paid for these books?
 A. Rs. 19,450 B. Rs. 21,200 C. Rs. 22,950 D. Rs. 26,150
- 2) What is the central angle of the sector corresponding to the expenditure incurred on Royalty?
 A. 15° B. 24° C. 54° D. 48°
- 3) The price of the book is marked 20% above the C.P. If the marked price of the book is Rs. 180, then what is the cost of the paper used in a single copy of the book?
 A. Rs. 36 B. Rs. 37.50 C. Rs. 42 D. Rs. 44.25
- 4) If 5500 copies are published and the transportation cost on them amounts to Rs. 82500, then what should be the selling price of the book so that the publisher can earn a profit of 25%?

- A. Rs. 187.50 B. Rs. 191.50 C. Rs. 175 D. Rs. 180

5) Royalty on the book is less than the printing cost by:

- A. 5% B. 33 1/5% C. 20% D. 25%

6) If the difference between the two expenditures are represented by 18° in the pie-chart, then these expenditures possibly are

- A. Binding Cost and Promotion Cost B. Paper Cost and Royalty C. Binding Cost and Printing Cost

D. Paper Cost and Printing Cost

7) For an edition of 12,500 copies, the amount of Royalty paid by the publisher is Rs. 2,81,250. What should be the selling price of the book if the publisher desires a profit of 5%?

- A. Rs. 152.50 B. Rs. 157.50 C. Rs. 162.50 D. Rs. 167.50

8) If for an edition of the book, the cost of paper is Rs. 56250, then find the promotion cost for this edition.

- A. Rs. 20,000 B. Rs. 22,500 C. Rs. 25,500 D. Rs. 28,125

9) Which two expenditures together have central angle of 108° ?

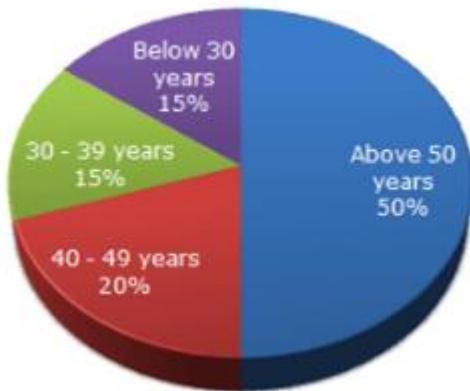
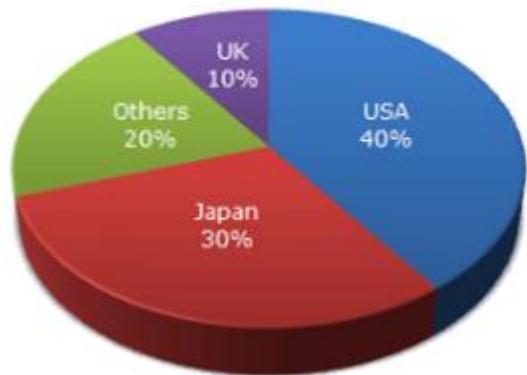
- A. Biding Cost and Transportation Cost B. Printing Cost and Paper Cost C. Royalty and Promotion Cost

D. Binding Cost and Paper Cost

Pie Chart Set 2: Direction for the question 1 to 2:

The following pie charts exhibit the distribution of the overseas tourist traffic from India. The two charts shows the tourist distribution by country and the age profiles of the tourists respectively.

Distribution of Overseas Tourist Traffic from India.



1) What percentage of Indian tourists went to either USA or UK ?

- A. 40 % B. 50 % C. 60 % D. 70 %

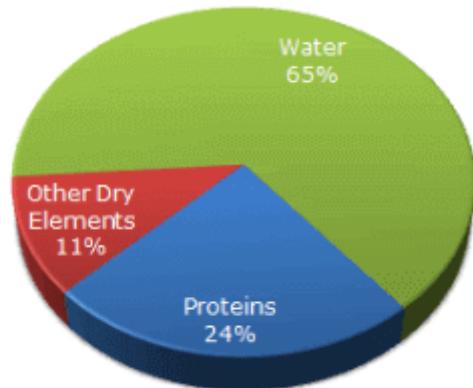
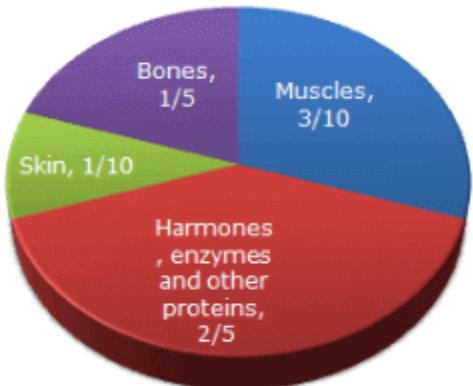
2) The ratio of the number of Indian tourists that went to USA to the number of Indian tourists who were below 30 years of age is ?

- A. 2:1 B. 8:3 C. 3:8 D. Cannot be determined

Pie Chart Set 3: Direction for the question 1 to 3:

The following pie chart give the information about the distribution of weight in the human body according to different kinds of components. Study the pie charts and answer the question.

Distribution of Weight in Human Body



- 1) What percentage of proteins of the human body is equivalent to the weight of its skin ?

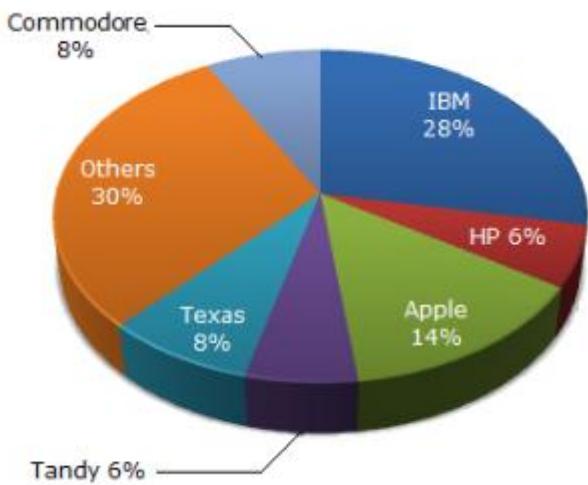
 A. 41.66 % B. 43.33 % C. 44.44 % D. Cannot be determined
- 2) How much of the human body is neither made of bones or skin ?

 A. 40 % B. 50 % C. 60 % D. 70 %
- 3) What is the ratio of the distribution of proteins in the muscles to that of the distribution of proteins in the bones?

 A. 2:1 B. 2:3 C. 3:2 D. Cannot be determined

Pie Chart Set 4: Direction for the question 1 to 3:

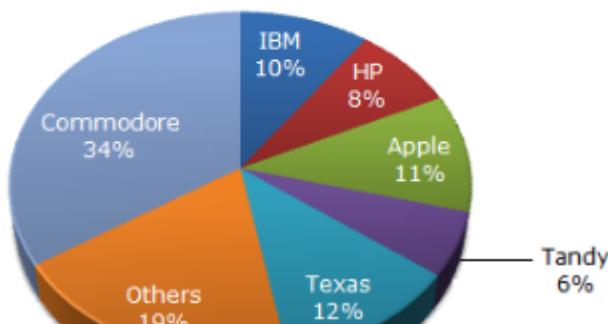
The pie chart shows the distribution of New York market share by value of different computer companies in 2005.



The pie chart shows the distribution of New York market share by **volume** of different computer companies in 2005.

Number of units sold in 2005 in New York = 1,500

Value of units sold in 2005 in New York = US \$1.650.000.



- 1) Based on the above pie chart, for the year 2005, which company has realized the lowest average unit sales price for a PC ?
A. Commodore B. IBM C. Tandy D. Cannot be determined

2) Over the period 2005-2006, if sales (value-wise) of IBM PC's increased by 50% and of Apple by 15% assuming that PC sales of all other computer companies remained the same, by what percentage (approximately) would the PC sales in New York (value-wise) increase over the same period ?
A. 16.1 % B. 18 % C. 14 % D. None of these

3) In 2005, the average unit sale price of an IBM PC was approximately (in US\$)
A. 3180 B. 2800 C. 3930 D. 3080

Pie Chart Set 5: Direction for the question 1 to 5:

The following pie-chart shows the sources of funds to be collected by the National Highways Authority of India (NHA) for its Phase II projects. Study the pie-chart and answers the question that follow.

Sources of funds to be arranged by NHAII for Phase II projects (in Yen.)



- 1) Near about 20% of the funds are to be arranged through:

A. SPVS B. External Assistance C. Annuity D. Market Borrowing

2) If NHAI could receive a total of 9695 Yen as External Assistance, by what percent (approximately) should it increase the Market Borrowing to arrange for the shortage of funds?

A. 4.5% B. 7.5% C. 6% D. 8%

3) If the toll is to be collected through an outsourced agency by allowing a maximum 10% commission, how much amount should be permitted to be collected by the outsourced agency, so that the project is supported with 4910 Yen?

A. 6213 Yen B. 5827 Yen C. 5401 Yen D. 5316 Yen

4) The central angle corresponding to Market Borrowing is

A. 52° B. 137.8° C. 187.2° D. 192.4°

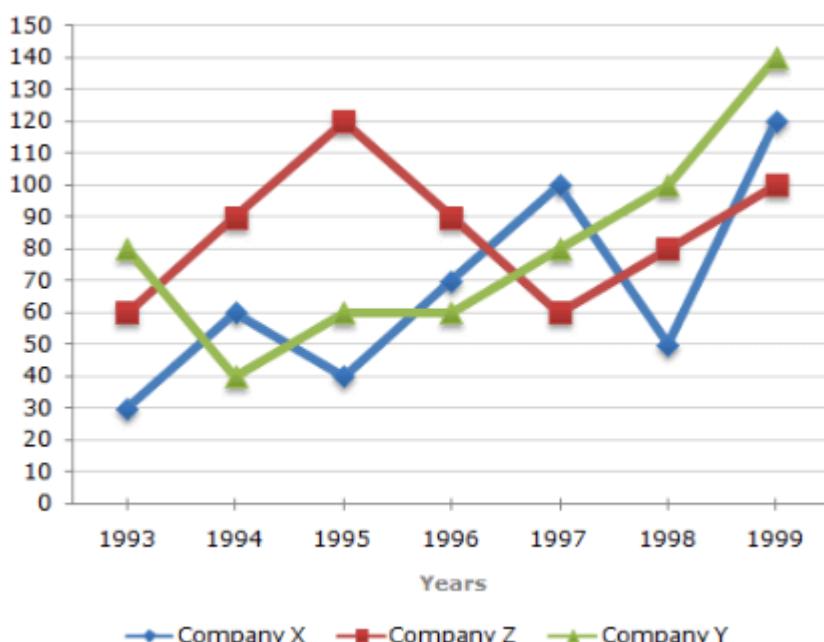
5) The approximate ratio of the funds to be arranged through Toll and that through Market Borrowing is

A. 2 : 9 B. 1 : 6 C. 3 : 11 D. 2 : 5

Line Graph Set 1: Direction for the question 1 to 5:

Study the following line graph and answer the questions.

Exports from Three Companies Over the Years (in Pesetas)

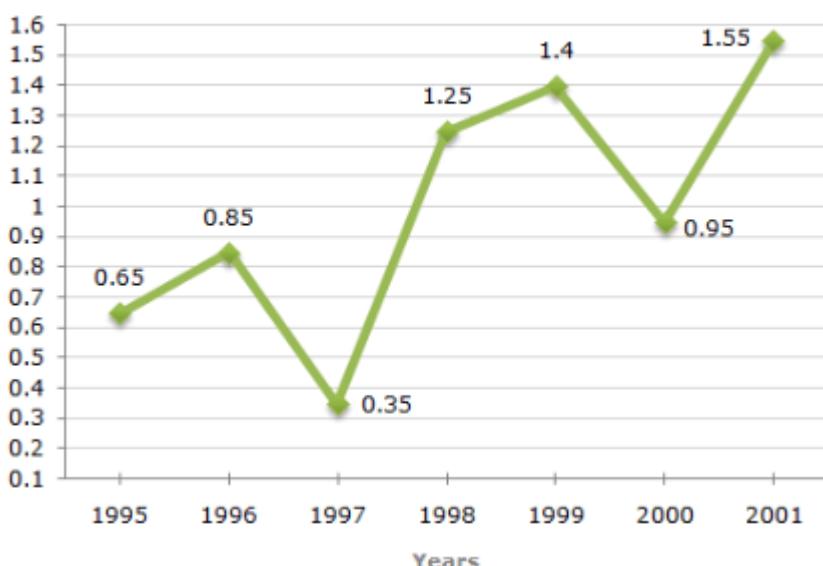


- 1) For which of the following pairs of years the total exports from the three Companies together are equal?
 - A. 1995 and 1998
 - B. 1996 and 1998
 - C. 1997 and 1998
 - D. 1995 and 1996
- 2) Average annual exports during the given period for Company Y is approximately what percent of the average annual exports for Company Z?
 - A. 87.12%
 - B. 89.64%
 - C. 91.21%
 - D. 93.33%
- 3) In which year was the difference between the exports from Companies X and Y the minimum?
 - A. 1994
 - B. 1995
 - C. 1996
 - D. 1997
- 4) What was the difference between the average exports of the three Companies in 1993 and the average exports in 1998?
 - A. 15.33
 - B. 18.67
 - C. 20
 - D. 22.17
- 5) In how many of the given years, were the exports from Company Z more than the average annual exports over the given years?
 - A. 2
 - B. 3
 - C. 4
 - D. 5

Line Graph Set 2: Direction for the question 1 to 5:

The following line graph gives the ratio of the amounts of imports by a company to the amount of exports from that company over the period from 1995 to 2001.

Ratio of Value of Imports to Exports by a Company Over the Years.



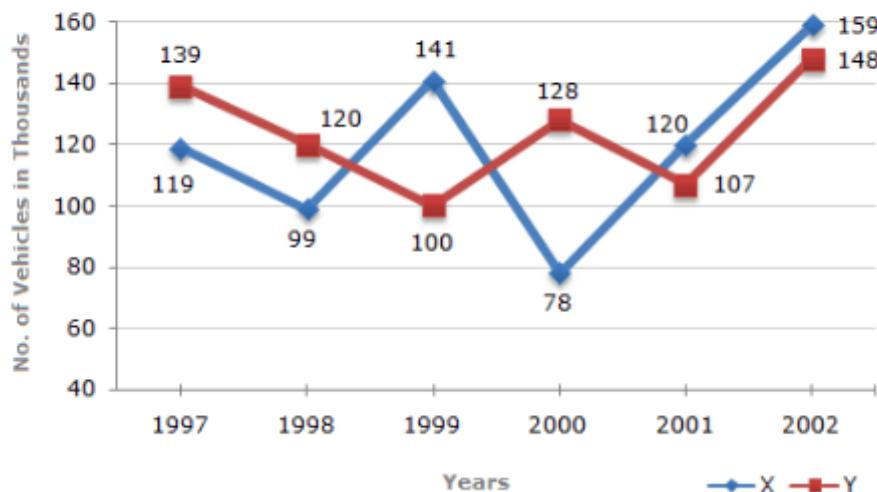
- 1) If the imports in 1998 was Rs. 250 and the total exports in the years 1998 and 1999 together was Rs. 500 then the imports in 1999 was?
 - A. 250
 - B. 300
 - C. 357
 - D. 420
- 2) The imports were minimum proportionate to the exports of the company in the year?
 - A. 1995
 - B. 1996
 - C. 1997
 - D. 2000
- 3) What was the percentage increase in imports from 1997 to 1998?

- A. 72 B. 56 C. 28 D. Data inadequate
- 4) If the imports of the company in 1996 was Rs. 2 720 000 000 , the exports from the company in 1996 was ?
 A. 3 700 000 000 B. 3 200 000 000 C. 2 800 000 000 D. 2 750 000 000
- 5) In how many of the given years were the exports more than the imports?
 A. 1 B. 2 C. 3 D. 4

Line Graph Set 3: Direction for the question 1 to 5:

Study the following line graph and answer the questions based on it.

Number of Vehicles Manufactured by Two companies ove the Years (Number in Thousands)

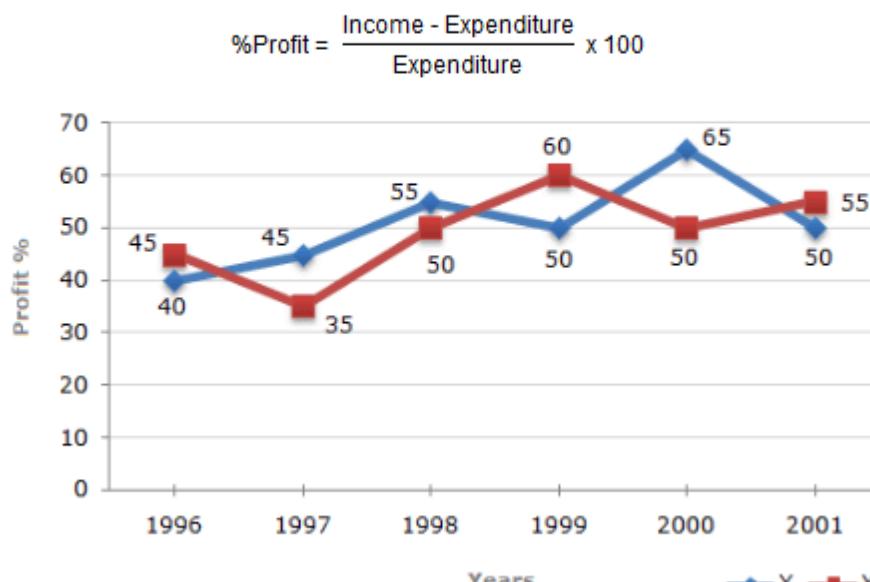


- 1) What is the difference between the number of vehicles manufactured by Company Y in 2000 and 2001?
 A. 50000 B. 42000 C. 33000 D. 21000
- 2) What is the difference between the total productions of the two Companies in the given years?
 A. 19000 B. 22000 C. 26000 D. 28000
- 3) What is the average numbers of vehicles manufactured by Company X over the given period? (rounded off to nearest integer)
 A. 119333 B. 113666 C. 112778 D. 111223
- 4) In which of the following years, the difference between the productions of Companies X and Y was the maximum among the given years?
 A. 1997 B. 1998 C. 1999 D. 2000
- 5) The production of Company Y in 2000 was approximately what percent of the production of Company X in the same year?
 A. 173 B. 164 C. 132 D. 97

Line Graph Set 4: Direction for the question 1 to 3:

The following line graph gives the percent profit earned by two Companies X and Y during the period 1996 - 2001.

Percentage profit earned by Two Companies X and Y over the Given Years



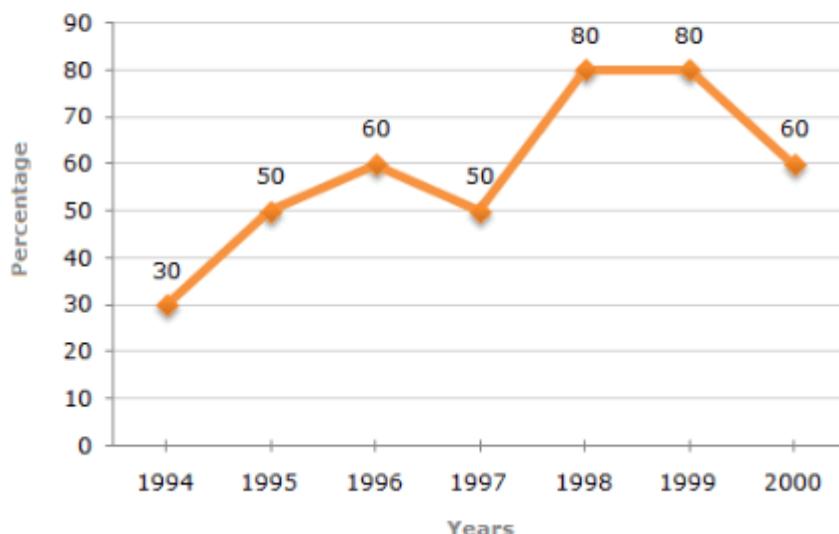
1) The incomes of two Companies X and Y in 2000 were in the ratio of 3:4 respectively. What was the respective ratio of their expenditures in 2000?

- A. 7:22 B. 14:19 C. 15:22 D. 27:35
- 2) If the expenditure of Company Y in 1997 was 220 what was its income in 1997?
 A. 312 B. 297 C. 283 D. 275
- 3) If the incomes of two Companies were equal in 1999, then what was the ratio of expenditure of Company X to that of Company Y in 1999?
 A. 6:5 B. 5:6 C. 11:6 D. 16:15

Line Graph Set 5: Direction for the question 1 to 5:

The following line graph gives the percentage of the number of candidates who qualified an examination out of the total number of candidates who appeared for the examination over a period of seven years from 1994 to 2000.

Percentage of Candidates Qualified to Appeared in an Examination Over the Years



1) The difference between the percentages of candidates qualified to appeared was maximum in which of the following pairs of years?

- A. 1994 and 1995 B. 1997 and 1998 C. 1998 and 1999 D. 1999 and 2000
- 2) In which pair of years was the number of candidates qualified, the same?
 A. 1995 and 1997 B. 1995 and 2000 C. 1998 and 1999 D. Data inadequate
- 3) If the number of candidates qualified in 1998 was 21200, what was the number of candidates appeared in 1998?

- A. 32000 B. 28500 C. 26500 D. 25000
- 4) If the total number of candidates appeared in 1996 and 1997 together was 47400, then the total number of candidates qualified in these two years together was?
- A. 34700 B. 32100 C. 31500 D. Data inadequate
- 5) The total number of candidates qualified in 1999 and 2000 together was 33500 and the number of candidates appeared in 1999 was 26500. What was the number of candidates in 2000?
- A. 24500 B. 22000 C. 20500 D. 19000

Campus Credentials

Data Interpretation Solution:

1) Answer - 4. 60%

Explanation :

$$= 320 - 200 = 120$$

$$= (120/200) * 100$$

$$= 60\%$$

2) Answer - 4. 1010

Explanation :

$$\text{Shirts in October, February & March} = 1700$$

$$\text{Shirts in January, November & December} = 690$$

$$\text{Difference} = 1700 - 690 = 1010$$

3) Answer - 4. 75/4 %

Explanation :

Required Percentage

$$= [(760-640)/640] * 100$$

$$= [120/640] * 100 = 75/4\%$$

4) Answer - 5. 206

Explanation :

Explanation :

$$\text{Avg} = 150 + 260 + 350 + 190 + 80 = 1030 = 1030/5 = 206$$

5) Answer - 5. 8:5

Explanation :

Shirts sold in Shop B in September

$$= 20\% \text{ of } 120 = 24 = 120 - 24 = 96$$

Shirts sold in Shop B in April

$$= 20\% \text{ of } 50 = 10 = 50 + 10 = 60$$

$$\text{Ratio} = 96 : 60 = 8:5$$

6) Answer - 1. 57%

Explanation :

$$\text{Number of teachers in Physics} = 17/100 * 1800 = 306$$

$$\text{Number of male teachers in Physics} = 7/9 * 306 = 238$$

$$\text{Number of teachers in Geography} = 23/100 * 1800 = 414$$

$$\% = 238 / 414 * 100 = 57\%$$

7) Answer - 2. 627

Explanation :

Number of male teachers who teach Geography = 2/3 *

$$23/100 * 1800 = 276$$

Number of male teachers who teach History = 1/2 * 27/100 *

$$1800 = 243$$

% of female teachers who teach Biology = % of female teachers who teach Biology i.e 50%

Therefore Number of male teachers who teach Biology =

$$50/100 * 12/100 * 1800 = 108$$

$$\text{Total} = 276 + 243 + 108 = 627$$

8) Answer - 3. 342

Explanation :

Total number of teacher who teach History and Physics = 44% of 1800

Total number of teacher who teach Chemistry and Biology = 25% of 1800

$$\text{Difference} = 19\% \text{ of } 1800 = 342$$

9) Answer - 4. 13 : 6

Explanation :

$$\text{Number of male teachers who teach Chemistry} = 2/3 * 13/100$$

$$* 1800 = 156$$

$$\text{Number of female teachers who teach Biotechnology} = 1/2 * 8/100 * 1800 = 72$$

$$\text{Ratio} = 156 : 72 = 13 : 6$$

10) Answer - 5. 459

Explanation :

$$\text{Total number of teacher who teach Chemistry} = 234 + 117 = 351$$

$$\text{Total number of teacher who teach Maths} = 3/4 * 8\% \text{ of } 1800 = 108$$

$$\text{Total number of Chemistry and Maths teachers together} = 351 + 108 = 459$$

11) Answer - 2 : 303

Explanation:

The required total number of female students =

$$\left(\frac{40}{100} \times 60 + \frac{50}{100} \times 150 + \frac{45}{100} \times 120 + \frac{40}{100} \times 180 \right)$$

$$+ \left(\frac{40}{100} \times 150 + \frac{30}{100} \times 60 \right)$$

$$= (24 + 75 + 54 + 72 + 60 + 18) = 303.$$

Choice (2)

12) Answer - 3 : 65 : 27

Explanation

The required ratio

$$= \left[\left(1 - \frac{35}{100} \right) 120 + \left(1 - \frac{35}{100} \right) \times 180 \right]$$

$$= \left[\frac{40}{100} \times 150 + \frac{35}{100} \times 60 \right]$$

$$= (78 + 117) : (60 + 21) = 195 : 81$$

Choice (3)

13) Answer - 1 : 444

Explanation

The required difference =

$$\left[\left(1 - \frac{45}{100} \right) \times 180 + \left(1 - \frac{35}{100} \right) \times 120 + \left(1 - \frac{40}{100} \right) 60 \right]$$

$$+ \left[\left(1 - \frac{40}{100} \right) \times 90 + \left(1 - \frac{35}{100} \right) \times 180 + \left(1 - \frac{50}{100} \right) \times 120 \right]$$

$$= (99 + 78 + 36) + (54 + 117 + 60)$$

$$= 213 + 231 = 444$$

Choice (1)

14) Answer - 3 : 60.69%

Explanation

Total number of students in CSE of all the colleges together

$$= (180 + 120 + 160 + 90 + 180 + 60 + 180) = 870$$

Number of males students in CSE of all the colleges together

$$= (99 + 78 + 36 + 45 + 117 + 36 + 117) = 528$$

∴ the required percentage

$$= \frac{528}{870} \times 100\% \approx 60.69\%$$

Choice (3)

15) Answer - 1 : V

Explanation

The following table shows the number of female students in each department of the given seven colleges.

Dept college \ college	CSE	EC	EEE	CE	ME	MME	Total
P	81	48	21	24	60	21	255
Q	42	63	60	27	63	40	295
R	24	75	54	72	60	18	303
S	45	27	45	42	30	48	237
T	63	42	21	36	36	63	261
U	24	36	60	21	63	75	279
V	24	36	60	21	63	75	279

Clearly the number is highest for the college V.
Choice (1)

16) Answer - B)2001

Explanation :

$$A = 697 * 12 / 17 = 492$$

$$B = 854 * 4 / 7 = 488$$

$$C = 780 * 7 / 15 = 364$$

$$D = 660 * 9 / 20 = 297$$

$$E = 684 * 20 / 38 = 360$$

$$\text{Total} = 492 + 488 + 364 + 297 + 360 = 2001$$

17) Answer - D)335

Explanation :

$$A = 697 - 492 = 205$$

$$B = 854 - 488 = 366$$

$$C = 780 - 364 = 416$$

$$D = 660 - 297 = 363$$

$$E = 684 - 360 = 324$$

$$\text{Avg} = 205 + 366 + 416 + 363 + 324 / 5 = 1674 / 5 = 334.8 = 335$$

18) Answer - D)219:229

Explanation :

$$\text{Male} = D + E = 297 + 360 = 657$$

$$\text{Female} = D + E = 363 + 324 = 687$$

$$657:687 = 219 : 229$$

19) Answer - A)18.18%

Explanation :

$$C = 780$$

$$D = 660$$

$$\% = (780 - 660) * 100 / 660 = 18.18\%$$

1) Answer - C)102.6%

Explanation :

$$A + C = 697 + 780 = 1477$$

$$\text{Female} B + D = 366 + 363 = 729$$

$$\% = (1477 - 729) * 100 / 729 = 102.6\%$$

Table Set 1: Solution

1) Answer & Explanation:

Answer: Option D

Explanation: Average amount of interest paid by the Company during the given period

$$\begin{aligned}
 &= \left[\frac{23.4 + 32.5 + 41.6 + 36.4 + 49.4}{5} \right] \\
 &= \left[\frac{183.3}{5} \right] \\
 &= 36.66
 \end{aligned}$$

2) Answer & Explanation:

Answer: Option C

Explanation: Required percentage

$$\begin{aligned}
 &\left[\frac{(3.00 + 2.52 + 3.84 + 3.68 + 3.96) * 100}{(288 + 342 + 324 + 336 + 420)} \right]\% \\
 &\left[\frac{17}{1710} * 100 \right]\% \\
 &\approx 1\%
 \end{aligned}$$

3) Answer & Explanation:

Answer: Option C

Explanation: Required percentage

$$\begin{aligned}
 &\left[\frac{(288 + 98 + 3.00 + 23.4 + 83) * 100}{(420 + 142 + 3.96 + 49.4 + 98)} \right]\% \\
 &\left[\frac{495.4}{713.36} * 100 \right]\% \\
 &\approx 69.45\%
 \end{aligned}$$

4) Answer & Explanation:

Answer: Option A

Explanation: Total expenditure of the Company during 2000 = $(324 + 101 + 3.84 + 41.6 + 74)$ pesetas = 544.44 pesetas

5) Answer & Explanation:

Answer: Option B

Explanation: Required ratio

$$\begin{aligned}
 &\left[\frac{(83 + 108 + 74 + 88 + 98)}{(98 + 112 + 101 + 133 + 142)} \right] \\
 &\left[\frac{451}{586} \right] \\
 &\frac{1}{1.3} \\
 &\frac{10}{13}
 \end{aligned}$$

Table Set 2: Solution

1) Answer & Explanation:

Answer: Option C

Explanation: Required percentage

$$\left[\frac{(720 + 840 + 780 + 950 + 870)}{(980 + 1050 + 1020 + 1240 + 940)} * 100 \right] \% \\ \left[\frac{4160}{5230} * 100 \right] \% \\ \approx 79.54\% \approx 80\%$$

2) Answer & Explanation:

Answer: Option C

Explanation: Required average

$$\frac{8100 + 9500 + 8700 + 9700 + 8950}{5} \\ \underline{44950} \\ \underline{\quad 5} \\ 8990$$

3) Answer & Explanation:

Answer: Option D

Explanation:

$$\text{For 1997 } \left(\frac{780}{6400} \times 100 \right) \% = 12.19\%.$$

$$\text{For 1998 } \left(\frac{1020}{8800} \times 100 \right) \% = 11.59\%.$$

$$\text{For 1999 } \left(\frac{890}{7800} \times 100 \right) \% = 11.41\%.$$

$$\text{For 2000 } \left(\frac{1010}{8750} \times 100 \right) \% = 11.54\%.$$

$$\text{For 2001 } \left(\frac{1250}{9750} \times 100 \right) \% = 12.82\%.$$

\therefore Maximum percentage is for the year 2001.

4) Answer & Explanation:

Answer: Option D

Explanation: Required percentage

$$\left[\frac{(840 + 1050 + 920 + 980 + 1020)}{(7500 + 9200 + 8450 + 9200 + 8800)} * 100 \right] \% \\ \left[\frac{4810}{43150} * 100 \right] \% \\ 11.15\%$$

5) Answer & Explanation:

Answer: Option B

Explanation: Required percentage

$$\left[\frac{(850 + 920 + 890 + 980 + 1350)}{(7400 + 8450 + 7800 + 8700 + 9800)} * 100 \right] \% \\ \left[\frac{4990}{42150} * 100 \right] \% \\ 11.84\%$$

6) Answer & Explanation:

Answer: Option C

Explanation: Required percentage

$$\left[\frac{(1020 + 1240)}{(8800 + 9500)} * 100 \right] \% \\ \left[\frac{2260}{18300} * 100 \right] \% \\ 12.35\%$$

Table Set 3: Solution

1) Answer & Explanation:

Answer: Option B

Explanation:

Average marks obtained in Physics by all the seven students

$$= \frac{1}{7} \times [(90\% \text{ of } 120) + (80\% \text{ of } 120) + (70\% \text{ of } 120) \\ + (80\% \text{ of } 120) + (85\% \text{ of } 120) + (65\% \text{ of } 120) + (50\% \text{ of } 120)] \\ = \frac{1}{7} \times [(90 + 80 + 70 + 80 + 85 + 65 + 50)\% \text{ of } 120] \\ = \frac{1}{7} \times [520\% \text{ of } 120] \\ = \frac{624}{7} \\ = 89.14.$$

2) Answer & Explanation:

Answer: Option B

Explanation: From the table it is clear that Sajal and Rohit have 60% or more marks in each of the six subjects.

3) Answer & Explanation:

Answer: Option D

Explanation:

Aggregate marks obtained by Sajal = [(90% of 150) + (60% of 130) + (70% of 120) + (70% of 100) + (90% of 60) + (70% of 40)] = [135 + 78 + 84 + 70 + 54 + 28] = 449.

4) Answer & Explanation:

Answer: Option A

Explanation: We shall find the overall percentage (for all the seven students) with respect to each subject. The overall percentage for any subject is equal to the average of percentages obtained by all the seven students since the maximum marks for any subject is the same for all the students. Therefore, overall percentage for:

(i) Maths	$= \left[\frac{1}{7} \times (90 + 100 + 90 + 80 + 80 + 70 + 65) \right] \%$
	$= \left[\frac{1}{7} \times (575) \right] \%$
	$= 82.14\%.$
(ii) Chemistry	$= \left[\frac{1}{7} \times (50 + 80 + 60 + 65 + 65 + 75 + 35) \right] \%$
	$= \left[\frac{1}{7} \times (430) \right] \%$
	$= 61.43\%.$
(iii) Physics	$= \left[\frac{1}{7} \times (90 + 80 + 70 + 80 + 85 + 65 + 50) \right] \%$
	$= \left[\frac{1}{7} \times (520) \right] \%$
	$= 74.29\%.$
(iv) Geography	$= \left[\frac{1}{7} \times (60 + 40 + 70 + 80 + 95 + 85 + 77) \right] \%$
	$= \left[\frac{1}{7} \times (507) \right] \%$
	$= 72.43\%.$
(v) History	$= \left[\frac{1}{7} \times (70 + 80 + 90 + 60 + 50 + 40 + 80) \right] \%$
	$= \left[\frac{1}{7} \times (470) \right] \%$
	$= 67.14\%.$
(vi) Comp. Science	$= \left[\frac{1}{7} \times (80 + 70 + 70 + 60 + 90 + 60 + 80) \right] \%$
	$= \left[\frac{1}{7} \times (510) \right] \%$
	$= 72.86\%.$

$= (\text{No. of students scoring 30 and above marks in Chemistry}) - (\text{Number of students scoring 30 and above marks in aggregate})$
 $= 27 - 21$
 $= 6.$

2) Answer & Explanation:

Answer: Option B

Explanation:

We have $60\% \text{ of } 50 = (60/100) \times 50 = 30.$

Therefore Required number

$= \text{No. of students scoring 30 and above marks in Physics}$

$= 32$

3) Answer & Explanation:

Answer: Option C

Explanation:

$\text{Number of students getting at least } 60\% \text{ marks in Chemistry}$

$= \text{Number of students getting 30 and above marks in Chemistry}$
 $= 21.$

$\text{Number of students getting at least } 40\% \text{ marks in aggregate}$

$= \text{Number of students getting 20 and above marks in aggregate}$
 $= 73.$

$\text{Required percentage} = (21/73) \times 100\%$

$= 28.77\% \approx 29\%.$

4) Answer & Explanation:

Answer: Option D

Explanation:

We have $40\% \text{ of } 50 = (40/100) \times 50 = 20$

Therefore Required number

$= \text{Number of students scoring less than 20 marks in aggregate}$

$= 100 - \text{Number of students scoring 20 and above marks in aggregate}$
 $= 100 - 73 = 27.$

5) Answer & Explanation:

Answer: Option C

Explanation:

Since 66 students get 20 and above marks in Chemistry and out of these 21 students get 30 and above marks, therefore to select top 35 students in Chemistry, the qualifying marks should lie in the range 20-30.

Table Set 5: Solution

1) Answer & Explanation:

Answer: Option A

Explanation: The average number of candidates selected over the given period for various states are:

Table Set 4: Solution

1) Answer & Explanation:

Answer: Option D

Explanation:

Required difference from the table chart

$$\text{For Delhi} = \frac{94 + 48 + 82 + 90 + 70}{5} = \frac{384}{5} = 76.8.$$

$$\text{For H.P.} = \frac{82 + 65 + 70 + 86 + 75}{5} = \frac{378}{5} = 75.6.$$

$$\text{For U.P.} = \frac{78 + 85 + 48 + 70 + 80}{5} = \frac{361}{5} = 72.2.$$

$$\text{For Punjab} = \frac{85 + 70 + 65 + 84 + 60}{5} = \frac{364}{5} = 72.8.$$

$$\text{For Haryana} = \frac{75 + 75 + 55 + 60 + 75}{5} = \frac{340}{5} = 68.$$

Clearly, this average is maximum for Delhi.

2) Answer & Explanation:

Answer: Option D

Explanation: The percentages of candidates qualified from Punjab over those appeared from Punjab during different years are:

$$\text{For 1997} = \left(\frac{680}{8200} \times 100 \right) \% = 8.29\%.$$

$$\text{For 1998} = \left(\frac{600}{6800} \times 100 \right) \% = 8.82\%.$$

$$\text{For 1999} = \left(\frac{525}{6500} \times 100 \right) \% = 8.08\%.$$

$$\text{For 2000} = \left(\frac{720}{7800} \times 100 \right) \% = 9.23\%.$$

$$\text{For 2001} = \left(\frac{485}{5700} \times 100 \right) \% = 8.51\%.$$

Clearly, this percentage is highest for the year 2000.

3) Answer & Explanation:

Answer: Option D

Explanation: The percentages of candidates selected over the candidates appeared in 1997, for various states are:

$$(i) \text{ For Delhi} = \left(\frac{94}{8000} \times 100 \right) \% = 1.175\%.$$

$$(ii) \text{ For H.P.} = \left(\frac{82}{7800} \times 100 \right) \% = 1.051\%.$$

$$(iii) \text{ For U.P.} = \left(\frac{78}{7500} \times 100 \right) \% = 1.040\%.$$

$$(iv) \text{ For Punjab} = \left(\frac{85}{8200} \times 100 \right) \% = 1.037\%.$$

$$(v) \text{ For Haryana} = \left(\frac{75}{6400} \times 100 \right) \% = 1.172\%.$$

Clearly, this percentage is lowest for Punjab.

4) Answer & Explanation:

Answer: Option D

Explanation:

$$\begin{aligned} \text{Required percentage} &= \left[\frac{(75 + 75 + 55 + 60 + 75)}{(94 + 48 + 82 + 90 + 70)} \times 100 \right] \% \\ &= \left[\frac{340}{384} \times 100 \right] \% \\ &= 88.54\% \\ &\approx 88.5\% \end{aligned}$$

5) Answer & Explanation:

Answer: Option B

Explanation: The percentages of candidates selected from U.P. over those qualified from U.P. during different years are:

$$\text{For 1997} = \left(\frac{78}{720} \times 100 \right) \% = 10.83\%.$$

$$\text{For 1998} = \left(\frac{85}{620} \times 100 \right) \% = 13.71\%.$$

$$\text{For 1999} = \left(\frac{48}{400} \times 100 \right) \% = 12\%.$$

$$\text{For 2000} = \left(\frac{70}{650} \times 100 \right) \% = 10.77\%.$$

$$\text{For 2001} = \left(\frac{80}{950} \times 100 \right) \% = 8.42\%.$$

Clearly, this percentage is highest for the year 1998.

6) Answer & Explanation:

Answer: Option D

Explanation:

$$\begin{aligned} \text{Required percentage} &= \left[\frac{(82 + 70 + 48 + 65 + 55)}{(640 + 560 + 400 + 525 + 350)} \right] \% \\ &= \left[\left(\frac{320}{2475} \times 100 \right) \right] \% \\ &= 12.93\% \\ &\approx 13\%. \end{aligned}$$

Bar chart Set 1: Solution

1) Answer & Explanation:

Answer: Option D

Explanation:

$$\text{Required ratio} = \frac{(75 + 65)}{(85 + 95)} = \frac{140}{180} = \frac{7}{9}.$$

2) Answer & Explanation:

Answer: Option C

Explanation:

$$\begin{aligned}\text{Required percentage} &= \left[\frac{(70 + 80)}{(95 + 110)} \times 100 \right] \% \\ &= \left[\frac{150}{205} \times 100 \right] \% \\ &= 73.17\%.\end{aligned}$$

3) Answer & Explanation:

Answer: Option D

Explanation:

Average sales (in thousand number) of branches B1, B3 and B6 in 2000

$$= \frac{1}{3} \times (80 + 95 + 70) = \left(\frac{245}{3} \right).$$

Average sales (in thousand number) of branches B1, B2 and B3 in 2001

$$= \frac{1}{3} \times (105 + 65 + 110) = \left(\frac{280}{3} \right).$$

$$\therefore \text{Required percentage} = \left[\frac{245/3}{280/3} \times 100 \right] \% = \left(\frac{245}{280} \times 100 \right) \% = 87.5\%.$$

4) Answer & Explanation:

Answer: Option B

Explanation:

Average sales of all the six branches (in thousand numbers) for the year 2000

$$\begin{aligned}= &1/6 \times [80 + 75 + 95 + 85 + 75 + 70] \\= &80.\end{aligned}$$

5) Answer & Explanation:

Answer: Option D

Explanation:

Total sales of branches B1, b2 and B5 for both the years (in thousand numbers)

$$\begin{aligned}= &(80 + 105) + (95 + 110) + (75 + 95) \\= &560.\end{aligned}$$

Bar chart Set 2: Solution:

1) Answer & Explanation:

Answer: Option C

Explanation:

Average foreign exchange reserves over the given period = 3480 million US \$.

The country had reserves above 3480 million US \$ during the years 1992-93, 1996-97 and 1997-98, i.e., for 3 years and below 3480 million US \$ during the years 1991-92, 1993-94, 1994-95, 1995-56 and 1998-99 i.e., for 5 years.

Hence, required ratio = 3 : 5.

2) Answer & Explanation:

Answer: Option D

Explanation:

Required ratio

$$= 5040/3360$$

$$= 1.5.$$

3) Answer & Explanation:

Answer: Option A

Explanation:

There is an increase in foreign exchange reserves during the years 1992 - 1993, 1994 - 1995, 1996 - 1997, 1997 - 1998 as compared to previous year (as shown by bar-graph).

The percentage increase in reserves during these years compared to previous year are:

$$\text{For } 1992 - 1993 = \left[\frac{(3720 - 2640)}{2640} \times 100 \right] \% = 40.91\%.$$

$$\text{For } 1994 - 1995 = \left[\frac{(3360 - 2520)}{2520} \times 100 \right] \% = 33.33\%.$$

$$\text{For } 1996 - 1997 = \left[\frac{(4320 - 3120)}{3120} \times 100 \right] \% = 38.46\%.$$

$$\text{For } 1997 - 1998 = \left[\frac{(5040 - 4320)}{4320} \times 100 \right] \% = 16.67\%.$$

Clearly, the percentage increase over previous year is highest for 1992 - 1993.

4) Answer & Explanation:

Answer: Option D

Explanation:

Average foreign exchange reserves over the given period
 $= [1/8 \times (2640 + 3720 + 2520 + 3360 + 3120 + 4320 + 5040 + 3120)] \text{ million US \$}$
 $= 3480 \text{ million US \$}.$

Foreign exchange reserves in 1996 - 1997 = 4320 million US \\$.

Therefore Required percentage
 $= (4320/3480 \times 100) \%$
 $= 124.14\%$
 $\approx 125\%.$

5) Answer & Explanation:

Answer: Option A

Explanation:

Foreign exchange reserves in 1997 - 1998 = 5040 million US \\$.

Foreign exchange reserves in 1993 - 1994 = 2520 million US \\$.

Therefore Increase = $(5040 - 2520) = 2520 \text{ US \$}.$

Therefore Percentage Increase = $(2520/2520 \times 100) \% = 100\%.$

The bar graph given below shows the data of the production of paper (in lakh tonnes = One Lakh is equal to One Hundred Thousand (100,000)) by three different companies X, Y and Z over the years.

Bar chart Set 3: Solution:

1) Answer & Explanation:

Answer: Option A

Explanation: Percentage change (rise/fall) in the production of Company Y in comparison to the previous year, for different years are:

$$\text{For 1997} = \left[\frac{(35 - 25)}{25} \times 100 \right] \% = 40\%.$$

$$\text{For 1998} = \left[\frac{(35 - 35)}{25} \times 100 \right] \% = 0\%.$$

$$\text{For 1999} = \left[\frac{(40 - 35)}{35} \times 100 \right] \% = 14.29\%.$$

$$\text{For 2000} = \left[\frac{(50 - 40)}{40} \times 100 \right] \% = 25\%.$$

Hence, The maximum percentage rise/fall in the production of Company Y is for 1997.

2) Answer & Explanation:

Answer: Option C

Explanation: Average production of Company X in the period 1998-2000

$$= \left[\frac{1}{3} \times (25 + 50 + 40) \right] = \left(\frac{115}{3} \right) \text{ lakh tons.}$$

Average production of Company Y in the period 1998-2000

$$= \left[\frac{1}{3} \times (35 + 40 + 50) \right] = \left(\frac{125}{3} \right) \text{ lakh tons.}$$

$$\therefore \text{Required ratio} = \frac{\left(\frac{115}{3} \right)}{\left(\frac{125}{3} \right)} = \frac{115}{125} = \frac{23}{25}.$$

3) Answer & Explanation:

Answer: Option D

Explanation: Average production (in lakh tons) in five years for the three companies are:

$$\text{For Company X} = \left[\frac{1}{5} \times (30 + 45 + 25 + 50 + 40) \right] = \frac{190}{5} = 38.$$

$$\text{For Company Y} = \left[\frac{1}{5} \times (25 + 35 + 35 + 40 + 50) \right] = \frac{185}{5} = 37.$$

$$\text{For Company Z} = \left[\frac{1}{5} \times (35 + 40 + 45 + 35 + 35) \right] = \frac{190}{5} = 38.$$

\therefore Average production of five years is maximum for both the Companies X & Z.

4) Answer & Explanation:

Answer: Option A

Explanation: The percentages of production of Company Z to the production of Company Z for various years are:

$$\text{For 1996} = \left(\frac{35}{25} \times 100 \right) \% = 140\%.$$

$$\text{For 1997} = \left(\frac{40}{35} \times 100 \right) \% = 114.29\%.$$

$$\text{For 1998} = \left(\frac{45}{35} \times 100 \right) \% = 128.57\%.$$

$$\text{For 1999} = \left(\frac{35}{40} \times 100 \right) \% = 87.5\%.$$

$$\text{For 2000} = \left(\frac{35}{50} \times 100 \right) \% = 70\%.$$

Clearly, this percentage is highest for 1996.

5) Answer & Explanation:

Answer: Option D

Explanation: Percentage increase in the production of Company Y from 1996 to 1999

$$= \left[\frac{(40 - 25)}{25} \times 100 \right] \%$$

$$= \left[\frac{15}{25} \times 100 \right] \%$$

$$= 60\%.$$

6) Answer & Explanation:

Answer: Option B

Explanation:

Required difference

$$= [(45 - 25) \times 1,00,000] \text{ tons} \\ = 20,00,000 \text{ tons.}$$

Bar chart Set 4: Solution:

1) Answer & Explanation:

Answer: Option C

Explanation: The differences between the amount invested in raw material and the value of sales of finished goods for various years are:

For 1995 = Rs. (200 - 120) lakhs = Rs. 80 lakhs.

For 1996 = Rs. (300 - 225) lakhs = Rs. 75 lakhs.

For 1997 = Rs. (500 - 375) lakhs = Rs. 125 lakhs.

For 1998 = Rs. (400 - 330) lakhs = Rs. 70 lakhs.

For 1999 = Rs. (600 - 525) lakhs = Rs. 75 lakhs.

For 2000 = Rs. (460 - 420) lakhs = Rs. 40 lakhs.

Clearly, maximum difference was during 1997.

2) Answer & Explanation:

Answer: Option D

Explanation:

$$\text{Required percentage} = \left[\frac{600}{(375 + 330 + 525)} \times 100 \right] \% \\ = 48.78\% \\ \approx 49\%.$$

3) Answer & Explanation:

Answer: Option D

Explanation: Required difference

$$\begin{aligned}
 &= \text{Rs.} \left[\frac{1}{6} \times (200 + 300 + 500 + 400 + 600 + 460) \right. \\
 &\quad \left. - \frac{1}{6} \times (120 + 225 + 375 + 330 + 525 + 420) \right] \text{lakhs} \\
 &= \text{Rs.} \left[\left(\frac{2460}{6} \right) - \left(\frac{1995}{6} \right) \right] \text{lakhs} \\
 &= \text{Rs.} (410 - 332.5) \text{lakhs} \\
 &= \text{Rs.} 77.5 \text{lakhs.}
 \end{aligned}$$

4) Answer & Explanation:

Answer: Option B

Explanation: By analyzing the data you can see that the percentage change in the amount invested in raw-materials and in the value of sales of finished goods for different years are: Percentage change in Amount invested in raw-material:

$$\begin{aligned}
 \text{For 1996} &= \left[\frac{(225 - 120)}{120} \times 100 \right] \% = 87.5\%. \\
 \text{For 1997} &= \left[\frac{(375 - 225)}{225} \times 100 \right] \% = 66.67\%. \\
 \text{For 1998} &= \left[\frac{(330 - 375)}{375} \times 100 \right] \% = -12\%. \\
 \text{For 1999} &= \left[\frac{(525 - 330)}{330} \times 100 \right] \% = 59.09\%. \\
 \text{For 2000} &= \left[\frac{(420 - 525)}{525} \times 100 \right] \% = -20\%.
 \end{aligned}$$

Percentage change in value of sales of finished good

$$\begin{aligned}
 \text{For 1996} &= \left[\frac{(300 - 200)}{200} \times 100 \right] \% = 50\%. \\
 \text{For 1997} &= \left[\frac{(500 - 300)}{300} \times 100 \right] \% = 66.7\%. \\
 \text{For 1998} &= \left[\frac{(400 - 500)}{500} \times 100 \right] \% = -20\%. \\
 \text{For 1999} &= \left[\frac{(600 - 400)}{400} \times 100 \right] \% = 50\%. \\
 \text{For 2000} &= \left[\frac{(460 - 600)}{600} \times 100 \right] \% = -23.33\%.
 \end{aligned}$$

Thus, the percentage difference is same during the year 1996.

5) Answer & Explanation:

Answer: Option A

Explanation: The percentage increase in the amount invested in raw-materials as compared to the previous year, for different years are:

$$\text{For 1996} = \left[\frac{(225 - 120)}{120} \right] \% = 87.5\%.$$

$$\text{For 1997} = \left[\frac{(375 - 225)}{225} \right] \% = 66.67\%.$$

For 1998 there is a decrease.

$$\text{For 1999} = \left[\frac{(525 - 330)}{330} \right] \% = 59.09\%.$$

For 2000 there is a decrease.

∴ There is maximum percentage increase in 1996.

Bar chart Set 5: Solution

1) Answer & Explanation:

Answer: Option C

Explanation:

Required percentage

$$= (45-60)/60\%$$

$$= -25\%.$$

Therefore There is a decline of 25% in production from 1997 to 1998.

2) Answer & Explanation:

Answer: Option D

Explanation:

$$\text{Average production (in 10000 tonnes) of 1996 and 1997} = \frac{40 + 60}{2} = 50.$$

We shall find the average production (in 10000 tonnes) for each of the given alternative pairs:

$$2000 \text{ and } 2001 = \frac{50 + 75}{2} = 62.5.$$

$$1999 \text{ and } 2000 = \frac{65 + 50}{2} = 57.5.$$

$$1998 \text{ and } 2000 = \frac{45 + 50}{2} = 47.5.$$

$$1995 \text{ and } 1999 = \frac{25 + 65}{2} = 45.$$

$$1995 \text{ and } 2001 = \frac{25 + 75}{2} = 50.$$

∴ The average production of 1996 and 1997 is equal to the average production of 1995 and 2001.

3) Answer & Explanation:

Answer: Option C

Explanation:

Required percentage

$$= (80-25)/25\%$$

$$= 220\%.$$

4) Answer & Explanation:

Answer: Option D

Explanation: The percentage increase in production compared to previous year for different years are:

$$\text{In 1996} = \left[\frac{(40 - 25)}{25} \times 100 \right] \% = 60\%.$$

$$\text{In 1997} = \left[\frac{(60 - 40)}{40} \times 100 \right] \% = 50\%.$$

In 1998 there is a decrease in production.

$$\text{In 1999} = \left[\frac{(65 - 45)}{45} \times 100 \right] \% = 44.44\%.$$

In 2000 there is a decrease in production.

$$\text{In 2001} = \left[\frac{(75 - 50)}{50} \times 100 \right] \% = 50\%.$$

$$\text{In 2002} = \left[\frac{(80 - 75)}{75} \times 100 \right] \% = 6.67\%.$$

Clearly, there is maximum percentage increase in production in 1996.

5) Answer & Explanation:

Answer: Option D

Explanation:

$$\begin{aligned} \text{Average production (in 10000 tons) over the given years} \\ = 1/8(25 + 40 + 60 + 45 + 65 + 50 + 75 + 80) \\ = 55. \end{aligned}$$

Therefore the productions during the years 1997, 1999, 2001 and 2002 are more than the average production.

Pie chart Set 1 Solution:

1) Answer & Explanation:

Answer: Option C

Explanation:

$$\begin{aligned} \text{Let the amount of Royalty to be paid for these books be Rs. } r. \\ \text{Then, } 20 : 15 = 30600 : r \Rightarrow r = \text{Rs. } (30600 \times 15)/20 \\ = \text{Rs. } 22,950. \end{aligned}$$

2) Answer & Explanation:

Answer: Option C

Explanation:

$$\begin{aligned} \text{Central angle corresponding to Royalty} = (15\% \text{ of } 360)^\circ \\ = (15/100) \times 360^\circ \\ = 54^\circ. \end{aligned}$$

3) Answer & Explanation:

Answer: Option B

Explanation:

$$\begin{aligned} \text{Clearly, marked price of the book} = 120\% \text{ of C.P.} \\ \text{Also, cost of paper} = 25\% \text{ of C.P} \end{aligned}$$

$$\begin{aligned} \text{Let the cost of paper for a single book be Rs. } n. \\ \text{Then, } 120 : 25 = 180 : n \Rightarrow n = \text{Rs. } (25 \times 180)/120 \\ = \text{Rs. } 37.50. \end{aligned}$$

4) Answer & Explanation:

Answer: Option A

Explanation:

$$\begin{aligned} \text{For the publisher to earn a profit of } 25\%, \text{ S.P.} = 125\% \text{ of C.P.} \\ \text{Also Transportation Cost} = 10\% \text{ of C.P.} \end{aligned}$$

Let the S.P. of 5500 books be Rs. x.

$$\begin{aligned} \text{Then, } 10 : 125 = 82500 : x \Rightarrow x = \text{Rs. } (125 \times 82500)/10 = \text{Rs. } 1031250. \end{aligned}$$

Therefore S.P. of one book = $\text{Rs. } 1031250/5500 = \text{Rs. } 187.50$.

5) Answer & Explanation:

Answer: Option D

Explanation:

Printing Cost of book = 20% of C.P.

Royalty on book = 15% of C.P.

$$\text{Difference} = (20\% \text{ of C.P.}) - (15\% \text{ of C.P.}) = 5\% \text{ of C.P.}$$

$$\begin{aligned} \therefore \text{Percentage difference} &= \left(\frac{\text{Difference}}{\text{Printing Cost}} \times 100 \right)\% \\ &= \left(\frac{5\% \text{ of C.P.}}{\text{Printing Cost}} \times 100 \right)\% = 25\%. \end{aligned}$$

6) Answer & Explanation:

Answer: Option D

Explanation:

Central angle of $18^\circ = (18/360) \times 100\%$ of the total expenditure

= 5% of the total expenditure.

From the given chart it is clear that:

Out of the given combinations, only in combination (d) the difference is 5% i.e.

Paper Cost - Printing Cost = (25% - 20%) of the total expenditure

= 5% of the total expenditure.

7) Answer & Explanation:

Answer: Option B

Explanation:

Clearly, S.P. of the book = 105% of C.P.

$$\begin{aligned} \text{Let the selling price of this edition (of 12500 books) be Rs. } x. \\ \text{Then, } 15 : 105 = 281250 : x \Rightarrow x = \text{Rs. } (105 \times 281250)/15 = \\ \text{Rs. } 1968750. \end{aligned}$$

$$\begin{aligned} \text{Therefore S.P. of one book} &= \text{Rs. } 1968750/12500 \\ &= \text{Rs. } 157.50. \end{aligned}$$

8) Answer & Explanation:

Answer: Option B

Explanation:

Let the Promotion Cost for this edition be Rs. p.

$$\begin{aligned} \text{Then, } 25 : 10 = 56250 : p \Rightarrow p = \text{Rs. } (56250 \times 10)/25 \\ = \text{Rs. } 22,500. \end{aligned}$$

9) Answer & Explanation:

Answer: Option A

Explanation:

$$\begin{aligned} \text{Central angle of } 108^\circ &= (108/360) \times 100\% \text{ of the total expenditure} \\ &= 30\% \text{ of the total expenditure.} \end{aligned}$$

From the pie chart it is clear that:

Binding Cost + Transportation Cost = (20% + 10%) of the total expenditure

= 30% of the total expenditure.

Therefore Binding Cost and Transportation Cost together have a central angle of 108° .

Pie Chart Set 2: Solution

1) Answer & Explanation:

Answer: Option B

Explanation:

$$(40 + 10) = 50\% \text{ (from first chart)}$$

2) Answer & Explanation:

Answer: Option B

Explanation:

$$40:15 = 8:3$$

Pie Chart Set 3: Solution

1) Answer & Explanation:

Answer: Option A

Explanation:

$$\begin{aligned} \text{Total percentage} &= (10 / 24) \times 100 \\ &= 41.666667 \% \end{aligned}$$

2) Answer & Explanation:

Answer: Option D

Explanation:

$$20 + 10 = 30\% \text{ is made up of either bones or skin.}$$

Hence, 70% is made up of neither.

3) Answer & Explanation:

Answer: Option D

Explanation:

It cannot be determined since the respective distributions are not known.

Pie Chart Set 4: solution

1) Answer & Explanation:

Answer: Option D

Explanation:

Although it seems to be Commodore, the answer cannot be determined due to the fact that we are unaware of the break-up of the sales value and volume of companies compromising the other categories.

2) Answer & Explanation:

Answer: Option A

Explanation:

If we assume the total sales to be 100 in the first year, IBM's sales would go up by 50% (from 28 to 42) contributing an increase of 14 to the total sales value.

Similarly, Apple's increase of 15% would contribute an increase of 2.1 to the total sales value. The net change would be 14 + 2.1 on 100. (i.e., 16.1%)

3) Answer & Explanation:

Answer: Option D

Explanation:

By looking at the pie chart we can see that IBM accounts for 28% of the share by value and 10% of the share by volume.

$$28\% \text{ of } 1650000 = 28 \times 1650000/100 = 462000$$

$$10\% \text{ of } 1500 = 10 \times 1500/100 = 150$$

$$\begin{aligned} \text{Therefore, average unit sale price} &= 462000/150 \\ &= 3080. \end{aligned}$$

Pie Chart Set 5: Solution

1) Answer & Explanation:

Answer: Option B

Explanation:

$$\begin{aligned} 20\% \text{ of the total funds to be arranged} &= (20\% \text{ of } 57600) \text{ Yen} \\ &= 11520 \text{ Yen} \end{aligned}$$

$$\approx 11486 \text{ Yen}$$

11486 Yen is the amount of funds to be arranged through External Assistance.

2) Answer & Explanation:

Answer: Option C

Explanation:

Shortage of funds arranged through External Assistance

$$\text{Therefore } = (11486 - 9695) \text{ Yen} = 1791 \text{ Yen}$$

Therefore Increase required in Market Borrowing = 1791 Yen

$$\begin{aligned} \text{Percentage increase required} &= (1791/29952) \times 100\% = \\ &= 5.98\% \approx 6\%. \end{aligned}$$

3) Answer & Explanation:

Answer: Option C

Explanation:

Amount permitted = (Funds required from Toll for projects of Phase II) + (10% of these funds)

$$\begin{aligned} &= 4910 \text{ Yen} + (10\% \text{ of } 4910) \text{ Yen} \\ &= (4910 + 491) \text{ Yen} \\ &= 5401 \text{ Yen} \end{aligned}$$

4) Answer & Explanation:

Answer: Option C

Explanation:

$$\begin{aligned} \text{Central angle corresponding to Market Borrowing} &= \\ (29952/57600) \times 360^\circ &= 187.2^\circ \end{aligned}$$

5) Answer & Explanation:

Answer: Option B

Explanation:

$$\text{Required ratio} = 4910/29952$$

$$= 1/6.1$$

$$\approx 1/6$$

Line Graph Set 1 Solution:

1) Answer & Explanation:

Answer: Option D

Explanation:

Total exports of the three Companies X, Y and Z together, during various years are:

$$\text{In 1993} = (30 + 80 + 60) = 170$$

$$\text{In 1994} = (60 + 40 + 90) = 190$$

$$\text{In 1995} = (40 + 60 + 120) = 220$$

$$\text{In 1996} = (70 + 60 + 90) = 220$$

$$\text{In 1997} = (100 + 80 + 60) = 240$$

$$\text{In 1998} = (50 + 100 + 80) = 230$$

$$\text{In 1999} = (120 + 140 + 100) = 360$$

Clearly, the total exports of the three Companies X, Y and Z together are same during the years 1995 and 1996.

2) Answer & Explanation:

Answer: Option D

Explanation:

Analysis of the graph: From the graph it is clear that

1. The amount of exports of Company X (in Pesetas) in the years 1993, 1994, 1995, 1996, 1997, 1998 and 1999 are 30, 60, 40, 70, 100, 50 and 120 respectively.

2. The amount of exports of Company Y (in Pesetas.) in the years 1993, 1994, 1995, 1996, 1997, 1998 and 1999 are 80, 40, 60, 80, 100 and 140 respectively.

3. The amount of exports of Company Z (in Pesetas) in the years 1993, 1994, 1995, 1996, 1997, 1998 and 1999 are 60, 90, 120, 90, 60, 80 and 100 respectively.

Average annual exports (in Pesetas) of Company Y during the given period

$$= 1/7 \times (80 + 40 + 60 + 60 + 80 + 100 + 140) = 560/7 = 80.$$

Average annual exports (in Pesetas) of Company Z during the given period

$$= 1/7 \times (60 + 90 + 120 + 90 + 60 + 80 + 100) = (600/7).$$

$$\text{Therefore Required percentage} = \left(\frac{80}{\frac{600}{7}} \times 100 \right) \% \cong$$

93.33%

3) Answer & Explanation:

Answer: Option C

Explanation:

The difference between the exports from the Companies X and Y during the various years are:

$$\text{In 1993} = (80 - 30) = 50$$

$$\text{In 1994} = (60 - 40) = 20$$

$$\text{In 1995} = (60 - 40) = 20$$

$$\text{In 1996} = (70 - 60) = 10$$

$$\text{In 1997} = (100 - 80) = 20$$

$$\text{In 1998} = (100 - 50) = 50$$

$$\text{In 1999} = (140 - 120) = 20$$

Clearly, the difference is minimum in the year 1996.

4) Answer & Explanation:

Answer: Option C

Explanation:

Average exports of the three Companies X, Y and Z in 1993

$$= [1/3 \times (30 + 80 + 60)] = (170/3)$$

Average exports of the three Companies X, Y and Z in 1998

$$= [1/3 \times (50 + 100 + 80)] = (230/3)$$

$$\text{Difference } [(230/3) - (170/3)]$$

$$= (60/3) = 20$$

5) Answer & Explanation:

Answer: Option C

Explanation:

Average annual exports of Company Z during the given period

$$= 1/7 \times (60 + 90 + 120 + 90 + 60 + 80 + 100)$$

$$= (600/7) = 85.71$$

From the analysis of graph the exports of Company Z are more than the average annual exports of Company Z (i.e., 85.71) during the years 1994, 1995, 1996 and 1999, i.e., during 4 of the given years.

Line Graph Set 2: Solution:

1) Answer & Explanation:

Answer: Option D

Explanation:

The ratio of imports to exports for the years 1998 and 1999 are 1.25 and 1.40 respectively.

Let the exports in the year 1998 = x

Then, the exports in the year 1999 = (500 - x)

Therefore $1.25 = 250/x \Rightarrow x = 250/1.25 = 200$ [Using ratio for 1998]

Thus, the exports in the year 1999 = (500 - 200) = 300

Let the imports in the year 1999 = y

Then, $1.40 = y/300 \Rightarrow y = (300 \times 1.40) = 420$.

Therefore Imports in the year 1999 = 420

2) Answer & Explanation:

Answer: Option C

Explanation:

The imports are minimum proportionate to the exports implies that the ratio of the value of imports to exports has the minimum value.

Now, this ratio has a minimum value 0.35 in 1997, i.e., the imports are minimum proportionate to the exports in 1997.

3) Answer & Explanation:

Answer: Option D

Explanation:

The graph gives only the ratio of imports to exports for different years. To find the percentage increase in imports from 1997 to 1998, we require more details such as the value of imports or exports during these years.

Hence, the data is inadequate to answer this question.

4) Answer & Explanation:

Answer: Option B

Explanation:

Ratio of imports to exports in the year 1996 = 0.85.

Let the exports in 1996 = x

Then, $2720000000/x = 0.85 \Rightarrow x = 2720000000/0.85 = 320$.

Therefore Exports in 1996 = 320000000

5) Answer & Explanation:

Answer: Option D

Explanation:

The exports are more than the imports imply that the ratio of value of imports to exports is less than 1.

Now, this ratio is less than 1 in years 1995, 1996, 1997 and 2000.

Thus, there are four such years.

Line Graph Set 3: Solution

1) Answer & Explanation:

Answer: Option D

Explanation:

Required difference = $(128000 - 107000) = 21000$.

2) Answer & Explanation:

Answer: Option C

Explanation:

From the line-graph it is clear that the productions of Company X in the years 1997, 1998, 1999, 2000, 2001 and 2002 are 119000, 99000, 141000, 78000, 120000 and 159000 and those of Company Y are 139000, 120000, 100000, 128000, 107000 and 148000 respectively.

Total production of Company X from 1997 to 2002

$= 119000 + 99000 + 141000 + 78000 + 120000 + 159000 = 716000$.

and total production of Company Y from 1997 to 2002

$= 139000 + 120000 + 100000 + 128000 + 107000 + 148000 = 742000$.

Difference = $(742000 - 716000) = 26000$.

3) Answer & Explanation:

Answer: Option A

Explanation:

Average number of vehicles manufactured by Company X
 $= \frac{1}{6} (119000 + 99000 + 141000 + 78000 + 120000 + 159000)$
 $= 119333.$

4) Answer & Explanation:

Answer: Option D

Explanation:

The difference between the productions of Companies X and Y in various years are:

For 1997 ($139000 - 119000 = 20000$).

For 1998 ($120000 - 99000 = 21000$).

For 1999 ($141000 - 100000 = 41000$).

For 2000 ($128000 - 78000 = 50000$).

For 2001 ($120000 - 107000 = 13000$).

For 2002 ($159000 - 148000 = 11000$).

Clearly, maximum difference was in 2000.

5) Answer & Explanation:

Answer: Option B

Explanation:

$$\text{Required percentage} = \left(\frac{128000}{78000} * 100 \right) \% \approx 164\%.$$

Line Graph Set 4: Solution
1) Answer & Explanation:

Answer: Option C

Explanation:

Let the income in 2000 of the companies X and Y be $3x$ and $4x$ respectively.

And let the expenditure in 2000 of companies X and Y be E_1 and E_2 respectively.

Then, for company X we have:

$$65 = \frac{3x - E_1}{E_1} * 100 \Rightarrow \frac{65}{100} = \frac{3x}{E_1} - 1 \Rightarrow E_1 = 3x \times \left(\frac{100}{165} \right) \dots \text{(i)}$$

For Company Y we have:

$$50 = \frac{4x - E_2}{E_2} * 100 \Rightarrow \frac{50}{100} = \frac{4x}{E_2} - 1 \Rightarrow E_2 = 4x \times \left(\frac{100}{150} \right) \dots \text{(ii)}$$

From (i) and (ii), we get:

$$\frac{E_1}{E_2} = \frac{3x \times \left(\frac{100}{165} \right)}{4x \times \left(\frac{100}{150} \right)} = \frac{3 \times 150}{4 \times 165} = \frac{15}{22} \quad (\text{Required ratio}).$$

2) Answer & Explanation:

Answer: Option B

Explanation:

Profit percent of Company Y in 1997 = 35.

Let the income of Company Y in 1997 be x .

$$\text{Then, } 35 = \frac{x - 220}{220} * 100 \Rightarrow x = 297.$$

Therefore Income of Company Y in 1997 = 297

3) Answer & Explanation:

Answer: Option D

Explanation: Let the incomes of each of the two Companies X and Y in 1999 be x .

And let the expenditures of Companies X and Y in 1999 be E_1 and E_2 respectively.

Then, for Company X we have:

$$50 = \frac{x - E_1}{E_1} * 100 \Rightarrow \frac{50}{100} = \frac{x}{E_1} - 1 \Rightarrow x = \frac{150}{100} E_1 \dots \text{(i)}$$

Also, for Company Y we have:

$$60 = \frac{x - E_2}{E_2} * 100 \Rightarrow \frac{60}{100} = \frac{x}{E_2} - 1 \Rightarrow x = \frac{160}{100} E_2 \dots \text{(ii)}$$

From (i) and (ii), we get:

$$\frac{150}{100} E_1 = \frac{160}{100} E_2 \Rightarrow \frac{E_1}{E_2} = \frac{160}{150} = \frac{16}{15} \quad (\text{Required ratio}).$$

Line Graph Set 5: Solution:
1) Answer & Explanation:

Answer: Option B

Explanation:

The differences between the percentages of candidates qualified to appeared for the give pairs of years are:

For 1994 and 1995 = $50 - 30 = 20$.

For 1998 and 1999 = $80 - 80 = 0$.

For 1994 and 1997 = $50 - 30 = 20$.

For 1997 and 1998 = $80 - 50 = 30$.

For 1999 and 2000 = $80 - 60 = 20$.

Thus, the maximum difference is between the years 1997 and 1998.

2) Answer & Explanation:

Answer: Option D

Explanation:

The graph gives the data for the percentage of candidates qualified to appeared and unless the absolute values of number of candidates qualified or candidates appeared is known we cannot compare the absolute values for any two years.

Hence, the data is inadequate to solve this question.

3) Answer & Explanation:

Answer: Option C

Explanation:

The number of candidates appeared in 1998 be x .

Then, $80\% \text{ of } x = 21200 \Rightarrow x = (21200 \times 100)/80 = 26500$ (required number).

4) Answer & Explanation:

Answer: Option D

Explanation:

The total number of candidates qualified in 1996 and 1997 together, cannot be determined until we know at least, the number of candidates appeared in any one of the two years 1996 or 1997 or the percentage of candidates qualified to appeared in 1996 and 1997 together.

Hence, the data is inadequate.

5) Answer & Explanation:

Answer: Option C

Explanation:

The number of candidates qualified in 1999 = (80% of 26500)
= 21200.

Therefore Number of candidates qualified in 2000 = (33500 -
21200) = 12300.

Let the number of candidates appeared in 2000 be x.

Then, 60% of x = 12300 => x = $(12300 \times 100) / 60 = 20500$.

Logical Reasoning

01) Alphabet Test

The letters of English alphabet can be written as :

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

From left side: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
19 20 21 22 23 24 25 26

From right side: 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12
11 10 9 8 7 6 5 4 3 2 1

The sum of letter of English alphabet from left side & right side is 27

Following formula is helpful in learning the order of letters of English alphabet.

E	J	O	T	Y
↓	↓	↓	↓	↓
5	10	15	20	25

Basically our left side is alphabet's left side and our right side is alphabet's right side.

Questions based on Alphabet:-

Type I:

(1) Arrange the following word according to English dictionary and which third letter among them is.

HAT, HEAT, HEAD, HEARD, HATE

Sol. According to eng. Dictionary arrangement is

HAT, HATE, HEAD, HEARD, HEAT

So third word is "HEAD"

Type II:

(1) In the word „APPLE” how many such pair of letters are there which have exactly same numbers letter between them as in the English alphabet.

A P P L E
1 16 16 12 5

Sol. Only one such pair i.e. A – E

(2) In the word „NOVEL” how many pair are there between the letters having same numbers letter between them as in English alphabet.

N O V E L
14 15 22 5 12

Sol. 2 pairs N – O and O – L.

Type III:

(1) How many meaningful words can be made from the 2nd, 4th, 9th and 10th letters of the word „ORIENTATION”

Sol. 2nd letter - R, 4th letter - N, 9th letter - I, 10th letter - O

Only one meaningful word is possible i.e., IRON.

(2) How many meaningful words can be formed from the 2nd, 4th, 8th & 10th letter of word „CONSIDERATION”

Sol.

2 → O 4 → S 8 → R 10 → T

Only one meaningful word is possible i.e. „SORT”

Type IV:

(1) If the 1st, 2nd, 3rd and 4th letter and so on of the word „REPRESENTATION” are interchange then which is the 7th letter from the right end.

Sol. R E P R E S E N T A T I O N

E R R P S E N E A T I T N O

7 6 5 4 3 2 1 ← Right end

7th letter from right end is ‘E’.

Type V:

(1) In the English alphabet which is the 4th letter to the left of the 11th letter from the left.

Sol. K - 4 = 11 - 4 = 7

From left side i.e. A to Z

G is the 7th letter.

(2) Which letter is the middle of 8th letter from left side & 9th letter from right end in English alphabet?

Sol. It's „M”

$$\text{let } \frac{27 - (\text{Left end} + \text{Right end})}{2} = k$$

Trick →

Now middle letters is k & position from left end or position from right end

$$k = \frac{27 - (9 + 8)}{2} = 5$$

Now, middle letter is 5 + 8 = 13th letter from left i.e. ‘M’.

Type VI:

(1) If the first half of English alphabet is written in reverse order and rest are written in same order. Then which is the 6th letter to the left of 17th left from the left.

Sol. M L K J I H G F E D C B A / N O P Q R S T U V W X Y Z
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Q - 6 = 17 - 6 = 11

So 11th letter from left is C.

Type VII:

In the type of question a mix-matched letter series is given

(1) D E F M P B M E F D E F M F E P M E F B M E P F

In the given series how many E's are there having M as a preceding & F as a succeeding letter.

Sol. only 2 (M E F)

(I) Which of the word cannot be formed from the given word

(1) S U P E R I T E N D E N T

(a) P E R T I N E N T

(b) T E N E N T

(c) R E T E N T I O N

(d) D E N T I S T

Sol. RETENTION because it has letter ‘O’

(2). U N I V E R S I T Y

(a) N E V E R

(b) R I V E R

(c) V I R U S

(d) T R U E

Sol. : NEVER has 2 E's

(II) Which of the word can be formed from the given word.

(1) R E C U R I U T M E N T

(a) C E M E N T E

(b) R T I R E M N T

(c) U N I T E

(d) T I R E

Sol. : U N I T E

Practice set:

Directions: In each of the following questions, five words are given. Which of them will come in the middle if all of them are arranged alphabetically as in a dictionary?

- | | | |
|-----------------|----------------|--------------|
| 1. (a) Fraught | (b) Fray | (c) Fraud |
| (d) Franchise | (e) Frappe | |
| 2. (a) Generate | (b) Generalize | (c) Genepool |
| (d) Genealogist | (e) Generality | |
| 3. (a) Halt | (b) Hake | (c) Hairy |
| (d) Hair-net | (e) Hale | |
| 4. (a) Electric | (b) Elector | (c) Elect |
| (d) Electrode | (e) Electron | |
| 5. (a) Length | (b) Lenient | (c) Legacy |
| (d) Legal | (e) Legible | |

Directions: Each of the following questions is based on the following alphabet series:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

6. If the alphabet is written in the reverse order and every alternate letter starting with Y is dropped which letter will be exactly in the middle of the remaining letters of the alphabet?

- (a) M (b) N (c) O (d) M or O

(e) None of these

7. Suppose the first and the second letters of the English alphabet changed places, also the third and the fourth, the fifth and the sixth, and so on. In the new alphabet series, thus formed which letter would be the 16th?

- (a) H (b) K (c) O (d) M

(e) None of these

8. How many such pairs of digits are there in the number 8314629 each of which has as many digits between them in the number as after arranging the digits in ascending order?

- (a) None (b) One (c) Two (d) Three

(e) None

9. If in the English alphabet every third letter is replaced by the symbol (*), which of the following would be sixth to the left of the sixteenth element from the left?

- (a) G (b) H (c) T (d) J

(e) None of these

10. If 1st and 26th, 2nd and 25th, 3rd and 24th and so on, letters of the English alphabet are paired, then which of the following pairs is correct?

- (a) GR (b) DW (c) IP (d) EU

(e) None of these

11. If every alternative letter of English alphabet from B onwards (including B) is written in lower case (small letters) and the remaining letters are capitalized, then how will the second month of the second half of the year be written?

- (a) July (b) August (c) July (d) August

(e) None of these

12. In the following alphabets, which letter is seventh to the right of the thirteenth letter from the right end?

Y Z A B C D E F G H I J K L M N O P Q R S T U V W X

- (a) H (b) R (c) S (d) T

(e) None of these

13. The positions of how many digits in the number 213659487 will remain same when the digits are arranged in ascending order?

- (a) None (b) One (c) Two (d) Three

(e) Four

14. G H I J K L M N

Which letter is fourth to the right of the letter immediately to the left of the letter immediately to the left of the letter which is third to the right of the letter immediately to the left of the letter H?

- (a) K (b) L (c) J (d) I

(e) None of these

Directions: If letters from A to M were written leaving space for one letter between every two letters, and then the remaining letters were inserted, beginning with N and ending the service with Z after, M, answer the following questions:

15. Which letter would be fourth to the right of the ninth letter from the left?

- (a) C (b) F (c) S (d) G

(e) None of these

16. Which letter would be exactly between Q and X?

- (a) S (b) T (c) H (d) W

(e) None of these

17. Which letter would be exactly in the middle of the nineteenth letter from the beginning and eighteenth from the end?

- (a) S (b) T (c) G (d) H

(e) None of these

Directions : If all the letters from A to Z were written as A_C_E_G upto Y, i.e. dropping each alternative letter, leaving blank spaces and then all the blanks were filled in with remaining letters in reverse order, i.e., A Z C X E V.... ending with B, answer the following questions :

18. Which letter is to the right of fifteenth letter from the left corner?

- (a) M (b) N (c) Q (d) L

(e) None of these

19. Which letters are exactly in the middle of the nineteenth letter from the left and fifteenth letter from the right end ?

- (a) MN (b) NO (c) OL (d) PM

(e) None of these

20. Which letter would be placed between H and F ?

- (a) H (b) J (c) L (d) U

(e) None of these

21. How many pairs of letters in the series are old neighbors from regular alphabetical order?

- (a) One (b) Two (c) Three (d) Four

(e) None of these

22. Which letters would be to the right and left of R ?
 (a) P and N (b) R and T (c) F and H (d) K and I
 (e) None of these

Directions: Study the following arrangement of the English alphabet and answer the questions given below:

F J M P O W R N B E Y C K A V L D G X U H Q I S Z T

23. Which letter is fifth to the right of the letter which is exactly in the middle of F and D ?
 (a) D (b) V (c) A (d) K
 (e) None of these

24. Four of the following five are alike in a certain way based on their position in the above arrangement and hence form a group. Which one does not belong to that group ?
 (a) BRY (b) ECN (c) HXI (d) OMR
 (e) KYV

25. JPM : ZIS in the same way as MPO : ?
 (a) IZS (b) ZSI (c) ISQ (d) ISZ
 (e) SIQ

26. If each of the odd digits in the number 54638 is decreased by 1 and each of the even digits is increased by 1, then which of the following will be the sum of the digits of the new number?
 (a) 25 (b) 26 (c) 28 (d) 29
 (e) none

27. If each letter is attached a value equal to its serial number in the above arrangement starting from your left, then what will be the sum of the numbers attached to all the vowels in the arrangement ?
 (a) 50 (b) 58 (c) 63 (d) 73
 (e) None of these

28. In the given series of letters, how many A's are preceded and followed by A ?
 P A P A A P P A P A P P P q q P A P A A P P P A
 (a) 0 (b) 2 (c) 3 (d) 4
 (e) None of these

29. In the following series of letters how many P's are there which do not have 'Y' preceding them and also do not have T following them?
 Z Q S T P Y M N Q N Y T U V X Y P T A S P T Q Y S P T
 (a) 1 (b) 2 (c) 3 (d) 5
 (e) None of these

30. The positions of the second and the eighth digits of the number 39128564 are interchanged. Similarly, the positions of the fourth and the fifth digits are interchanged. The positions of the first and the sixth digits are interchanged and the positions of the third and the seventh digits are interchanged. Which of the following will be the third digit to the left of 3 after the rearrangement?
 (a) 2 (b) 4 (c) 6 (d) 8
 (e) 9

Coding is a method of transmitting a message between the sender and the receiver that no third person can understand it. The coding and decoding one's ability of deciphering the rule and breaking the code to decipher the message will be tested to know.

Approach:

- 1) Observe alphabets or numbers given in the code keenly.
- 2) Find the sequence it follows whether it is ascending or descending.
- 3) Detect the rule in which the alphabets/numbers/words follow.
- 4) Fill the appropriate letter/number/word in the blank given.

e.g. → AMAN → BNBO or CPES

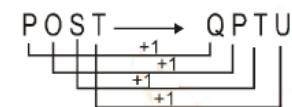
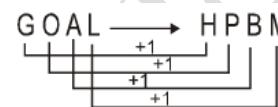
Decoding: The method of converting a non-meaningful word/letter/number in a meaningful word by a certain rule is called de-coding.

C P E S → A M A N

Example:

If in a certain language 'GOAL' is coded as HPBM, how is 'POST' coded in same language.

Sol.



Type I : Coding based on eng alphabets.

Ex.(1) If code for RADIO is SBEJP. What is code for CAMERA

Ans. : CAMERA → DBNFSB

Type II: Coding based on group words

Ex. In a certain code language

Dev Das ji means good little frock (→ mean)

Ram Kishan ji means behaves good

Durga Lal Kishan means makes mischief

Das Raj Kishan means little girl feel

What is code for frock

Ans. Dev

Type III: Coding based on conversion of name of words.

Ex. 'man is coded as 'woman', woman is coded as 'girl', 'girl' is coded as 'boy', 'boy' is coded as 'worker' then 6 years female is known as?

Ans.: 6 years female = girl, but 'girl' is coded as 'boy'.

Hence answer = boy.

Type IV: Coding based on numbers.

Ex. 1 If in a coded language A is coded as 1, B as 2 and so on then what is code for MAGGI.

Sol. MAGGI → 131779

Ex. 2 If BEAUTIFUL is coded as 573041208 and RUBBER is coded as 905579 then what is code for TEAR.

Sol. TEAR → 4739.

Ex. 3 Apple is coded as 25563, Rung is coded as 7148. Then purple is coded as

02 Coding And Decoding:

17. In a certain code language, PURSE is written as KFIHV, then what will be the code of CHAIR?

 - IRSZX
 - IRZSX
 - SZXIR
 - XSZRI
 - None of these

18. In a certain code language, FATHER is written as IVSGZU. How will CRUELTY be written in that code language?

 - VOCVZRL
 - VPCVZRL
 - VPVCZRL
 - BGOVFIX
 - None of these

19. If in certain language, BROUGHT is coded as CSPVHIV, which word would be coded as GBNPVT?

 - FARMER
 - HCOQWU
 - FRAMES
 - FARMES
 - FAMOTH

20. In a certain code, EVOLUTIONARY is coded as YRANOITULOVE. Which word would be coded as NOIТИNUMMA?

 - ANMOMIUTNI
 - AMNTOMUIIN
 - AMMUNITION
 - NMMUNITIOA
 - None of these

21. In a certain code language :

 - "nip zip tip" means "summer is hot".
 - "to tip de" means "winter is cold".
 - "de nip doo" means "winter or summer".
 - "to the da" means "nights are cold".

Which word in that language represent "winter"

 - nip
 - de
 - zip
 - da
 - None of these

22. In a certain code, NOVEMBER is written as ERMBVENO. Which word will be written as IEUAACEV in that code?

 - VACUATEA
 - CAVEETAU
 - EVACUAIE
 - VECAAUET
 - None of these

23. If in a certain code, S is written as O, N as P, E as M, I as A, D as E, U as C, T as S, R as N then how will INDUSTRIES be written in that code ?

 - CPEAOMNASO
 - APCESOANMO
 - APECOSNAMO
 - PACEOSNAMO
 - None of these

24. If the word REVERSE be written as APUPATP in coded form, how can RESERVE be written following the same coding ?

 - RQPUPMN
 - SQRPUVW
 - PATAPUP
 - APTPAUP
 - None of these

25. If in a certain code, R is written as S, E as P, F as Q, I as M, G as N, A as B, T as Z, O as Y then how will REFRIGERATOR be written in that code ?

 - PSQSNMSPZBSY
 - QSSPPSMNBZYS
 - SPQSMNPSBZYS
 - PSBZYSSPQSMN
 - None of these

26. In a certain code, TABLE is written as PBCME and GRADE as QSBHE. Following the same rule of coding, what should be the code for the word BLADE?

Directions (28-30) : Study the following letters and their corresponding digit codes followed by certain conditions of coding and answer the questions given below them by finding out which of the digit combinations given in (a), (b), (c) and (d) is the coded form of the letter-groups given in each question and mark your answer accordingly.

Letter: PN AJIREBUK

Code: 4270563918

Conditions:

- (1) If both the first and the last letters in the group are vowels, both should be coded as *.
(2) If both the first and the last letters in the group are consonants, both should be coded as £.

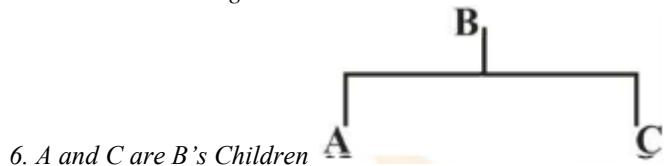
03 Blood Relation

This type of test is to test candidate's ability about blood relation. In this type of test, questions are given such that the relation of two persons is given and the relation of the other is to be found out.

For this, we use family tree. To build a family tree, certain standard notations are used to indicate a relationship between the members of the family.

Notifications

- 1. A is a male A+
- 2. A is a female A-
- 3. Sex of A not known A
- 4. A and B are married to each other A ↔ B
- 5. A and B are siblings A = B



To make a family tree from the given duties we will first identify the males and the females in the family and then try to put each member in their respective position in the tree.

Ex.1 : A, B, C, D, E and F are related to each other as given here. B is f's daughter in law D is A's only grandchild. C is D's only uncle. A has only 2 children F and C, one male and one female. E is the father of C.

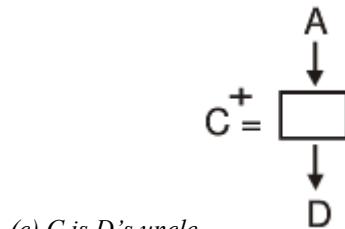
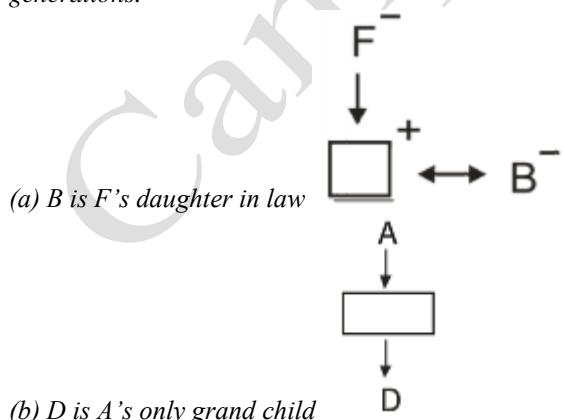
- (i) Who is the grandmother of D ?
- (ii) Who is the mother-in-law of B ?

Step I : Identify the sex of A, B, C, D, E and F.

- (a) B is f's daughter in law → B-
- (b) C is D's only uncle C+
- (c) A has 2 children F and C, one male and one female, since C is male, F is female.
→ F-
- (d) E is the father of C. → E+

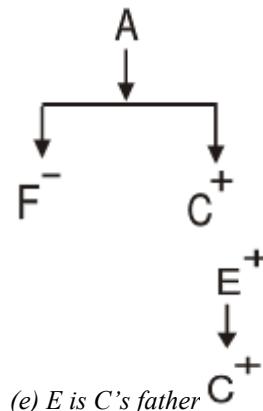
Step II :

Use the conditions to arrange A, B, C, D, E and F in these tree generations.



(c) C is D's uncle

(d) A has only two children F and C, one male and one female.



(e) E is C's father

Level I : A- ↔ E+

Level II : C+ F-

Level III : B- ↔ D+

Question I and II can be answered easily by looking at the family tree. A is the grandmother of D and F is the mother in law of B.

Ex 2 : Meena is Pankaj's daughter. Reena is Pankaj's sister. Reena's daughter is Diya and Reena's Son is Ram. Tina is Diya's only maternal aunt.

Q. 1: Meena is Tina's

- (a) aunt (b) niece (c) uncle
- (d) none of these

Q. 2: Diya is Pankaj's :

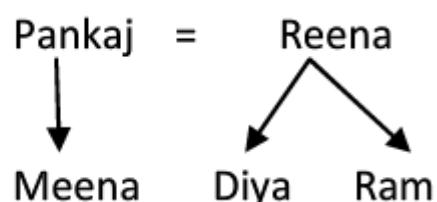
- (a) nephew (b) niece (c) uncle
- (d) can't be say

Q. 3: Ram is Tina's :

- (a) niece (b) aunt (c)
- nephew
- (d) none of these

Solutions :

Tina ↔ Pankaj =



Ans. 1 :

- (d) Meena is Tina's daughter

29. Mr. A is a Police Officer. B is the brother in law of C's sister D. D is the wife of her brother's boss A. What is the relationship of C and B with A ?

- (a) Brother and brother in law
 - (b) Brother in law and brother
 - (c) Subordinate and brother in law
 - (d) Friend and brother in law
 - (e) None of these

30. Pointing towards someone said, "She is my father's sister and she is the only daughter". How many children had my grandfather?

- (a) Two sons
 - (b) One daughter
 - (c) One son and one daughter
 - (d) Cannot be determined
 - (e) None of these

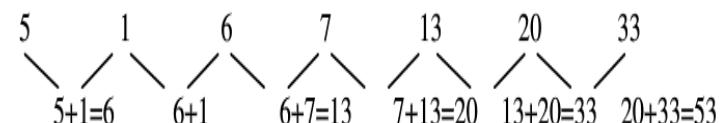
04 Number Series

In these type of questions, given a series of numbers. The terms in the series follows a particular pattern (rule) throughout the series. We are required to study the series and identify the pattern for completing the series.

Ex.1] 5, 1, 6, 7, 13, 20, 33, ?

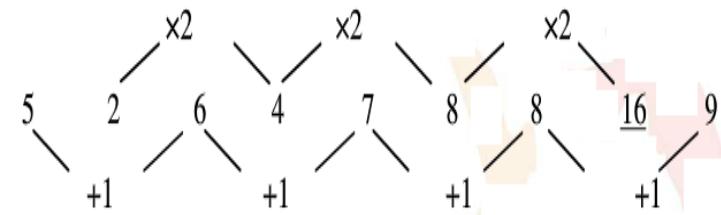
- (a) 50 (b) 53 (c) 55 (d) 58
 (e) None of these

Sol.(b)



Ex. 21.5. 2, 6, 4, 7, 8, 8, 2, 9

Sol.(c):



Ex.3] 1, 9, 25, 49, 81, ?

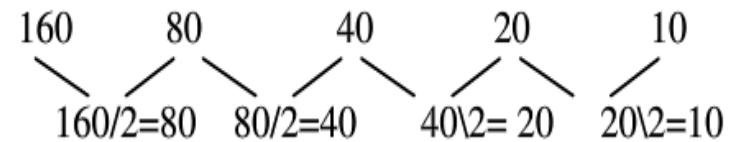
- (a) 100 (b) 121 (c) 144 (d) 169
 (e) None of these

$$\begin{array}{rcccccc} Sol.(b): & 19 & 25 & 49 & 81 & \dots \\ 1^2 & 3^2 & 5^2 & 7^2 & 9^2 & 11 \\ = 11^2 & = 121 & & & & \end{array}$$

Ex.4] 160, 80, 40, _____, 10

- (a) 20 (b) 15 (c) 25 (d) 35
(e) None of these

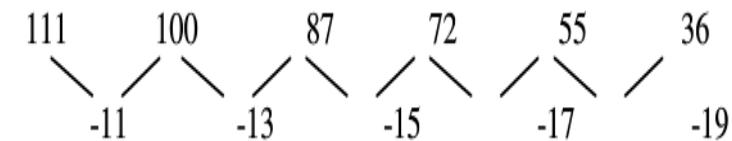
Sol.(a):



Ex.5] 111, 100, 87, ___, 55, 36

- (a) 83 (b) 64 (c) 72 (d) 78
 (e) None of these

Sol.(c):



Practice set

1. $3125, 625, \underline{\hspace{2cm}}, 25, 5, 1$

- (a) 50 (b) 55 (c) 125 (d) 124

(e) None of these				
2. $8, 13, 22, 39, 72, \underline{\hspace{2cm}}$	(a) 137	(b) 135	(c) 133	(d) 131
(e) None of these				
3. $0.6, 0.06, 0.006, \underline{\hspace{2cm}} 0.00006$:	(a) .06	(b) .00006	(c) .006	(d) .0006
(e) None of these				
4. $302 : 502 :: 601 : \underline{\hspace{2cm}}$	(a) 401	(b) 702	(c) 701	(d) 802
(e) None of these				
5. $\underline{\hspace{2cm}}, 3219, 5231, 7243, 9255$.	(a) 1226	(b) 2226	(c) 1216	(d) 1207
(e) None of these				
6. $8 : 16 :: \underline{\hspace{2cm}} : 24$.	(a) 3	(b) 6	(c) 9	(d) 12
(e) None of these				
7. $12, 78, 13, 91, 14, \underline{\hspace{2cm}}, 15$	(a) 100	(b) 102	(c) 98	(d) 105
(e) None of these				
8. $7, 15, 31, 55, \underline{\hspace{2cm}}, 127$	(a) 41	(b) 77	(c) 47	(d) 87
(e) None of these				
9. $7, 26, 63, \underline{\hspace{2cm}}, 215, 342$.	(a) 105	(b) 104	(c) 124	(d) 13
(e) None of these				
10. $1, 5, 14, 30, 55, \underline{\hspace{2cm}}$	(a) 88	(b) 91	(c) 72	(d) 56
(e) None of these				
11. $45, 44, 42, 39, ?, ?$:	(a) 35, 29	(b) 35, 30	(c) 38, 36	(d) 35, 28
(e) None of these				
12. $3, 7, 13, 21, ?, ?$:	(a) 30, 41	(b) 30, 45	(c) 31, 43	(d) 35, 48
(e) None of these				
13. $3 : 4 : 5 :: 9 : \underline{\hspace{2cm}} : 41$.	(a) 35	(b) 40	(c) 45	(d) 12
(e) None of these				
14. $18, 2, 36, 3, 108, 4, \underline{\hspace{2cm}} ?$	(a) 228	(b) 256	(c) 456	(d) 432
(e) None of these				
15. $7, 12, 22, 37, 57, \underline{\hspace{2cm}} ?$	(a) 69	(b) 77	(c) 82	(d) 89
(e) None of these				
16. Find the missing no. of the series : $0, ?, 10, 18, 28$.	(a) 1	(b) 3	(c) 5	(d) 4
(e) None of these				
17. $36, 20, 12, 8, 6, \underline{\hspace{2cm}}$	(a) 1	(b) 2	(c) 3	(d) 5
(e) None of these				
18. $2 + \sqrt{10}, 3 + \sqrt{17}, 5 + \sqrt{37}, \underline{\hspace{2cm}}$	(a) $7 + \sqrt{19}$	(b) $7 + \sqrt{50}$	(c) $7 + \sqrt{60}$	
(d) $7 + \sqrt{65}$	(e) None of these			
19. $7, 11, 13, 17, 19, \underline{\hspace{2cm}}, 29, 31$.	(a) 26	(b) 23	(c) 24	(d) 25
(e) None of these				
20. $1, 9, 25, 49, 81, \underline{\hspace{2cm}}$	(a) 101	(b) 103	(c) 111	(d) 121
(e) None of these				
21. $4 : 16 :: 16 : \underline{\hspace{2cm}} ?$	(a) 32	(b) 12	(c) 4	(d) 256
(e) None of these				
22. $6 : 84 :: 7 \underline{\hspace{2cm}} ?$	(a) 98	(b) 92	(c) 89	(d) 91
(e) None of these				
23. $295, 259, 234, \underline{\hspace{2cm}}, 209, 205$	(a) 220	(b) 218	(c) 225	(d) 230
(e) None of these				
24. $5, 6, 14, 45, \underline{\hspace{2cm}}, 925$.	(a) 90	(b) 180	(c) 184	(d) 525
(e) None of these				
25. $169 : \underline{\hspace{2cm}} :: 361 : 289$	(a) 196	(b) 169	(c) 144	(d) 121
(e) None of these				
26. $412, 387, 362, 337, \underline{\hspace{2cm}}$	(a) 302	(b) 312	(c) 300	(d) 217
(e) None of these				
27. $-4, -1, 4, 11, 20, \underline{\hspace{2cm}}$	(a) 30	(b) 31	(c) 32	(d) 33
(e) None of these				
28. $15, 16, 20, 29, 45, 70, \underline{\hspace{2cm}}$	(a) 106	(b) 96	(c) 102	(d) 76
(e) None of these				
29. $0, 3, 8, 15, 24, \underline{\hspace{2cm}}$	(a) 30	(b) 35	(c) 34	(d) 32
(e) None of these				
30. $1, 8, 27, 64, 125, 216, \underline{\hspace{2cm}}$	(a) 512	(b) 342	(c) 343	(d) 334
(e) None of these				

05 Letter Series

In this series given alphabets follow a particular sequence or order. We have to detect the pattern from the given alphabets and find missing alphabet or the next alphabet to continue the pattern.

Ex. 1 : ABZ, BCY, CDX, DEW,

- (a) EFK (b) DEF (c) FEV
 (d) DEV

(e) None of these

Sol.(a) : EFK

Ex. 2 :, PSV, EHK, TWZ, ILO

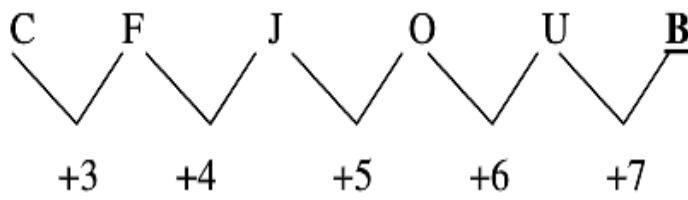
- (a) BEH (b) ADG (c) IMP (d) ZCF
 (e) None of these

Sol.(b) : ADG

Ex. 3 : C, F, J, O, U,

- (a) D (b) B (c) A (d) E
 (e) None of these

Sol. (b) : Sequence in the given series is moving forward with +3, +4, +5, +6, +7 and so on steps.



Ex. 4 : ba __ b __ aab __ a __ b

- (a) baab (b) abba (c) abaa (d) babb
 (e) None of these

Sol.(b) : Pattern is baa / ba / ba

Ex. 5 : a __ ba __ cbaac __ aa __ ba

- (a) cabb (b) cabc (c) bbcc (d) cbcb
 (e) None of these

Sol.(b): Pattern is acba / acba / acba

Practice set:

1. OE, NF, MG, LH, _____

- (a) QL (b) KI (c) OK (d) GK
 (e) None of these

2. 11C, 24E, 37G, 50I, 63K, _____

- (a) 61M (b) 69M (c) 76M (d) 71M
 (e) None of these

3. AT, CR, EP, GN, _____

- (a) LI (b) IN (c) IL (d) MN
 (e) None of these

4. A, I, Y, W, _____

- (a) Z (b) A (c) C (d) Y
 (e) None of these

5. BC, EF, HI, KL, _____

- (a) HN (b) NM (c) NO (d) ON
 (e) None of these

6. AB, EF, IJ, MN, _____

- (a) WX (b) YZ (c) QR (d) XY
 (e) None of these

7. 2B2, 5E5, 8H8, _____, 14N14

- (a) 8G8 (b) 11K11 (c) 11 I 11
 (d) 9K9
 (e) None of these

8. MOST, MOTS, MSTO, MSOT, MTOS, _____

- (a) MTSO (b) MOST (c) MSOT (d) TSOM
 (e) None of these

9. AEWS, BFXT, _____, DHZV

- (a) CGTX (b) CGXT (c) CGYU (d) CTXG
 (e) None of these

10. BDF, CFI, DHL, _____

- (a) EJN (b) EJO (c) EIN (d) EIO
 (e) None of these

11. SUW, UWY, WYA, _____

- (a) YZC (b) YAC (c) YBC (d) CYA
 (e) None of these

12. $\frac{C}{E}$, $\frac{E}{H}$, $\frac{H}{L}$, $\frac{L}{Q}$, _____

- (a) Q/P (b) Q/S (c) Q/I (d) Q/W
 (e) None of these

13. ABC, CEF, EHI, GKL, _____

- (a) IJK (b) GHI (c) IKL (d) INO
 (e) None of these

14. YB : VE :: SH : _____

- (a) UL (b) CR (c) PK (d) NM
 (e) None of these

15. P O T A T O : T P O O A T : : 1 2 3 4 3 2 : _____ ?

- (a) 312214 (b) 123456 (c) 321124 (d) 312243
 (e) None of these

16. BD, EH, IM, NS, ?

- (a) UY (b) UZ (c) TY (d) TZ
 (e) None of these

17. Z, X, U, Q, L, ?

- (a) F (b) M (c) N (d) F
 (e) None of these

18. DEFG : HJLN : : GHIJ : _____

- (a) NPRT (b) NPTR (c) NPRQ (d) NPOT
 (e) None of these

19. X, N, G, C, _____

- (a) B (b) A (c) Y (d) W
 (e) None of these

20. AD : N : : BC : _____

(a) U (b) V (c) W (d) P
(e) None of these

21. BCD, DFH, HKN, NRV, ____
(a) ZKU (b) ZKV (c) VAF (d) VAE
(e) None of these

22. Y, T, U, Q, Q, N, M, K, __, __
(a) J, I (b) I, H (c) H, J (d) K, L
(e) None of these

23. MH, NI, OJ, ?
(a) PT (b) PK (c) SP (d) KP
(e) None of these

24. BUCZH, DSEXJ, FQGVL, HOITN, ?
(a) MQORN (b) JMRKP (c) JMKRP
(d) KMRKP (e) None of these

25. Q1H, S2G, U6F, W21E, ?
(a) Y44D (b) Y88D (c) Y88B(d) Y44B
(e) None of these

26. K6M, I10P, G14S, E18V, ?
(a) C17Y (b) C22Y (c) C66Y(d) D23Y
(e) None of these

27. CFE, G __ I, K __ M
(a) H L (b) J N (c) D J (d) N K
(e) None of these

28. V, S, __, N, L
(a) S (b) P (c) Q (d) R
(e) None of these

29. Z, X, S, I, R, R, ?, ?
(a) J I (b) J K (c) G I (d) G H
(e) None of these

30. T1C, Q3E, N9G, K3II, ?
(a) H31K (b) K11H (c) H129K (d) K12II
(e) None of these

06 Clock & Calendar:

A clock has 2 hands : Hour hand and Minute hand. It has 12 hours and 60 minutes.

In one hour, hour hand makes an angle = $\frac{360}{12} = 30^\circ$

In one minute, minute hand makes an angle = $\frac{360}{60} = 6^\circ$

In one minute hour hand makes an angle = $\frac{30}{60} = \frac{1}{2}^\circ$

In every hour, both the hand coincide once

In a day, the hands coincides 22 times

In every 12 hours, the hands coincides 11 times

In every 12 hour the hands of clock are in opposite direction 11 times

In every 12 hour the hands of clock are at right angle 22 times

In every hour, the two hand are at right angle twice.

Both the hand coincides at an interval of $66\frac{5}{11}$ mins.

CALENDAR :

Earth takes 365 days, 5 hours, 48 mins and $47\frac{1}{2}$ sec to complete one revolution.

An ordinary years have 365 days i.e. 52 weeks and 1 odd days leap years have 366 days i.e. 52 weeks and 2 odd days.

The first and last day of an ordinary year is same.

e.g. → If on 15 august 2010, its Sunday

then on 15 august 2011, its Monday

& on 15 august 2009 its Saturday.

Leap year → The year which is divisible by 4 is called leap year.

e.g. → 1996, 2000, 2004, 2008, 2012 etc.

Leap century → The year which is divisible by 400 is called Leap century.

e.g. → 1600, 2000, 2400 etc

Odd – days out

100 years contains (76 ordinary years & 24 leap year) 5 odd days.

200 years contains 3 odd days

300 years contain 1 odd days

400 years contain 0 odd days.

The month having 31 days contains $(4 \times 7 + 3)$ 3 odd days

The month having 30 days contains $(4 \times 7 + 2)$ 2 odd days.

In an ordinary year February have no odd days.

In a leap year it has 1 odd days.

The day on 31 December 1600 is Sunday

Ex. 1:

What is the angle between hour hand and minute hand when it was 5 : 45 pm

$$0' \text{ clock } \times 5 = x, \text{ Minute } - x = y, y \times 6 - \frac{\text{Minute}}{2} = \text{angle}$$

$$5 \times 5 = 25, 45 - 25 = 20, 20 \times 6 - \frac{45}{2} = 97.5^\circ$$

Ex. 2:

What was day on 23rd march 1931.

Sol. 31 Dec. 1600 its Sunday and 31 Dec. 1900 its Monday.

No. of odd days 31 Dec. 1900 to 23 march 1931 = 42

$\frac{42}{7} \rightarrow \text{remainder} = 0$

On 23rd March 1931 it was Monday.

Ex. 3: At what time between 5.30 & 6 will the hands on a clock be at right angle.

Sol.: At 5 both the hands are 25 mins apart & to be at right both the hands have to be 15 min apart shown in fig. 1 & fig. 2



Fig 1

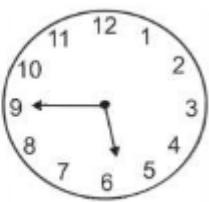


Fig 1

Now, min hand has to travel $25+15 = 40$ min So, 55 min space is gained in 60 mins. 40 min space is gained in $\frac{60}{55} \times 40 = 43\frac{7}{11}$ min

Both the hands are at right angle at $43\frac{7}{11}$ past 5

Ex. 4: If on 15th Jan 1993 its Monday then what day of the week will be on 17 Aug. 2004.

Sol. No. of odd days = $(2004 - 1993) + 2 + 19 = 32$

$\frac{32}{7} \rightarrow$ remainder = 4

On 17th Aug. 2004 it was Friday.

Ex. 5: It is Sunday on 13th Jan 1980, then on 13 Jan 2012 what will be the day of week.

Sol. No. of odd days = $(2012 - 1980) + 8 = 40$

$\frac{32}{7} \rightarrow$ Remainder = 5

On 13 Jan 2012 it will be Friday

Practice set:

1. What will be the angle between hands of a clock at 7:40?

- (a) 15° (b) 10° (c) 20° (d) 25°
(e) None of these

2. What will be the angle between the hands of a clock at 3:07?

- (a) 51° (b) $51\frac{1}{2}^\circ$ (c) $52\frac{1}{2}^\circ$ (d) $55\frac{1}{2}^\circ$
(e) None of these

3. At what time between 2 & 3 O'clock the hands of a clock will be coincide?

- (a) $2:5\frac{5}{11}$ (b) $2:10\frac{10}{11}$ (c) $2:19\frac{1}{11}$ (d)
 $2:25\frac{5}{11}$
(e) None of these

4. At what time between 9 & 10 O'clock the hands of a clock will be in opposite direction?

- (a) $9:10\frac{10}{11}$ (b) $9:5\frac{5}{11}$ (c) $9:18\frac{2}{11}$ (d)
 $9:16\frac{4}{11}$
(e) None of these

5. How many times hands of clock will be at right angle in 3 days?

- (a) 198 times (b) 66 times (c) 132 times
(d) 144 times (e) None of these

6. How many times hands of a clock will be in opposite direction in 2 days?

- (a) 66 times (b) 48 times (c) 44 times
(d) 96 times (e) None of these

7. Which day of week was on 30th June 1996

- (a) Sunday (b) Monday (c) Tuesday
(d) Wednesday (e) None of these

8. Which day of week was on 17th April 2008?

- (a) Sunday (b) Monday (c) Thursday
(d) Wednesday (e) None of these

9. If 19th March 1992 was Monday then which day of the week on 7th April 1999?

- (a) Monday (b) Tuesday (c) Wednesday
(d) Thursday (e) None of these

10. If find number of days from 18th Jan to 27th March?

- (a) 69 (b) 68 (c) 67
(d) cannot be determined (e) None

11. Find the number of days from 29th June to 18th September?

- (a) 81 (b) 82 (c) 80
(d) cannot be determined (e) None

12. If 14 November 1999 was Wednesday then which day of week was on 14th February 2003?

- (a) Wednesday (b) Thursday (c) Friday
(d) Saturday (e) None of these

13. In a clock the time is 9:48 then what will be time if we see that clock in mirror?

- (a) 3:12 (b) 3:15 (c) 3:48 (d) 2:52
(e) None of these

14. What will be angle between hands of clock at 8:35.

- (a) $72\frac{1}{2}^\circ$ (b) $87\frac{1}{2}^\circ$ (c) $25\frac{1}{2}^\circ$ (d) $105\frac{1}{2}^\circ$
(e) None of these

15. If today is Monday then what will be the day of week after 49 days?

- (a) Friday (b) Saturday (c) Sunday (d) Monday
(e) None of these

16. If 19 Jan was Tuesday then which day of the week will be on 19th March?

- (a) Saturday (b) Friday (c) Sunday (d) A or B
(e) Can't be determine

17. After 1997 which year has the same calendar as year 1997?

- (a) 1999 (b) 2003 (c) 2007
(d) Can't be determine (e) None

18. In mirror a clock shows the time 5:18 then what will be the actual time?

- (a) 7:42 (b) 6:42 (c) 11:18 (d) 10:18
(e) None of these

19. At a time minute hand is at 5 and the difference between minute and hour hand is $47\frac{1}{2}^\circ$ then what would be time.

- (a) 1: 25 (b) 2:25 (c) 3:25 (d) 4:25
 (e) None of these

20. What will be the angle between hands of a clock at 2:38?
 (a) 210° (b) 150° (c) 175° (d) 185°
 (e) None of these

21. At 9 O' Clock, the hour hand points towards south. then in which direction will the minute hand point at 7:30 pm.
 (a) North (b) South (c) South East (d) East
 (e) None of these

22. In which day of the week did India got its independence.
 (a) Monday (b) Sunday (c) Friday
 (d) Saturday (e) None of these

23. If on 13 Jan 2012 its was Friday then what day will be on 17 June 2012.
 (a) Sunday (b) Monday (c) Wednesday
 (d) Tuesday (e) None of these

24. If there are 5 Monday in June month of a year then what day of the week will be on 1 June.
 (a) Saturday (b) Sunday (c) Friday
 (d) Tuesday (e) None of these

25. It on 25 Dec. it was Sunday then which month of that year will have Sunday on 25th.
 (a) October (b) November (c) September (d) January
 (e) None of these

26. Which of the following year have 29 days in February?
 (a) 1978 (b) 1900 (c) 1834 (d) 2010
 (e) None of these

27. What day of the week will be on 13 Jan 2013.
 (a) Sunday (b) Monday (c) Tuesday
 (d) Saturday (e) None of these

28. Aniket was born on 24 October 2010 what will be the day of week when he will be of 18 years.
 (a) Sunday (b) Monday (c) Tuesday
 (d) Saturday (e) None of these

29. Yashi was born on 03 July 1981. It was Friday on which day of week will she be of 13 years 5 months 18 days.
 (a) Tuesday (b) Thursday (c) Friday
 (d) Wednesday (e) None of these

30. Which month begins and ends on the same day of the week.
 (a) February (b) April (c) Dec. of the year
 (d) Feb. of the leap year (e) None

07 Ranking

Questions on counting are based on height, weight, distance, number, rank, obtained marks etc. of a person, place or things. On the basis of these information we arrange the given data and then solve the question given.

Type I :

Formula \rightarrow Ranking from one end = [Total number – Ranking from other end] + 1

Ex. 1 In a class of 27 students Rank of M is 14th. Find his Rank from other end.

$$\text{Sol. : Rank from other end} = (27 - 14) + 1 = 14$$

Ex. 2 The Rank of Mohit and Rohit is 15th & 16th respectively. In a class of 51 students. Find their rank from other end.

$$\text{Sol. Mohit's Rank} = 51 - 15 + 1 = 37^{\text{th}}$$

$$\text{Rohit's Rank} = 51 - 16 + 1 = 36^{\text{th}}$$

Type II

Formula used \rightarrow Total No.'s of students = [Rank from one end + Rank from other end] – 1

Ex. 1 In a row of students, the Rank of Ram is 8th from left and 29th from right. How many students are there in the row.

$$\text{Sol. No. of students} = (8 + 29) - 1 = 36$$

Ex. 2 In a class, the Rank of Mohan is 8th from top and Rohan is 19th from the bottom. How many students are there in the class.

Sol. As we do not know the number of student between Mohan and Rohan.

So we cannot find the Number of students in the class.

Type III

Ranking based on comparison of person / things / place

Ex. 1 Veena is younger than Rina but elder than Tina. Riya is younger than Priya but elder than Rina. Who is youngest among them.

$$\text{Sol. } \text{Rina} > \text{Veena} > \text{Tina}$$

$$\text{Priya} > \text{Riya} > \text{Rina}$$

$$\therefore \text{Priya} > \text{Riya} > \text{Rina} > \text{Veena} > \text{Tina}$$

So, Tina is the youngest one.

Ex. 2 Dhruv, who is larger than Sohan, who is shorter than Rishi. Bablu is shorter than Sohan but larger than Kamal. Rishi is shorter than Dhruv. Who is the largest one.

Sol.

$$\text{Dhruv} > \text{Sohan}$$

$$\text{Sohan} < \text{Rishi}$$

$$\text{Sohan} > \text{Bablu} > \text{Kamal}$$

$$\text{Dhruv} > \text{Rishi}$$

$$\therefore \text{Dhruv} > \text{Rishi} > \text{Sohan} > \text{Bablu} > \text{Kamal}$$

So Dhruv is the largest one.

Ex. 3 Out of 5 river P, Q, R, S and T. P is shorter than Q but larger than T. R is the longest one, S is shorter than Q but a longer than P. Which is the shortest river ?

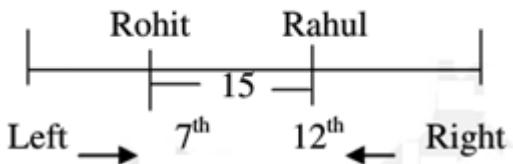
$$\text{Sol. } \text{T} < \text{P} < \text{Q} \text{ and } \text{P} < \text{S} < \text{Q} \text{ and } \text{R} \text{ is the longest}$$

$$\therefore \text{T} < \text{P} < \text{S} < \text{Q} < \text{R}$$

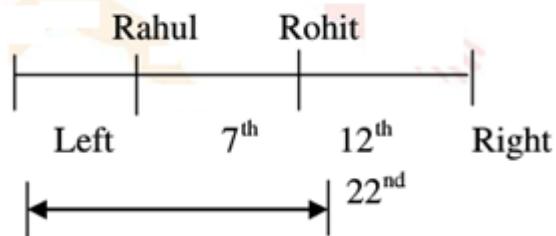
T is the shortest river.

Type IV

Ex. 1 In a row of students, Rohit's rank is 7th from left and Rahul's rank is 12th from right. There are 15 students in between Rohit and Rahul. Find the no. of student in the row, they interchange their position.

Initial position


Sol.

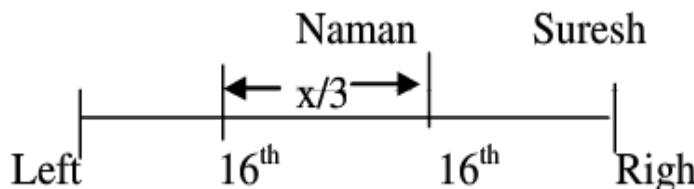
After Interchange


$$\begin{aligned} \text{Total no. of student} &= [\text{Position of Rohit from left} + \text{Position of Rohit from right}] - 1 \\ &= 22 + 12 - 1 = 33 \end{aligned}$$

Trick \rightarrow Total no. of student = [Interchanged position of Rohit + Initial position of Rahul] - 1

Ex. 2 In a row of students Naman's rank is 16th from left and Suresh's rank is 16th from right. If there are 1/3rd of total students between them. What is total number of students.

Sol.



But total no. of student be x

$$\text{Then } x = 16 + x/3 + 16$$

$$\therefore x = 48$$

Practice Set:

1. How many 6's are there in the following number sequence which are immediately preceded by 8 and immediately followed by 7 ? 8 6 6 9 4 6 8 7 4 6 9 7 8 6 7 8 7 4 3 2 6 7 8 7

- (a) One (b) Two (c) Three (d) Four
(e) None of these

2. How many 8's are there in the following number series, each of which is immediately preceded by 2 or 7 and immediately followed by 4 or 6 ?

1 8 4 5 7 8 3 1 6 8 2 4 3 2 8 4 6 2 7 8 6 1 4 2 8 7 3 4 1 2 6 8 5 2 8 4

- (a) None (b) One (c) Two (d) Three
(e) None of these

3. How many 8's immediately preceded by 7 but not immediately followed by 5 are there in the following series ?

8 5 2 8 7 5 3 7 8 4 3 4 8 9 5 3 8 7 8 2 5 0 7 8 5 3

- (a) One (b) Two (c) Four (d) Six
(e) None of these

4. In the series given below, count the number of 7's, each of which is not immediately preceded by 8 but is immediately followed by either 1 or 3. How many such 7's are there?

2 7 1 6 8 7 3 5 3 7 3 1 8 7 1 7 3 4 5 1 2 7 5

- (a) One (b) Three (c) Five (d) Six
(e) None of these

5. How many 1's are there preceded by 9 but not followed by 3.

3 5 7 3 2 4 9 1 2 6 7 9 1 6 4 3 2 8 9 1 4 3 8 3 2 5 6 9 1 3 9 5 8 2

0 4 8 9 1 6 3

- (a) Three (b) Four (c) Five (d) Six
(e) None of these

6. If the following series is written in the reverse order, which number will be third to the right of the sixth number from the left?

6, 2, 1, 0, 5, 11, 13, 7, 3, 9, 7, 0, 3, 8, 4

- (a) 13 (b) 5 (c) 9 (d) 0
(e) None of these

7. In the following sequence of instructions, 1 stands for Win, 2 stands for Loss, 3 stands for Tie, 4 stands for Draw and 5 stands for Cancel. If the sequence were continued, which instruction will come next ?

4 4 5 4 5 3 4 5 3 1 4 5 3 1 2 4 5 4 5 3 4 5 3

- (a) Cancel (b) Draw (c) Tie (d) Loss
(e) Win

8. In a school, the following codes were used during physical exercise. „1’ means „start playing”, „2’ means „keep waiting”, „3’ means „start logging at the same spot”, „4’ means „sit relax”. How many times will a student who perform the following sequence without error from the beginning to the end have to relax. ?

1 2 3 4 2 3 1 4 4 3 2 2 1 2 4 3 1 4 4 1 2

- (a) 2 (b) 3 (c) 4 (d) 5
(e) None of these

9. Thirty six vehicle are parked in a parking lot in a single row. After the first Scorpio, there is one Bike. After the second Scorpio, there are two Bikes. After the third Scorpio, there are three Bikes and so on. Work out the number of Bikes in the second half of the row.

- (a) 12 (b) 10 (c) 15 (d) 16
(e) None of these

Directions (Q. 10-12) : Read the following information carefully to answer the questions given below :

A person is asked to put in a basket one Orange when ordered “One”, one Kiwi when ordered “Two”, one Mango when ordered „Three” and is asked to take out from the basket one range and one Kiwi both when ordered “Four”. The order sequence executed by the person is as follows:

1 2 3 3 2 1 4 2 3 1 4 2 2 3 3 1 4 1 1 3 2 3 4

10. How many fruits will be there in the basket at the end of the above order sequence?

- (a) 10 (b) 11 (c) 12 (d) 13
 (e) None of these

11. How many Kiwis will be there in the basket at the end of the above order sequence?

- (a) 1 (b) 2 (c) 3 (d) 4
 (e) None of these

12. How many Oranges will be there in the basket at the end of the above order sequence?

- (a) 4 (b) 3 (c) 2 (d) 1
 (e) None of these

13. If the first and second digits in the sequence 4567932413 are interchanged, also the third and fourth digits, the fifth and sixth digits and so on, which digit would be the sixth counting from your left?

- (a) 1 (b) 4 (c) 7 (d) 9
 (e) None of these

14. The positions of the second and the eighth digits of the number 30892574 are interchanged. Similarly, the positions of the fourth and the fifth digits are interchanged. The positions of the first and the sixth digits are interchanged and the positions of the third and the seventh digits interchanged. Which of the following will be the third digit to the left of 3 after the rearrangement?

- (a) 2 (b) 4 (c) 7 (d) 8
 (e) 9

15. The positions of the first and the fifth digits in the number 98032546 are interchanged. Similarly the positions of the second and the sixth digits are interchanged and so on. Which of the following will be the second to the right of the fifth digit from the right end after rearrangement?

- (a) 3 (b) 4 (c) 7 (d) 9
 (e) None of these

16. If the positions of the first and the sixth digits of the number 8127965430 are interchanged. Similarly the positions of the second and the seventh digits are interchanged and so on, which of the following will be the third to the left of eighth digit from the left end?

- (a) 0 (b) 1 (c) 7 (d) 8
 (e) None of these

17. What will be the difference between the sum of the even digits and the sum of the odd digits in the number 875621?

- (a) 0 (b) 3 (c) 2 (d) 4
 (e) None of these

18. If each of the odd digits in the number 72456 is decreased by 1 and each of the even digits is increased by 1, then which of the following will be the sum of the digits of the new number?

- (a) 25 (b) 26 (c) 28 (d) 29
 (e) None of these

19. How many times will you write even digits if you write all the numbers from 491 to 500?

- (a) 11 (b) 13 (c) 15 (d) 17

20. The positions of how many digits in the number 213654987 will remain same when the digits are arranged in ascending order?

- (a) None (b) One (c) Two (d) Three
 (e) Four

21. How many such digits are there in the number 587296341, each of which is as far away from the beginning of the number as when the digits are arranged in descending order?

- (a) Four (b) One (c) Two (d) Three
 (e) None of these

22. How many such pairs of digits are there in the number 7514632 each of which has as many digits between them in the number as after arranging the digits in descending order?

- (a) None (b) One (c) Two (d) Three
 (e) None of these

23. How many such pairs of digits are there in the number 84153726 each of which has as many digits between them in the number as when they are arranged in ascending order?

- (a) Two (b) Three (c) Four (d) Five
 (e) More than three

24. If it is possible to make a number which is perfect square of a two-digit number with the second, the six and the ninth digits of the number 147682593, which of the following is the digit in the unit's place of that two-digit number?

- (a) 2 (b) 8 (c) 6
 (d) No such number can be made (e) None of these

25. If it is possible to form a number which is perfect square of a two-digit odd number using the second, the fourth and the seventh digits of the number 793142658 using each only once, which of the following is the second digit of that two-digit odd number?

- (a) 3 (b) 4 (c) 5 (d) 7
 (e) None of these

26. Which of the following three-digit numbers will be second largest among them after 2 is subtracted from the middle digit of each number and the positions of the first and the third digits are interchanged?

- (a) 863 (b) 984 (c) 275 (d) 358
 (e) 479

Directions (Q. 27 - 29) : The digits of each of the following five numbers are written in reverse order and five new numbers are obtained :

614 827 593 956 249

27. Which of the following will be the middle digit of the third number from the top when the new numbers are arranged in descending order?

- (a) 1 (b) 2 (c) 5 (d) 9
 (e) None of these

28. Which of the following original numbers retains the same position from the top when arranged in descending order even after the positions of the digits are reversed?

- (a) 249 (b) 593 (c) 614 (d) 827
 (e) 956

29. Which of the following will be the third digit of the second highest new number?

- (a) 1 (b) 5 (c) 9 (d) 8
 (e) None of these

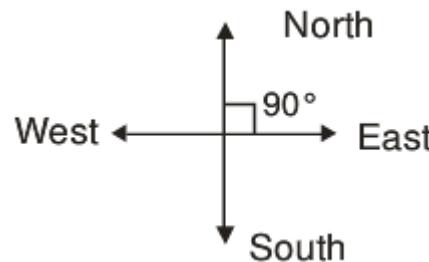
30. In the numbers from 100 to 1000, how many times digit 2 comes at the ten's place?

- (a) 9 (b) 10 (c) 90 (d) 900
 (e) None of these

08 Direction Sense Test

The main objective of these types of question is to check the direction sense ability in students preparing for various competitive exams.

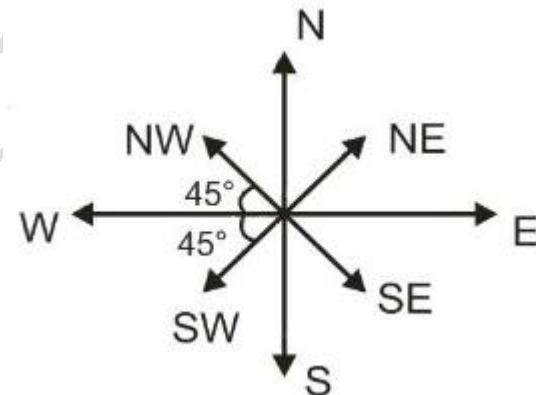
There are 4 main direction namely – North, South, East and West As shown in fig.



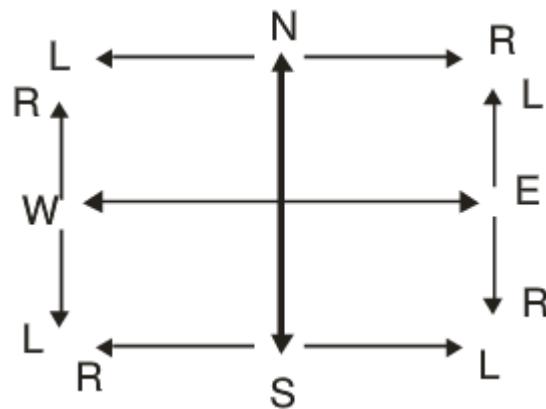
If a person is standing on a point then
 On his top – North
 On bottom – South
 On right side – East
 On left side – West

These 4 directions are perpendicular to each other
 There are 4 cardinal directions also namely – North east, North west, South east, South-west.

These directions are also perpendicular to each other.



Main direction and cardinal direction's makes an angle of 45°
 • We should be aware of left and right of each directions.



If we are moving towards any directions then
 Our right is Direction's Right
 Our left is Direction's left.

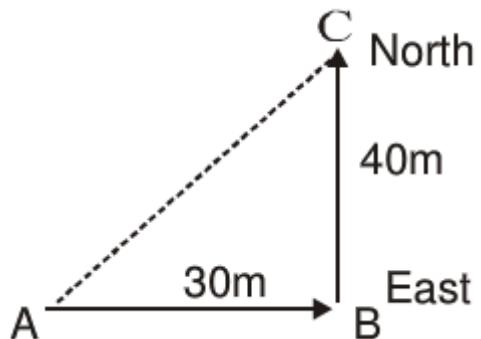
To determine the minimum distance

Pythagoras formula is very helpful

$$H^2 \equiv P^2 + B^2$$

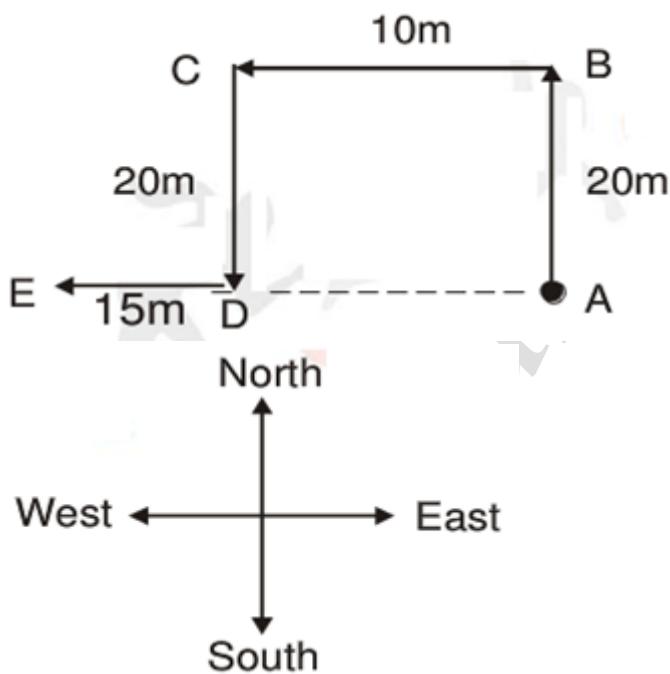
H = Hypotenuse, P = Perpendicular, B = Base

Ex. 1 : A walks 30m towards east direction and then turns to the north and walk 40m. how far is he from his original position
Sol.

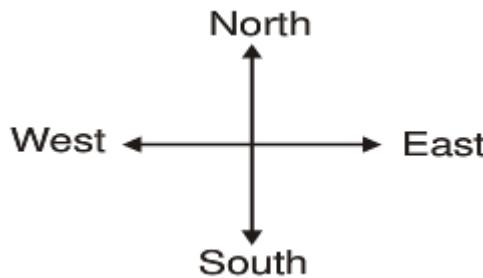
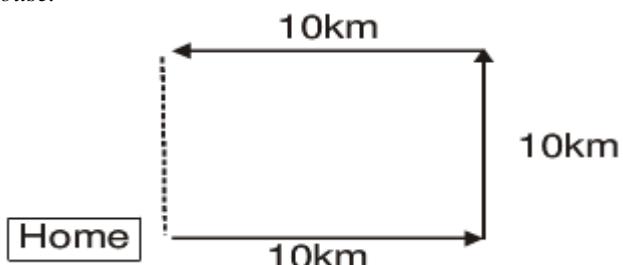


$$\begin{aligned}AC^2 &= AB^2 + BC^2 \\&= (30)^2 + (40)^2 \\AC &= 50m\end{aligned}$$

Ex 2 : A man walks 20m towards north and then he turns left and walks 10m. he again turns left and walks 20m now he turns right and walks another 15m. How far is he from his original position.



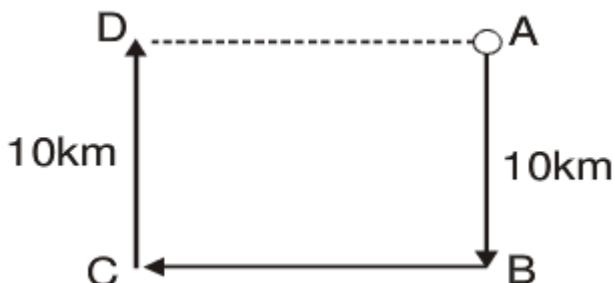
Ex. 3 : Pankaj moves 10km towards east from his house and then turns towards left and walks 10km, he again takes a left turn and walks 10km. How far is he now & in which direction from his house.



Pankaj is 10 km away from his house and in the North direction.

Ex. 4 : Pankaj moves 10 km towards South and then turns right and after walking a particular directions, he again turns right and walk 10 km. In which direction should he moves to reach his original position.

Sol.



Pankaj should walk towards east to reach his original position.

Practice set:

1. If East becomes North-West, North becomes South-West and so on. What will North-East become ?

- (a) East (b) West (c) South (d) North
(e) None of these

2. Rohit faces towards north. Turning to his right, he walks 15 metres. He then turns to his left and walks 25 metres. Next, he moves 15 metres to his right. He then turns to his right again and walks 40 metres. Finally, he turns to the right and moves 20 metres. In which direction is he now from his starting point?

3. Raj walks 15 km towards North. From there he walks 11 km towards South. Then, he walks 3 km towards East. How far and in which direction is he with reference to his starting point?

4. Mr. Roy left for his office in his car. He drove 20 km towards north and then 12 km towards west. He then turned to the south and covered 8 km. Further, he turned to the east and moved 8 km. Finally, he turned right and drove 12 km. How far and in which direction is he from his starting point?

5. While standing on his head, Shobhit's face is towards South. In which direction will his right hand point?

6. I am standing at the center of a circular field. I go down south to the edge of the field and then turning left I walk along the boundary of the field equal to three-eights of its length. Then I turn and go right across to the opposite point on the boundary. In which direction am I from the starting point?

- (a) North-west (b) North (c) South-west
 (d) West (e) None of these

7. Raina walked 30 meters towards North, took a left turn and walked 10 meters. She again took a left turn and walked 30 meters. How far and in which direction is she from the starting point?

- (a) 10 m East (b) 20 m North (c) 10 m West
 (d) 20m South (e) None of these

8. A man leaves for his shop from his house. He walks towards East. After moving a distance of 25 m, he turns South and walks 15 m. Then he walks 35 m towards the West and further 5 m towards the North. He then turns towards East and walks 10 m. What is the straight distance (in meters) between his initial and final positions?

- (a) 0 m (b) 5 m (c) 10 m
 (d) can't be determined (e) None of these

9. A rat runs 15 feet towards East and turns to right, runs 10 feet and again turns to right, runs 8 feet and again turns to left, runs 6 feet and then turns to left, runs 20 feet and finally turns to left and runs 8 feet. Now, which direction is the rat facing?

- (a) East (b) West (c) South
 (d) North (e) None of these

10. Vasant walked 40 meters towards East, took a right turn and walked 50 meters. Then he took a left turn and walked 40 meters. In which direction is he now from the starting point?

- (a) North-East (b) East (c) South East
 (d) South (e) None of these

11. A boy went to meet his uncle in another village situated 5 km away in the North-east direction of his own village. From there he came to meet his brother in law living in a village situated 4 km in the south of his uncle's village. How far away and in what direction is he now from the starting point?

- (a) 3 km in the North (b) 3 km in the East
 (c) 4 km in the East (d) 4 km in the West
 (e) None of these

12. Dhruv walks 15 meters towards the South. Turning to the left, he walks 30 meters and then moves to his right. After moving a distance of 25 meters, he turns to the right and walks 30 meters. Finally, he turns to the right and moves a distance of 12 meters. How far and in which direction is he from the starting point?

- (a) 28 m North (b) 20 m South (c) 28 m South
 (d) 20m South (e) None of these

13. A man walks 1 km towards East and then he turns to South and walks 6 km. Again he turns to East and walks 2 km, after this he turns to North and walks 10 km. Now, how far is he from his starting point?

- (a) 3 km (b) 4 km (c) 5 km
 (d) 7 km (e) None of these

14. Going 60 m to the South of her house, Meenu turns left and goes another 25 m. Then, turning to the North, she goes 45 m

and then starts walking to her house. In which direction is she walking now?

- (a) North-west (b) North (c) South-east
 (d) East (e) None of these

15. Six students A, B, C, D, E and F are standing in a row. B is between F and D. E is between A and C. A does not stand next to either F or D. C does not stand next to D. F is between which of the following pair of students?

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

16. Six persons, A, B, C, D, E and F are living in houses in a row. B has D and F as neighbours, E has A and C as neighbours. A does not live next to either F or D. If C does not live next to D, who are F's next door neighbours?

- (a) B and F (b) B and D (c) only B
 (d) B and C (e) Impossible to tell

17. The town of Khajuri is located on Green lake. The town of Rajan is west of Khajuri. Slkanpur is east of Rajan but west of Khajuri. Tekari is east of Antri but west of Slkanpur and Rajan. If they are all in the same district, which town is the farthest west?

- (a) Slkanpur (b) Tekari (c) Khajuri
 (d) Antri (e) None of these

18. Two ladies and two men are playing cards and are seated at North, East, South and West of a table. No lady is facing East. Persons sitting opposite to each other are not of the same sex. One man is facing South. Which directions are the ladies facing?

- (a) East and West (b) South and East
 (c) North and East (d) North and West
 (e) None of these

19. The station is to the east of the office while my house is to the south of the office. The market is to the north of the station. If the distance of the market from the post office is equal to the distance of my house from the office, in which direction is the market with respect to my office?

- (a) North (b) East (c) North east
 (d) South west (e) None of these

Directions: Study the information given below carefully and answer the questions as follow :

On a play ground, Rahul, Ketan, Himanshu, Atul and Ashutosh are standing as described below facing the North.

- (i) Ketan is 40 meters to the right of Atul.
 (ii) Rahul is 60 meters to the south of Ketan.
 (iii) Himanshu is 25 meters to the west of Atul.(iv) Ashutosh is 90 meters to the north of Rahul.

20. Who is to the north-east of the person who is to the left of Ketan ?

- (a) Rahul (b) Himanshu (c) Atul
 (d) Either Himanshu or Rahul (e) None of these

21. If a boy walks from Himanshu, meets Atul followed by Ketan, Rahul and then Ashutosh, how many meters has he walked if he has traveled the straight distance all through?

- (a) 155 m (b) 185 m (c) 215 m (d) 245 m
 (e) None of these

Directions: These questions are based on the following information:

Seven village P, Q, R, S, T, U and V are situated as follows:

T is 2 km to the west of Q.

U is 2 km to the north of P.

R is 1 km to the west of P.

S is 2 km to the south of V.

V is 2 km to the east of R.

S is exactly in the middle of Q and T.

22. P is in the middle of :

(a) T and R (b) T and V (c) T and V (d) V and

R

(e) None of these

23. Which two villages are the farthest from one another?

(a) S and R (b) U and T (c) U and Q (d) V and

T

(e) None of these

24. How far is T from U (in km) as the crow flies?

(a) 4 (b) $\sqrt{20}$ (c) 5 (d) $\sqrt{26}$

(e) None of these

25. I start from my home and go 3 km straight. Then I turn towards my right and go 2 km. I turn again towards my right and go 2 km again. If I am north-west from my house, then in which direction did I go in the beginning?

(a) North (b) South (c) East (d) West

(e) None of these

26. A direction pole was situated on the crossing. Due to an accident the pole turned in such a manner that the pointer which was showing East, started showing South. One traveler went to the wrong direction thinking it to be West. In what direction actually he was traveling?

(a) North (b) South (c) East (d) West

(e) None of these

27. Kapil goes towards East five km, then he takes a turn to South-West and goes five km. He again takes a turn towards North-West and goes five km with respect to the point from where he started, where is he now ?

(a) At the starting point (b) In the west

(c) In the east (d) In the North-East

(e) In the South-East.

28. Mr. Verma started walking towards South. After walking 20 m, he turned to the left and walked 20 m. he again turned to his left and walked 20 m. how far is he from his original position and in which direction?

(a) 15 m, North (b) 15 m, South

(c) 30 m, East (d) 15 m, West

(e) None of these

29. Rohan travelled 4 km straight towards south. He turned left and traveled 6 km straight, then turned right and traveled 4 km straight. How far is he from the straight point?

(a) 8 km (b) 10 km (c) 12 km (d) 18 km

(e) None

30. A man is facing North-East. He turns 90° in the anticlockwise direction and then 135° in the clockwise direction. Which direction is he facing now?

(a) West (b) North

(c) South

(d) East

(e) None of these

09 Eligibility Test

In such type of test, a vacancy is declared. The necessary qualifications required in the candidates coming up to fill the vacancy are provided and merits of the candidates mentioned.

In these questions we have to decide the course of action to be taken upon a candidate who has applied for a vacancy or allotment to an institution, keeping in mind essential requisites and the data given for the candidate.

Practice set:

Directions (1-10) : Study the following information carefully and answer the questions given below

Following are the conditions for granting advance of Rs. 15 lakhs to the farmers for purchasing tractor, by a Nabard Bank.

The farmer must –

- (i) have at least five acres of cultivable land.
- (ii) be able to produce collateral of at least Rs. 8 lakhs.
- (iii) not be more than 50 years old as on 1.12.2008
- (iv) not have any outstanding unpaid loan from the bank.
- (v) Be able to produce a recommendation letter from the Panchayat Pradhan.

In the case of a farmer who satisfies all other criteria except –
(A) at (i) above, but is able to cultivate more than one crop in each piece of land, the case is to be referred to Chairman of the bank;

(B) at (iv) above, but has Fixed Deposits of at least Rs. 4 lakhs with the bank, the case is to be referred to the General Manager of the bank.

In each question below, detailed information of one farmer is given. You have to carefully study the information provided in each case and take one of the following courses of actions based on the information and conditions given below. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1.12.2005. You have to indicate your decision by marking answers to each question as follows:

Mark answer

- (a) if the advances not to be granted ;
- (b) if the case is to be referred to the General Manager of the bank;
- (c) if the data provided is not adequate to take a decision;
- (d) if the advance is to be granted ;
- (e) if the case is to be referred to the Chairman of the bank.

1. Ram Sharma was born on 16th February 1959. He has Seven acres of cultivable land. He has submitted a recommendation letter issued by the Panchayat Pradhan. He can pledge collateral of more than Rs. 8 lakhs. He doesn't have any unpaid loan from the bank.

2. Mohit Verma was born on 16th September 1961. He has Four acres of cultivable land. He can produce a recommendation letter from the Panchayat Pradhan. He can give collateral of Rs. 9 lakhs and does not have any outstanding loan from the bank. He grows two crops in each piece of his land.

3. Yatendra Tomar has six acres of cultivated land. He has obtained a recommendation letter from the Panchayat Pradhan. He doesn't have any unpaid loan from the bank. He grows two crops in his entire land. He can produce collateral of more than Rs. 5 lakhs.

4. Bhupendra Tomar was born on 11th October, 1959. He has obtained a recommendation letter from the Panchayat Pradhan. He has Three acres of cultivable land with two crops in each piece of land. He can pledge Rs. 8 lakhs as collateral. He has no outstanding loan from the bank.

5. Rajan Yadav has obtained a recommendation letter from the Panchayat Pradhan. He has six acres of cultivable land and can produce collateral of Rs. 9 lakhs. He was born on 5th July, 1958. He doesn't have any outstanding loan from the bank ?

6. Bablu Rana was born on 10th April, 1959. He can produce a recommendation letter from the Panchayat Pradhan. He does not have any outstanding loan. He has a fixed deposit of Rs. 6 lakhs in addition to his collateral of Rs. 8 lakhs. He has four acres of cultivable land with only one crop.

7. Jatin Seth was born on 8th June, 1959. He has nine acres of cultivable land. He can produce a recommendation letter from the Panchayat Pradhan. He can give collateral of more than Rs. 8 lakhs. He grows two crops on half of his total land.

8. Rajesh Pathak was born on 10th July 1960. He has obtained a recommendation letter from the Panchayat Pradhan. He has Seven acres of cultuivable land and can pledge collateral of Rs. 8 lakhs in addition to his fixed deposit of Rs. 5 lakhs. He has an outstanding loan of Rs. 4 lakhs.

9. Mohan Pal can produce a recommendation letter from the Panchayat Pradhan. He can produce collateral of Rs. 8 lakhs. He has outstanding loan of Rs. 5 lakhs from the bank and also has fixed deposit of Rs. 2 lakhs with the bank. He was born on 10th June, 1960.

10. Aasif Khan has Seven acres of cultivable land and he doesn't have any outstanding loan from the bank. He can produce a recommendation letter from the Panchayat Pradhan. He can produce collateral of Rs. 9 lakhs. He was born on 20th March 1960.

Directions (11-20): Study the following information carefully to answer these questions :

Following are the criteria for selection of IT Officer in an organization :

The candidate must –

- (i) be a Computer Engineer or MCA with first class having minimum 65% marks
- (ii) have secured at least 50% marks in the selection test.
- (iii) have secured at least 40% marks in the interview
- (iv) not be less than 21 years and not more than 30 years of age as on 1.10.2010.

In case of a candidate who satisfies all other criteria except :
(A) At (i) above but is an Electronics Engineer with 70% marks, the case may be reffered to the GM, Recruitment.

(B) at (ii) above but is having at least 2 year's experience of working as a Systems Analyst, the case may be referred to the Chairman, Recruitment Committee.

In each of the following questions, information about one candidate is given. You have to analyze it with reference to the above criteria and conditions and then decide the appropriate course of action. You are not to assume anything other than the given information. All these cases are given to you as on 1.10.2005.

Mark Answer

- (a) if the candidate is to be selected ;
- (b) if the candidate is not to be selected ;
- (c) if the case is to be referred to the Chairman, Recruitment Committee ;
- (d) if the case is to be referred to the GM, Recruitment
- (e) if the data provided are inadequate to take a decision.

11. Neha Chawla is a Computer Engineer with 78% marks. She scored more than 60% marks in the interview and the Selection Test.

12. Rohini Chaturvedi a Computer Engineer, passed out with 68% marks in the final examination at the age of 22 years in 2008. She secured 62% marks in the Selection Test and 56% marks in the interview.

13. Sachin scored 72% marks in B.Sc. (IT) and 76% marks in Electronics Engineering. His scores at the Selection Test and the interview are 58% and 52% respectively. He has been working as a System Analyst since 2001. His date of birth is 19.6.1979.

14. Rishi Agrawal is an Electronics Engineer with 71% marks. His score in interview as well as Selection Test is 56%. He was 24 years old in 2005 at the time of passing the engineering degree examination.

15. Aman Sharma is a Mechanical Engineer with 75% marks. He was born on 8th July, 1981.
He scored 66% marks in the Selection Test and 52% marks in the interview.

16. Aditi Verma is MCA with 68% marks and is working as a programmer for the last three years. She secured 48% marks in the Selection Test and 58% marks in the interview.

17. Rahul Chouhan is MCA with 76% marks. He has been working as a System Analyst in an Engineering firm since 20th November, 2008. He scored 72% marks in the Selection Test and 65% marks in the interview. His date of birth is 25th October, 1983.

18. Rajeev Goyal did MCA in 2003 with 67% marks at the age of 22 years. He scored 52% marks in interview and 45% marks in the Selection Test. He joined an IT company in 2004 as a programmer and got promoted as Systems Analyst in December 2007.

19. Sujoy Bose is an Electronics Engineer passed out in 2004 at the age of 23 years with 82% marks. He scored 64% marks in

the Selection Test and 58% marks in the interview. He has got the work experience as programmer for 2½ years.

20. Saurabh Sharma is an IT Engineer passed out with 87% marks in 2005 at the age of 22 years. He scored 70% marks in the Selection Test and 76% marks in the interview.

Directions (21-30) : Study the following information carefully to answer these questions :

Following are the conditions for selecting Deputy Personal Managers in an organization :

The candidate must –

(A) be a graduate in any subject with at least 60% marks
(B) be at least 25 years and not more than 35 years old as on 1.12.2011.

(C) have post-qualification work experience of at least four years in the Personal department in an organization.

(D) have obtained post graduate degree/diploma in management with at least 55% marks

(E) have secured at least 50% marks in interview.

In the case of a candidate who satisfies all the criteria except –

(i) at (A) above, but has secured at least 65% marks in post graduate degree diploma in management, his/her case is to be referred to VP Personnel.

(ii) at (C) above, but has post-qualification work experience of at least two years as Assistant Personnel Manager in an organization, his/her case is to be referred to SVP Personnel.

In each question below is given the detailed information of one candidate. You have to take one of the following courses of action based on the information provided in each case and conditions and sub-conditions given above. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1.6.2006.

Mark Answer

- (a) if the candidate is to be selected ;
- (b) if the candidate is not to be selected ;
- (c) if the data provided are not adequate to arrive at a decision
- “
- (d) if the case is to be referred to VP-Personnel ;
- (e) if the case is to be referred to SVP-Personnel.

21. Jatin Tohra was born on 30th November 1982. He has been working in the Personnel department of an organization for the past four years after obtaining his post-graduate degree in management with 60% marks. He has secured 50% marks in interview and 63% marks in graduation.

22. Mohita Singh has secured 57% marks in graduation and 60% marks in interview. She has been working in the Personnel department of an organization after obtaining her post graduate degree in management with 68% marks. She was born on 8th November, 1981.

23. Nitika Roy has secured 67% marks in graduation. She has also secured 60% marks in her post-graduate diploma in management. She has been working an Assistant Personnel Manager for the past three years in an organization after completing her post-graduate diploma. She has secured 65% marks in the interview. She was born on 16th October, 1982.

24. Dimple Sharma was born on 9th March, 1980. He has secured 55% marks in interview. He has been working for the past six years in the Personnel department of an organization. He has secured 60% marks in the post-graduate degree in management. He has also secured 65% marks in graduation.

25. Nishant Garg has been working as Assistant Personnel Manager in an organization for the past two years after completing his post-graduate diploma in management with 60% marks. He has secured 63% marks in graduation and 50% marks in interview.

26. Nidhi Tomar was born on 27th July, 1985. He has been working for the past five years in the Personnel department of an organization after securing his post graduate management degree with 65% marks. He has secured 50% marks in the interview.

27. Kunal Kapoor has secured 60% marks in graduation. He was born on 2nd June, 1978. He has been working as Assistant Personnel Manager for the past four years in an organization after completing his post-graduate degree in management with 61% marks. He has secured 55% marks in interview.

28. Rajendra Barua was born on 10th June, 1980. He has secured 50% marks in graduation. He has been working for the past four years in the Personnel department in an organization after completing his post-graduate degree with 62% marks. He has secured 56% marks in interview.

29. Lakhan Pandey Patel has secured 52% marks in the interview. He has been working in the Personnel department of an organization for the past five years after completing his post graduate degree in management with 66% marks. He was born on 16th August, 1983. He has secured 58% marks in graduation.

30. Rohit Gupta has secured 50% marks in the interview. He has been working in the Personnel Department of an organization for the past five years after completing his post graduate diploma in management with 62% marks. He was born on 13th May, 1981. He has secured 55% marks in graduation.

10 Seating Arrangement

In such types of problems candidates required to arranging the things may usually there are two types of arrangement asked in exam.

(1) In a row

(2) Around a circle or square

In a row → (1) If we have to arrange the objects in a row then consider right end of your right hand side & left end your left hand side.

Left end ← → Right end

If we have to go right then go your right hand side & if we have to go left then go your left hand side.

For example : (i) A is third to the left of B

A — — B

③ ② ①

(ii) C is second to the right of D

D — C

① ②

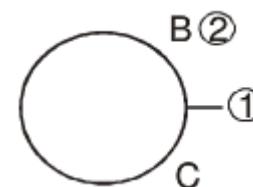
(2) If there are number of persons (or objects) are sitting in two rows facing towards each other then left & right end of these two rows are opposite to each other.

1st row → Left end ← → Right end

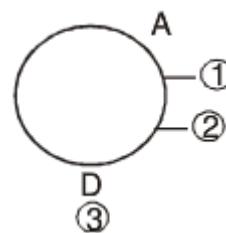
2nd row → Right end ← → Left end

Around a circle :

If few persons are sitting around a circular table facing towards the center then for left go clockwise & for right go anticlockwise. i.e. : B is sitting second to the right of C



D is third to the left of A



Ex.1 :

A, B, C, D, E, F, G & H are sitting around a circular table facing towards the center, A is third to the left of B & second to the right of D. C is neighbor of F but not neighbor of A & B. E is third to the right of H.

(i) Who is sitting immediate right of D ?

- (a) A (b) C (c) G (d) H

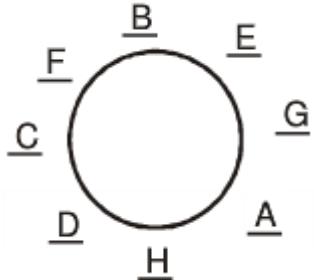
(e) None of these

(ii) Which of the following pair is immediate neighbor of B ?

- (a) FE (b) DA (c) HG (d) EG

(e) None of these

Sol.



(i) d

(ii) a

Ex. 2 :

Nidhi, Rohan, Kunal and Mukesh are to be seated in a row. But Kunal and Mukesh cannot be together. Also, Rohan cannot be at the third place.

(i) Which of the following must be false?

- (a) Nidhi is at the first place
(b) Nidhi is at the second place
(c) Nidhi is at the third place
(d) Nidhi is at the fourth place
(e) None of these

(ii) If Nidhi is not at the third place, then Kunal has which of the following options?

- (a) The first place only
(b) The third place only
(c) The first and third place only (d) Any of the places
(e) None of these

Sol. (i) (a).: Since Kunal and Mukesh cannot be together, they can occupy either of the seats

(1st and 3rd), (1st and 4th) or (2nd or 4th), in the last two cases since Rohan cannot be in the 3rd place, Nidhi will have to be there. Hence Nidhi can never be in the 1st place.

(ii) (c) : Since neither Nidhi nor Rohan can be at 3rd place, this place has to be occupied by either Mukesh or Kunal. And if either of them occupies this place, the other one has to occupy the 1st place (since Kunal and Mukesh cannot be together). Hence Kunal can only occupy either 1st or 3rd place only.

Practice set:

Directions (1 - 3) : Read the information and answer the questions :

Six persons Ram, Rahim, Sohan, Mohan, Kapil and Priya are standing in a row. Rahim stands between Mohan and Priya. Ram does not stand next to either Priya or Mohan. Sohan does not stand next to Mohan. Kapil stands between Ram and Sohan.

1. Priya stands between

- (a) Rahim and Sohan (b) Kapil and Ram
(c) Mohan and Rahim (d) Ram and Sohan
(e) Can't be determined

2. Who occupy the extreme ends of the row ?

- (a) Mohan and Kapil (b) Mohan and Ram

- (c) Ram and Priya (d) Rahim and Kapil

(e) None of these

3. Sohan stands between

- (a) Priya and Rahim (b) Priya and Mohan

- (c) Priya and Kapil (d) Kapil and Ram

(e) None of these

Direction (4-9) : Read the information carefully and answer the questions given below.

Kabir, Kanha, Kiran, Manoj, Maya, Yash, Pradeep and Ram are sitting around a circle facing towards center, Kiran is sitting third to the left of Kabir and second to the right of Maya. Kanha is sitting second to the right of Kiran, Manoj is second to the right of Yash. Who is second to the right of Kabir. Pradeep is not a neighbor of Kiran.

4. Who is sitting next to the right of Karan ?

- (a) Ram (b) Pradeep (c) Manoj
(d) Data insufficient (e) None of these

5. Who is sitting next to the left of Ram?

- (a) Manoj (b) Pradeep (c) Kabir
(d) Data insufficient (e) None of these

6. Who is sitting next to the left of Manoj?

- (a) Kiran (b) Ram (c) Yash
(d) Maya (e) Data insufficient

7. Who is sitting third to the right of Ram?

- (a) Maya (b) Yash (c) Manoj
(d) Pradeep (e) None of these

8. Who is sitting second to the right of Pradeep?

- (a) Kabir (b) Manoj (c) Maya
(d) Data insufficient (e) None of these

9. In which of the following first person is sitting in between second & third person?

- (a) Kanha, Ram, Kabir (b) Kiran, Ram, Kanha
(c) Maya, Manoj, Kiran (d) Maya, Yash, Pradeep
(e) none of these

Directions (10 - 12) : Seven friends A, B, C, D, X, Y, Z are seated in a row as follows :

(i) A and B have one letter between them

(ii) C is to the right of X.

(iii) Y is to the immediate left of B.

(iv) There is one letter between Z and X.

(v) Z is not C's neighbour.

(vi) C and B have two letters between them.

10. Which letter is second to the left of letter X ?

- (a) C (b) Y (c) Z (d) A
(e) B

11. Which letter will be exactly in the middle of the letter series so obtained?

- (a) Z (b) X (c) A (d) B
(e) None

12. Which pair of the letters is adjacent to the letter Y ?

- (a) XC (b) CA (c) AB (d) CX
 (e) None

Directions (13-15) :

Nine hockey fans are watching a match in a stadium. Seated in one row, they are A, B, C, D, E, F, G, H and I. C is the right of D and at third place at the right of E. B is at one end of the row. H is immediately next to F and G. F is at the third place to the left of B. A is immediate left of F.

13. Who is sitting in the center of the row?

- (a) C (b) F (c) A (d) H
 (e) None

14. Who is at the other end of the row?

- (a) I (b) A (c) G (d) E
 (e) None

15. Which of the following statements is true?

- (a) I and G are neighbours
 (b) There is one person between C and F
 (c) D is at one extreme end
 (d) E is two seats away from A
 (e) None

Directions (16-20) : 6 peoples L, M, N, O, P & Q are sitting on the ground in hexagonal shape.

All the sides of the hexagon so formed are of same length. L is not adjacent to M or N; O is not adjacent to P; M and N are adjacent; Q is in the middle of O and N?

16. Which of the following is not a correct neighbour pair?

- (a) L & Q (b) O & Q (c) M & P
 (d) N & Q (e) None of these

17. Who is at the same distance from O as P is from O?

- (a) M (b) N (c) O (d) Q
 (e) None of these

18. Which of the following is in the right sequence?

- (a) L, Q, M (b) Q, L, P (c) M, N, Q (d) O, L, M
 (e) None of these

19. If one neighbour of L is O, who is the other one?

- (a) M (b) N (c) P (d) Q
 (e) None of these

20. Who is placed opposite to P?

- (a) M (b) N (c) O (d) Q
 (e) None of these

Direction (21-23) : Read the following information carefully and answer the questions given below.

Four girls H, I, J, K and four boys L, M, N, O are sitting in a circle around a table facing each other.

- (i) No two girls or two boys are sitting side by side.
 (ii) J, who is sitting between N and L, is facing K
 (iii) M is between K and H and is facing N
 (iv) O is to the right of I.

21. Who is sitting to the left of H?

- (a) L (b) M (c) N (d) O
 (e) None of these

22. L is facing whom?

- (a) M (b) I (c) N (d) O
 (e) None of these

23. Who are immediate neighbours of I?

- (a) N and O (b) L and M (c) L and O
 (d) M and O (e) None of these

Directions (24-27) : 7 girls Roma, Rama, Riya, Rekha, Renu, Priya and Payal are sitting in a row facing north. Roma is sitting third to the right of Rama. Renu is sitting second to the right of Priya. Who is at one end. Riya is next to the right of Roma. Rekha is not a neighbour of Renu.

24. Who is sitting in between of Rama and Payal?

- (a) Priya (b) Riya (c) Renu
 (d) Rekha
 (e) none of these

25. Who are sitting at the two ends of row?

- (a) Priya & Payal (b) Rekha & Priya
 (c) Riya & Priya (d) Data insufficient
 (e) none of these

26. What is the place of Roma in reference of Rekha?

- (a) Second to the right (b) Second to the left
 (c) Third to the right (d) Third to the left
 (e) none of these

27. Which of the following statement is definitely true?

- (a) Roma is sitting third to the left of Riya.
 (b) Rama is sitting second to the right of Priya.
 (c) Renu is sitting fourth to the right of Rekha.
 (d) Payal is sitting third to the left of Priya.
 (e) None of these.

Direction (28-30) :

Read the following information carefully and answer the questions given below.

Five friends P, Q, R, S & T are sitting on a bench.

- (i) P is sitting next to Q
 (ii) R is sitting next to S
 (iii) S is not sitting with T
 (iv) T is on the left end of the bench.
 (v) R is on second position from right
 (vi) P is on the right side of Q and to the right side of T.
 (vii) P and R are sitting together.

28. At what position is P sitting?

- (a) Between Q and R (b) Between S and R
 (c) Between T and S (d) Between R and T
 (e) None

29. Who is sitting at the centre?

- (a) P (b) Q (c) R (d) S
 (e) T

30. What is the position of Q?

- (a) Second from right (b) Centre (c) Extreme left
 (d) Second from left (e) none

11 Syllogism

Syllogism is originally a word, it means inference or deduction. Let us begin by looking at the format in which the problem appears in the competitive examination. Format of the questions.

Direction : In the following type of question, two statements are being provided followed by two conclusions A and B. you have to study the two statements and then decide whether, from those two statements.

- (a) only A follows (b) only B follows
- (c) Both A , B follows (d) Either A or B follows
- (e) Neither A nor B follows

1. Statement :

- (1) All trees are sky (2) All sky are beautiful

Conclusions :

- (A) All trees are beautiful (B) Some beautiful are trees.

2. Statement :

- (1) All dog are cat (2) No cat is rat

Conclusion :

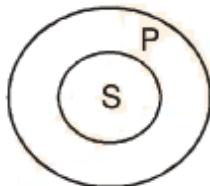
- (A) Some dog are rat. (B) Some cat are not dog

For solving this type of problems we use Euler's circle or Venn diagram.

There is a pictorial way of representing the propositions. Then there are four way in which the relation could be made according to the propositions.

Type I :

All S are P.



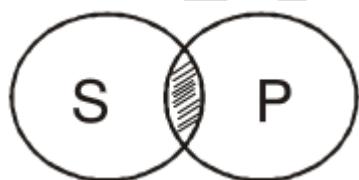
Type II :

No S are P



Type III :

Some S are P.



Type IV :

Some S are not P.



Ex. 1 :

Statement :

- (1) Some rooms are stores (2) All stores are home

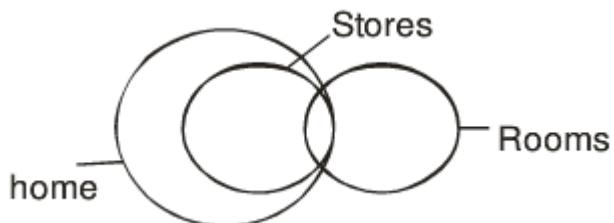
Conclusion :

I. Some rooms are home

Sol.

II. Some stores are rooms.

First we draw Venn diagram and then choose the appropriate conclusion



Conclusions :

- 1. Some rooms are home.

All stores are home and some rooms are stores then some rooms are also home.

- 2. Some stores are rooms.

Some rooms are stores then some stores are rooms.

Ex. 2 :

Statement :

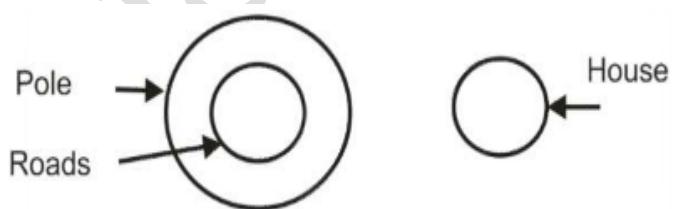
- 1. All roads are poles.

Conclusions :

- I. Some roads are houses

- 2. No pole is a house

- II. Some houses are poles.



Conclusions:

- I : Some roads are houses.

No, because by the given statement no pole is a house and all roads are pole, so no roads is a house. I conclusion is not follows.

- II. : Some house are pole

No, because no pole is a house so no house is a pole.

Ex. 3 :

Statement :

- 1. All fruits are flowers.

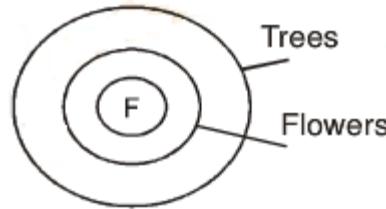
- 2. All flowers are tree.

Conclusions :

- I. All trees are fruits.

- II. All fruits are trees.

Sol.



Conclusions:

- I : No, because some tree are fruits.

II: Yes, because All fruits are flower and all flower are trees.

Ex. 4 :

Statement:

- 1. Some girls are flowers

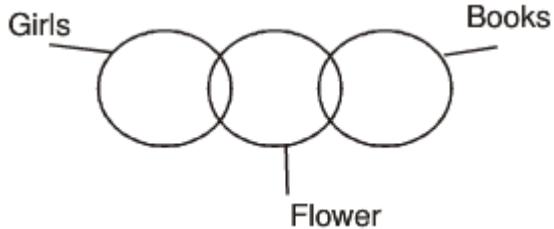
- 2. Some flowers are books

Conclusions :

- I. Some girls are books

- II. No book is a flower.

Sol.



Conclusions :

I. Some girls are books

No, because there is no direct relation between them. We cannot say exactly, it may be or not.

II. No, because some flowers are books, so some books are also flower.

Practice set:

Directions (Q.1-15) : In each question below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance with the commonly known facts and then decide which of the given conclusions logically follows from the two given statements, disregarding commonly known facts.

Give answer

- (a) if only conclusion I follows;
- (b) if only conclusion II follows;
- (c) if either or II follows;
- (d) if neither I nor II follows; and
- (e) if both I and II follow.

1. Statements :

Most pens are pencils. Some pencils are rubbers.

Conclusions :

I. Some rubber are pencils.

II. Some pens are rubbers.

2. Statements :

All cars are jeeps.

Some parents are jeeps.

Conclusions :

I. Some cars are parents.

II. Some parents are cars.

3. Statements :

All horses are cows. All cows are cats.

Conclusions :

I. All horses are cats.

II. All cats are horses.

4. Statements :

Some books are pens. Some pens are pencils.

Conclusions :

I. Some books are pencils

II. Some pencils are books.

5. Statements :

All stars are erasers. All books are erasers.

Conclusions :

I. All stars are books.

II. Some books are stars.

6. Statements :

Some cakes are mobiles. All mobiles are chocolates.

Conclusions :

I. Some chocolates are mobiles.

II. Some mobiles are not cakes.

7. Statements :

Some chalks are wires. Some wires are frames.

Conclusions :

I. Some chalks are frames.

II. Some frames are chalks.

8. Statements :

All doctors are nurses. Some nurses are teachers.

Conclusions :

I. No doctor is a teacher.

II. Some teachers are doctors.

9. Statements :

Some authors are teachers. No teacher is a lady.

Conclusions :

I. Some authors are not ladies.

II. Some ladies are teachers.

10. Statements :

All books are pens. All pens are boxes.

Conclusions :

I. All books are boxes.

II. All pens are books.

11. Statements :

All writers are teachers. All readers are teachers.

Conclusions :

I. Some teachers are readers.

II. Some readers are writers.

12. Statements :

All cats are rats. Some rats are lizards.

Conclusions :

I. Some cats are lizards.

II. Some lizards are cats.

13. Statements :

All lawyers are cheats. Some women are cheats.

Conclusions :

I. Some women are cheats.

II. All cheats are women.

14. Statements :

All hill-stations have a sunset point. Y is a hill-station.

Conclusions :

I. Y has a sunset point.

II. Places other than hill-stations do not have sunset points.

15. Statements :

Some boys are pens. Some flowers are pens.

Conclusions :

I. Some boys are pens.

II. No pens is a boys.

Directions (16-30) :

16. Statements:

All tables are windows. All chairs are windows. All cars are chairs

Conclusions:

I. All cars are windows

II. Some cars are tables

III. Some windows are cars.

(a) Only I and II follow

(c) Only I and III follow

(d) All follow

(e) None of these

17. Statements :

All apples are vegetables. All pens are vegetables. All vegetables are rains.

Conclusions :

I. All apples are rains

II. All pens are rains

III. Some rains are vegetables.

- (a) None of follows
- (b) Only I and II follow
- (c) Only II and III follow
- (d) Only I and III follow
- (e) All follow

18. Statements :

All girls are trees. Some trees are roads. All roads are mountains

Conclusions :

- | | |
|-------------------------------|--------------------------|
| I. Some mountains are girls | II. Some roads are girls |
| III. Some mountains are trees | |
| (a) Only I follows | (b) Only II follows |
| (c) Only III follows | (d) Both I and II follow |
| (e) None of follows | |

19. Statements :

Some hills are rivers. Some rivers are rings. All rings are roads

Conclusions :

- | | |
|---------------------------|----------------------------|
| I. Some roads are rivers | II. Some roads are hills |
| III. Some rings are hills | |
| (a) None follows | (b) Only I follows |
| (c) Only I and II follow | (d) Only II and III follow |
| (e) All follow | |

20. Statements :

Some blades are hammers. Some hammers are knives. Some knives are axes.

Conclusions :

- | | |
|---------------------------|----------------------------|
| I. Some axes are hammers | II. Some knives are blades |
| III. Some axes are blades | |
| (a) None of follows | (b) Only I follows |
| (c) Only II follows | (d) Only III follows |
| (e) None of these | |

21. Statements :

All trees are flowers. No flower is leaves. All branches are leaves

Conclusions :

- | | |
|----------------------------|---|
| I. Some branches are trees | II. No leaf is tree |
| III. No tree is branch | |
| (a) None of follows | (b) Only either I or III follows |
| (c) Only II follows | (d) Only either I or III, and II follow |
| (e) None of these | |

22. Statements :

All tigers are lions. No dog is lion. Some cats are dogs

Conclusions :

- | | |
|-----------------------------|----------------------|
| I. Some lions are cats | II. No cat is tiger |
| III. Some tigers are dogs | |
| (a) None of follows | (b) Only I follows |
| (c) Only II follows | (d) Only III follows |
| (e) Either I or III follows | |

23. Statements :

Some tables are chairs. No chairs is soap. All soaps are cats.

Conclusions :

- | | |
|-----------------------------|---------------------------------|
| I. Some cats are chairs. | II. No cat is chair |
| III. Some tables are soaps. | |
| (a) None follows | (b) Only either I or II follows |
| (c) Only II follows | (d) Only I and III follow |
| (e) None of these | |

24. Statements :

Some pens are books. All schools are books. Some colleges are schools.

Conclusions :

- | | |
|------------------------------|----------------------------|
| I. Some colleges are pens | II. Some pens are schools |
| III. Some colleges are books | |
| (a) Only I and II follow | (b) Only II and III follow |
| (c) Only I and III follow | (d) All follow |
| (e) None of these | |

25. Statements :

All tigers are trees. No trees is bird. Some birds are rains

Conclusions :

- | | |
|---|--------------------------|
| I. No rain is tree | II. Some rains are trees |
| III. No bird is tiger. | |
| (a) Only I and II follow | (b) Only III follow |
| (c) Only either I or II, and III follow | (d) All follow |
| (e) None of these | |

26. Statements :

All flowers are hills. Some hills are trees. Some angles are trees.

Conclusions :

- | | |
|-------------------------------|----------------------------|
| I. Some angles are hills | II. Some trees are flowers |
| III. Some flowers are angles. | |
| (a) None follow | (b) Only I follows |
| (c) Only II follow | (d) Only III follow |
| (e) Only I and III follow | |

27. Statements :

All trains are buses. No houses is bus. All boats are houses

Conclusions :

- | | |
|----------------------------|---------------------------|
| I. No boat is train | II. No bus is boat |
| III. No train is house | |
| (a) None follows | (b) Only I and II follow |
| (c) Only II and III follow | (d) Only I and III follow |
| (e) All follow | |

28. Statements :

No horse is lion. Some rabbits are lions. All horse are chairs

Conclusions :

- | | |
|----------------------------|----------------------------------|
| I. Some chairs are lions | II. Some rabbits are horses |
| III. No lion is chair. | |
| (a) None follows | (b) Only either I or III follows |
| (c) Only II and III follow | (d) Only III follows |
| (e) None of these | |

29. Statements :

Some mountains are hillocks. Some mountains are rivers. Some mountains are valley

Conclusions :

- | | |
|---|-----------------------------|
| I. All mountains are either hillocks or rivers or valleys | |
| II. No valley is river | III. Some river are valleys |
| (a) None follows | (b) Only I follows |
| (c) Only either II or III follows | (d) Only III follows |
| (e) None of these | |

30. Statements :

Some boxes are pens. Some pens are beads. All beads are rings

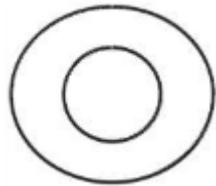
Conclusions :

- | | |
|----------------------------|----------------------------|
| I. Some rings are pens | II. Some pens are boxes |
| III. Some rings are boxes. | |
| (a) None follows | (b) Only I follows |
| (c) Only I and II follow | (d) Only II and III follow |
| (e) All follow | |

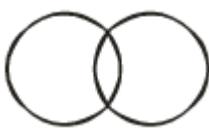
12 Venn Diagram

The term *Venn-diagram* is test of reasoning relates to the different figures drawn to represent relationship between two or more objects.

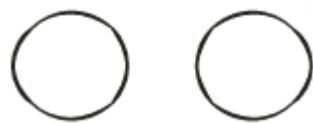
(1) An object is called a subset of another object, if former is a part of latter & such relation is shown by two concentric circle & can be represented by figure.



(2) An object is said to have an intersection with another object when two objects share something in common & relationships can be represented by figure.



(3) Two objects are said to be disjoint when neither one is subset of another nor they share anything in common & can be represented by figure.



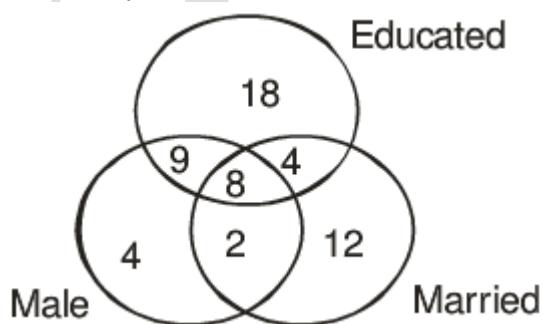
Ex. 1: How can we represent electron, proton & atom in Venn diagram?

Sol. :



Electron & Proton both are different but both are parts of atom. In this type of questions, geometrical figures are given that represent different classes. This different classes share some common relationship. Students are then asked question based on such relationship.

Ex. 2 : Study the given diagram carefully & answer the question given below of it.



(i) How many male are there, who are married?

Sol. $8 + 2 = 10$

(ii) How many persons are educated?

Sol. $18 + 9 + 8 + 4 = 39$.

(iii) How many persons are either married or educated?

Sol. $18 + 9 + 8 + 4 + 2 + 12 = 53$.

(iv) How many male are there who are educated but not married?

Sol. 9

Ex. 3 : In a serve of 2400 people of city, it was found that 31% people read newspaper A, 22% people read newspaper B. 27% people read newspaper C. 8% people read both A & B. 7% people read both B & C & 10% people read both C & A. if 2% people read all the three newspaper then.

(i) How many people read none of the newspaper?

(a) 1032 (b) 994 (c) 806 (d) 1225

(e) None of these

(ii) How many read both the newspaper A & B but do not read C.

(a) 196 (b) 144 (c) 156 (d) 142

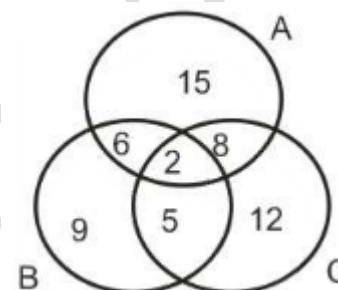
(e) None of these

(iii) How many people read at last two newspapers?

(a) 504 (b) 242 (c) 296 (d) 302

(e) None of these

Sol.



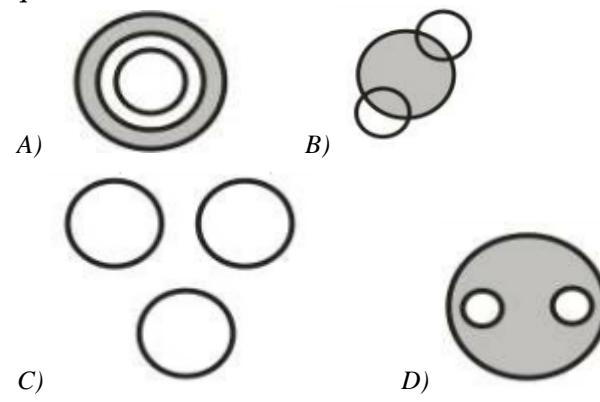
(i) (a) $43\% \text{ of } 2400 = 1032$

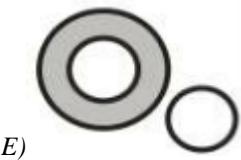
(ii) (b) $6\% \text{ of } 2400 = 144$

(iii) (a) $21\% \text{ of } 2400 = 504$

Practice Set:

Direction (1-10) : Each of the questions given below contains three groups of things. You have to choose from the following five numbered diagrams, the diagram that depicts the correct relationship among the three groups of things in each question.





1. Pop, Songs, Classical
(a) C (b) E (c) D (d) A (e) B

2. Wheat, Sugarcane, Crops
(a) A (b) B (c) C (d) D (e) E

3. Birds, Owls, Tigers
(a) A (b) B (c) C (d) D (e) E

4. Pineapple, Grapes, Papaya
(a) A (b) B (c) C (d) D (e) E

5. Asia, Colombo, Srilanka
(a) A (b) B (c) C (d) D (e) E

6. Lawyers, Men, Doctors
(a) A (b) B (c) C (d) D (e) E

7. Brinjal, Glass, Plate
(a) A (b) B (c) C (d) D (e) E

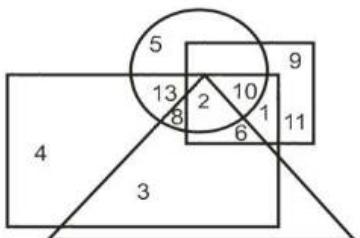
8. Pencil, Stationery, Powder
(a) A (b) B (c) C (d) D (e) E

9. Vehicle, Car, Auto
(a) A (b) B (c) C (d) D (e) E

10. Year, Month, Day
(a) A (b) B (c) C (d) D (e) E

Direction (Q.11-15) : Read the following information carefully and answer the questions based on them.

The circle represents rich boys, the square educated boys, the triangle represents the boys who are employed somewhere and the rectangle represents those who help in the family business. Each section of the diagram is numbered. Now answer the questions given below on the basis of the study of this diagram.



11. Which numbers represents those rich boys, who help in family business but are not educated or employed elsewhere?
(a) 2 (b) 3 (c) 11 (d) 13 (e) 7

12. Which number represents the group of educated rich boys who are employed somewhere but do not help in family business?
(a) 12 (b) 3 (c) 11 (d) 2 (e) none

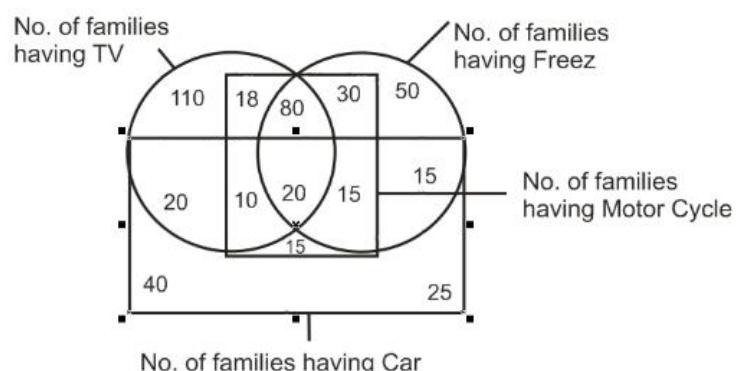
13. Which section does number 10 represent?

- (a) Uneducated rich boys who do not help in family business
- (b) Educated rich boys employed in service
- (c) Uneducated boys who help in family business
- (d) Educated rich boys who help in family business
- (e) None of the above

14. Which number represents that section of rich boys who are neither educated nor are in any employment or have any family business?
(a) 4 (b) 13 (c) 1 (d) 11 (e) 5

15. Boys who are neither educated nor rich but have employment as well as a family business are represented by the number.
(a) 8 (b) 3 (c) 4 (d) 6 (e) 13

Direction (Q.16-20) : Study the figure given below and answer the following questions.



16. Find out the number of families which have all the four things mentioned in the diagram.
(a) 40 (b) 30 (c) 35 (d) 20 (e) none

17. Find out the number of families which have Motor Cycles
(a) 145 (b) 100 (c) 188 (d) 240 (e) none

18. Find out the number of families which have TV and Freez both.
(a) 84 (b) 24 (c) 104 (d) 129 (e) None

19. Find out the number of families which have only one thing, i.e., either TV or Freez or Motor Cycle or Car.
(a) 160 (b) 184 (c) 225 (d) 254 (e) None

20. Find out the number of families which have Freez and Motor Cycle both but have neither TV nor Car.
(a) 15 (b) 30 (c) 4 (d) 50 (e) None

Directions (Q.21-26) : Read the following information carefully to answer these questions.

A sample poll of 200 voters revealed the following information concerning three candidates P, Q and R of a certain party who were running for three different offices.

26 in favour of both P and Q

98 in favour of P or Q but not R

40 in favour of Q but not P or R.

122 in favour of Q or R but not P

66 in favour of R but not P or Q

14 in favour of P and R but not Q

21. How many voters were in favour of all the three candidates?
(a) 14 (b) 6 (c) 20 (d) 16 (e) none

22. How many voters were in favour of P irrespective of Q or R?
 (a) 78 (b) 64 (c) 42 (d) 56 (e) none

23. How many voters were in favour of Q irrespective of P or Q?
 (a) 78 (b) 63 (c) 46 (d) 85 (e) none

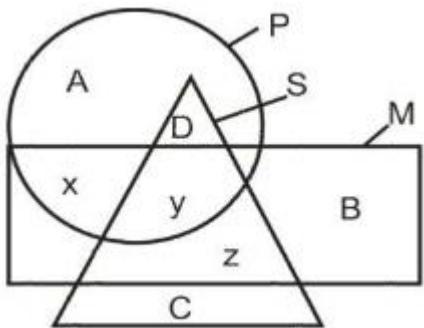
24. How many voters were in favour of R irrespective of P or Q?
 (a) 78 (b) 102 (c) 88 (d) 86 (e) none

25. How many voters were in favour of P and Q but not R?
 (a) 8 (b) 20 (c) 14 (d) 16 (e) none

26. How many voters were in favour of only one of the candidates?
 (a) 85 (b) 87 (c) 105 (d) 144 (e) none

Direction (Q.27-30) : In the diagram given below :

The circle represents professors in a Engineering College, the triangle stands for Poets while the rectangle represents the Story writer.



27. Professors who are also poets are represented by
 (a) Y (b) C (c) D (d) X (e) none

28. Poets who are also Story writer but no Professors are represented by
 (a) X (b) Y (c) Z (d) B (e) none

29. College professor who are also Story writer are represented by
 (a) Y (b) X (c) Z (d) A (e) none

30. 'B' represents
 (a) Professors who are not Story writers
 (b) Professors who are not Poets
 (c) Professors who are neither Story writers nor surgical Poets
 (d) Story writers who are neither professors nor Poets
 (e) None of these

13 Puzzle

We can solve the questions based on puzzle test with the help of a chart

Under, this, data have to be represented on the table. The questions are based on various other topics like – classification, blood relation, direction, ranking, sitting arrangement, comparing quantities etc.

Ex. 1 :

Read the instruction carefully and answer the question given below.

(i) A, B, C, D, E & F are six members of a family. Who are Doctor, Lawyer, Manager, Jeweler, Engineer and Teacher?

(ii) Doctor is grandfather of F who is Teacher.

(iii) Manager D is married with A

(iv) C, who is jeweler is married to Lawyer

(v) B is mother of E and F

(vi) There are 2 married couple in the family.

1. What is the profession of A ?

(a) Manager (b) Teacher (c)

Jeweler

(d) Doctor (e) None

2. The no. of female members in family is

(a) 1 (b) 2 (c) 3

(d) Data inadequate (e) None

3. Which is the pair of married couple?

(a) AD (b) AC (c) AB

(d) can't determine (e) None

4. How is B related to C?

(a) B is wife of C (b) B is Mother of C

(c) B is Sister of C (d) B is Daughter of C

(e) None

Sol.

	Profession	Relation
A+	Doctor	Grand father
B-	Lawyer	Mother
C+	Jeweller	Father
D-	Manager	Grand mother
E	Engineer	Kid/child
F	Teacher	Kid/child

1.(d) A is doctor

2.(d) It is not clear that E & F are son or daughter of B & C. So we can't find the no. of female members in the family.

3.(a) A & D are married couple

4.(a) B is wife of C.

Ex. 2 :

Read the instructions carefully to answer the questions that follows

(i) P, Q, R, S, T & U are six member of a family having 2 married couples. There are 2 teachers, 1 doctor, 1 advocate and 2 engineer. Both the teacher are male candidate.

(ii) P and R are in same profession

(iii) Doctor is married to teacher and one engineer is married to advocate who is female.

(iv) Engineer P and teacher T are unmarried.

(v) Q is wife of U.

1. Who is advocate in the family?

- | | | |
|---------------------|----------|-------|
| (a) P | (b) Q | (c) R |
| (d) can't determine | (e) None | |

2. Doctor is married to

- | | | |
|---------------------|----------|-------|
| (a) Q | (b) S | (c) U |
| (d) Can't determine | (e) None | |

3. What is profession of Q?

- | | | |
|--------------|------------|-----|
| (a) Advocate | (b) Doctor | (c) |
| Teacher | | |
| (d) Engineer | (e) None | |

4. Which of the option represent married couple?

- | | | |
|--------------|--------------|--------------|
| (a) R-S, U-Q | (b) T-Q, R-U | (c) P-R, S-T |
| (d) Q-T, U-R | (e) None | |

Sol.

1.(d) A is doctor

2.(d) It is not clear that E & F are son or daughter of B & C. So we Can't find the no. of female members in the family.

3.(a) A & D are married couple

4.(a) B is wife of C.

Ex. 2 :

Read the instructions carefully to answer the questions that follows

(i) P, Q, R, S, T & U are six member of a family having 2 married couples. There are 2 teachers, 1 doctor, 1 advocate and 2 engineer. Both the teacher are male candidate.

(ii) P and R are in same profession

(iii) Doctor is married to teacher and one engineer is married to advocate who is female.

(iv) Engineer P and teacher T are unmarried.

(v) Q is wife of U.

1. Who is advocate in the family?

- | | | |
|---------------------|----------|-------|
| (a) P | (b) Q | (c) R |
| (d) can't determine | (e) None | |

2. Doctor is married to

- | | | |
|---------------------|----------|-------|
| (a) Q | (b) S | (c) U |
| (d) Can't determine | (e) None | |

3. What is profession of Q?

- | | | |
|--------------|------------|-----|
| (a) Advocate | (b) Doctor | (c) |
| Teacher | | |
| (d) Engineer | (e) None | |

4. Which of the option represent married couple?

- | | | |
|--------------|--------------|--------------|
| (a) R-S, U-Q | (b) T-Q, R-U | (c) P-R, S-T |
| (d) Q-T, U-R | (e) None | |

Sol.

	Profession	Relation
P	Engineer	Unmarried

Q-	Doctor	Wife of T
R+	Engineer	Husband of S
S-	Advocate	Wife of R
T	Teacher	Unmarried
U+	Teacher	Husband of Q

1.(e) None (S-)

2.(c) Teacher (U)

3.(b) Doctor

4.(a) R+ - S - and U + - Q -

Ex. 3 :

Read the instruction and answer the question based on them.

(i) P, Q, R, S, T & U are six friends. Each play separate games among football, cricket,

Tennis, Basketball, Volleyball, Badminton

(ii) T who is longer (height wise by) P and S, play Tennis

(iii) The person who is longest play basketball

(iv) R shortest one play volley ball

(v) Q and S neither play volleyball nor basketball

(vi) Height wise T is in between „Q’ who plays football and P.

1. Which sport do S play?

- | | |
|---------------|--------------------------|
| (a) Badminton | (b) Cricket |
| (c) Football | (d) Cricket or badminton |

2. Who is longer than R but shortest than P

- | | | | |
|-------|-------|-------|-------|
| (a) Q | (b) S | (c) T | (d) U |
|-------|-------|-------|-------|

3. Who play basketball

- | | | | |
|-------|-------|-------|-------|
| (a) R | (b) S | (c) U | (d) P |
|-------|-------|-------|-------|

4. Which is in correct statement

- | | |
|------------------------|--------------------------|
| (a) T, is longer R | (b) S in shortest than Q |
| (c) U is longer than Q | (d) S in longer than Q |

Sol.

Player	Game
P	Cricket, Badminton
Q	Football
R	Volleyball
S	Cricket, Badminton
T	Tennis
U	Basket ball

Descending order of height of 6 friends are U > Q > T > P > S > R

- | | | | |
|--------|--------|--------|--------|
| 1. (d) | 2. (b) | 3. (c) | 4. (d) |
|--------|--------|--------|--------|

Ex. 4 :

The following question are based on information given below.

Branches of five banks A, B, C, D & E are as follows:

(i) A, B, C are in Agra & Kanpur

(ii) A, B & E are in Agra & Jhansi

(iii) B, C & D are in Kanpur & Allahabad

(iv) A, E & D are in Jhansi & Lucknow

(v) C, E & D are in Allahabad & Lucknow

1. Branch of which is in Agra but not in Allahabad ?

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

2. Branch of which bank is in Allahabad and Agra but not in Kanpur.

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

3. Branch of which bank is in all places except Jhansi.

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

4. In which city there is no branch of Bank B ?

- (a) Agra (b) Kanpur (c) Jhansi
(d) Allahabad (e) Lucknow

Sol.

City : Agra	A	B	C	X	E
Jhansi	A	B	X	D	E
Kanpur	A	B	C	D	X
Lucknow	A	X	C	D	E
Allahabad	X	B	C	D	E

1. (a) Bank A
2. (c) Bank E
3. (c) Bank C
4. (e) Lucknow

Practice set:

Directions (1 - 5): Study the following information carefully and answer the questions given below:

There is a family of six persons P, Q, R, S, T and U. They are Businessman, Doctor, Teacher, Manager, Engineer and Accountant. There are two married couples in the family. S, the Manager, is married to the Doctor. The Businessman is married to the Lady Teacher. U, the Engineer, is the son of Q and brother of T. R the Teacher, is the daughter-in-law of P. T is the unmarried Accountant. P is the grandmother of U.

1. How is T related to U?

- (a) Brother (b) Sister (c)
Cousin
(d) Can't be determined (e) None of these

2. What is the profession of Q?

- (a) Teacher (b) Doctor
(c) Businessman (d) Can't be determined
(e) None of these

3. What is the profession of P?

- (a) Businessman (b) Teacher (c)
Doctor
(d) Can't be determined (e) None of these

4. Which of the following is one of the couple?

- (a) T and S (b) S and Q (c) T and
P
(d) Q and R (e) None of these

5. How is S related to T?

- (a) Grandfather (b) Father (c) Uncle
(d) Brother (e) None of these

Directions (6 - 9) :Read the following information carefully and answer the questions given below :

In a car exhibition, seven cars of seven different companies, viz. Marchillego, Lamborghini, B.M.W., Ferrari, Jaguar, Hummer and Rolls-Royces were displayed in a row, facing east such that:

- (i) Marchillego car was on the immediate right of Rolls-Royce
(ii) Rolls-Royces was fourth to the right of B.M.W.
(iii) Ferrari car was between Lamborghini and Hummer
(iv) B.M.W. which was third to the left of Lamborghini car, was at one of the ends.

6. Which of the following was the correct position of the Jaguar?

- (a) Immediate left of Marchillego
(b) Immediate left of Hummer
(c) Between Hummer and Rolls-Royce
(d) Fourth to the right of Ferrari
(e) None of these

7. Which of the following is definitely true?

- (a) Rolls-Royces car is between Lamborghini and B.M.W.
(b) Marchillego car is on the immediate left of Jaguar.
(c) Rollsroyee is on the immediate right of Marchillego
(d) Ferrari is fourth to the right of Jaguar.
(e) None of these

8. Which cars are on the immediate either sides of the Marchillego car?

- (a) Lamborghini and Ferrari
(b) Ferrari and B.M.W.
(c) B.M.W and Jaguar
(d) Lamborghini and Rolls-Royce
(e) None of these

9. Which of the following is definitely true?

- (a) Ferrari is to the immediate left of Lamborghini
(b) Hummer is to the immediate left of B.M.W
(c) Hummer is at one of the ends
(d) B.M.W is second to the right of Ferrari
(e) None of these

Directions (10-14) : Read the following information carefully and answer the questions given below:

There are six persons A, B, C, X, Y and Z in a school. Each of the teachers teaches two subjects, one compulsory subject and the other optional subject. X's optional subject was Civics while three others have it as compulsory subject. Y and Z have Geography as one of their subjects. Z's compulsory subject is Mathematics which is an optional subject of both C and Y. Civics and English are A's subjects but in terms of compulsory and optional subjects, they are just reverse of those of X's. History is an optional subject of only one of them. The only female teacher in the school has English as her compulsory subject.

10. What is C's compulsory subject?

- (a) Civics (b) Geography (c)
History
(d) English (e) Mathematics

11. Who is a female member in the group?

- (a) A (b) B (c) C (d) X
(e) Y

12. Which of the following has the same compulsory and optional subjects as those of Z's?

- (a) X (b) B (c) A (d) C
(e) None of these

13. Disregarding which is the compulsory and which is the optional subject, who has the same two-subject combination as Z?

- (a) A (b) B (c) Y (d) X
(e) None of these

14. Which of the following groups has History as the compulsory subject?

- (a) A, C and X (b) B, C and X (c) C and X
(d) A, B and C (e) None of these

Directions (15 - 19): Read the following statements and answer the questions given below:

Of the six men of literature A, B, C, D, E and F being considered here, two belonged to the 18th century, three to the 20th and one to the 21th. Four were recognized as great Poet, three as great novelists and three as great dramatists. One contributed to Gujarati literature, two to Telugu, two to Punjabi and one to Bengali. The 21th century writer wrote poetry only and contributed to Punjabi literature and the other Punjabi writer contributed to poetry, novel and drama. One Telugu writer and the only Bengali writer belonged to the 20th century. The former contributed to poetry and novel while the latter to novel and drama. The Gujarati novelist belonged to the 18th century and contributed to poetry only. A belonged to the 21th century, B wrote drama only, C contributed to Punjabi literature, D was a Telugu poet and novelist belonged to the 20th century. E also belonged to the 20th century, and F contributed to poetry only.

15. To which language did B contribute?

- (a) Gujarati (b) Telugu (c)
Punjabi
(d) Bengali (e) None of these

16. Among these, who was the Bengali writer?

- (a) A (b) B (c) E
(d) F (e) None of these

17. To which branch of literature did A contribute?

- (a) Poetry (b) Novel (c)
Drama
(d) All the three (e) None of these

18. Among these, who was the Gujarati writer?

- (a) A (b) B (c) E (d) F
(e) None of these

19. To which branch of literature did C contribute?

- (a) Poetry (b) Drama (c) Novel
(d) All the three (e) None of these

Directions (20 - 24) : Study the following information and answer the questions given below:

There are five persons P, Q, R, S and T. One is a cricket player, one is a volleyball player and one is a badminton player. P and S are unmarried ladies and do not participate in any game. None of the ladies plays volleyball or cricket. There is a married couple in which T is the husband. Q is the brother of R and is neither a volleyball player nor a badminton player.

20. Who is the cricket player?

- (a) P (b) R (c) Q (d) T
(e) S

21. Who is the badminton player ?

- (a) T (b) R (c) S (d) Q
(e) P

22. Who is the volleyball player ?

- (a) S (b) P (c) T (d) R
(e) Q

23. Who is the wife of T ?

- (a) P (b) Q (c) S (d) R
(e) Data inadequate

24. The three ladies are

- (a) P, Q and R (b) Q, R and S
(c) P, Q and S (d) P, R and S (e) None of these

Directions (25-30) : Read the following information carefully and answer the given answers.

P, Q, R, S, T, U and V are seven members of a family. There are three female members. Each of them has a different profession – Lawyer, Chartered Accountant (CA), Engineer, Teacher, Doctor, Novelist and Writer. No lady is either Writer or Chartered Accountant. Each of them has a different monthly income. The Chartered Accountant earns the most. S, the engineer, earns less than U, the doctor. R, the teacher, earns more than P and less than S. V's wife earns the least. T is an unmarried lady lawyer and she earns less than P and more than only Q. The Writer's income is not the lowest.

25. Who earns the least?

- (a) P (b) Q (c) P or Q (d) R
(e) None of these

26. Which of the following pairs of professions represents the professions of husband and wife?

- (a) Writer, Novelist
(b) Chartered Accountant, Novelist
(c) Engineer, Writer
(d) Chartered Accountant, Engineer
(e) None of these

27. Which of the following statement is false?

- (a) The Novelist earns more than the Lawyer.
(b) The Teacher earns less than the Engineer
(c) The Doctor earns more than the Engineer
(d) The Writer earns more than the Lawyer
(e) None of these

28. What is P's profession?

- (a) Writer (b) Lawyer (c)
Teacher
(d) Data inadequate (e) None of these

29. How many members earn less than the Doctor?

- (a) Two (b) Three (c) Four
(d) Five (e) None of these

30. Which of the following represents the three female members of the family?

- (a) PTQ (b) TRQ (c) UTQ
(d) UTR (e) Data inadequate

14 Inference

In this type of questions a passage is given which is either a part of news information or an economic report. Some inference are given followed by the passage (there are usually five inference). The candidate is asked to decide whether a given inference follows or not in the light of the given passage.

Some Important Points :

- (1) In order to evaluate an inference, first of all check whether it can be evaluated with the help of the passage directly.
- (2) If an inference cannot be directly related with the passage check if you can justify or contradict it with the help of an additional assumption. The only condition is that the assumption you make should be justifiable and universally acceptable.
- (3) You can also evaluate an inference with the help of some key words used in the passage like all, some, none, never, always etc.
- (4) To avoid confusion between the choices "probably true" and "data inadequate", check if it is possible to make an extra assumption to take the inference as "probably true". If you can make a reasonable extra assumption the answer would be "probably true". The same strategy could be used to avoid confusion between the choices "probably false" and "data inadequate"

Directions Ex. (1-5) :

Below is given a passage followed by several possible inferences which can be drawn from the facts stated in the passage. You have to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity. Mark answer

- (a) If the inference is "definitely true", i.e. it properly follows from the statement of facts given.
- (b) If the inference is "probably true" though not "definitely true" in the light of the facts given.
- (c) If the "data are inadequate", i.e. from the facts given you cannot say whether the inference is likely to be true or false.
- (d) If the inference is "probably false" though not "definitely false" in the light of the facts given.
- (e) If the inference is "definitely false", i.e. it cannot possibly be drawn from the facts given for it contradicts the given facts.

"The economic reforms programme will affect private industrial sector as well as the public sector. Many people relates economic restructuring programme with privatization. This is one area of economic reforms where India has chosen to tread cautiously. The process of privatization has been set in motion why the disinvestment campaign in the public sector. Public sector industries in India have been characterized by inefficiency, and many of them have been incurring heavy losses over long periods while their counterparts in the private sector are generating profits. The economic reforms programme in India will be incomplete without a restructuring of the public sector undertaking".

1. The greater emphasis of reforms is on the private sector.
2. India's approach towards reforms is cautious
3. The reforms have not intended to restructure the public sector units.
4. Economic restructuring programme means privatization.

5. Disinvestment of public sector is a part of economic restructuring.

Ans.

- 1.(b) Probably true. The tone of the first sentence is such that it means that reforms affect mainly private sector and also, to some extent, public sector.
- 2.(a) Definitely true.
- 3.(e) Definitely false. Although the last sentence may give an impression that the inference is true, you must also see the first sentence as well as the fact that disinvestment in public sector has already began.
- 4.(e) Definitely false. The second sentence says that many people treat reforms as a equivalent of privatization. But the first sentence contradict this belief by claiming that reforms have affected the public sector too.
- 5.(a) Definitely true.

Practice Set:

Directions (1-30) :

Below is given a passage followed by several possible inferences which can be drawn from the facts stated in the passage. You have to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity. Mark answer

- (a) if the inference is "definitely true", i.e. it properly follows from the statement of facts given.
- (b) If the inference is "probably true" though not "definitely true" in the light of the facts given.
- (f) If the "data are inadequate", i.e. from the facts given you cannot say whether the inference is likely to be true or false.
- (d) If the inference is "probably false" though not "definitely false" in the light of the facts given.
- (e) If the inference is "definitely false", i.e. it cannot possibly be drawn from the facts given for it contradicts the given facts.

According to the latest figures, the core sector saw drastic (6.5 percent) growth recently. This could be a statistical aberration or a flash in the pan. But steel prices are climbing and this could be the sign of genuine core sector demand. It will be interesting to watch if steel prices do maintain this upward trend. That would be a confirmation of sustainability. If steel is indeed in a situation of great demand, it is given that downstream manufacturing will be doing well. Core sector industries such as heavy construction, mining, steel, etc. are classified as cyclical. However, the downtrend has lasted so long that one was afraid that these industries were in permanent decline. One doesn't know whether the current improvement will translate into rising stock prices over the long period.

1. The downstream manufacturing units are expected to have a slowdown in near future.
2. For the last few years the core sector has projected a modest growth.
3. The growth in core sector in the recent past was much below 4 percent
4. The steel prices will show continuous increase during next few months.
5. The price of steel depends on the activities in the core sector.

Directions (6-10) :

Logically these are rules of behavior. Every country has listed down comprehensive series of practical rules for citizens for resolving mutual contradictory rights and interests. Most of these rules have been listed down to sustain social activities. For instance, many nations have listed down rules to protest against such crimes as theft, attack and murder. These rules are backed by judicial system and executor institutions, which look after the citizens who obey the rules and also who violate the rules. Wherever the human behavior is involved such rules are not only for namesake there but are necessary also.

6. There are no need to have any machinery to ensure strict adherence to the rules by citizens.
7. There is no need of any rules if individuals do not have to interact with each other.
8. Human beings are susceptible to violate rules.
9. Without rules, human behavior degenerates into anarchy.
10. There are no rules in countries where citizens interests and rights do not contradict.

Directions (11-15) :

The Indian economy, despite not so strong monsoons, is expected to be among the faster growing economies of globally. The Indian equity markets are currently attractively poised with the sensex at low P/E of about 14, making valuations very attractive. Interest rates are at all time low and may probably go further down, with plenty of surplus liquidity in the system, improvement in business fundamentals and a growing interest in the disinvestment programme. However, despite these positive factors, the Indian equity markets have shown negative growth on account of concerns on the US economy and markets and also due to the persisting supply demand mismatch in the market despite good liquidity in the system.

11. The low interest rates have resulted in availability of more funds to be deployed in the equity market.
12. Indian equity market has never been so attractive to foreign investors in the past.
13. Low interest rate regime has considerably weakened the strength of business establishments in India.
14. The Indian economy is largely dependent on the status of US economy.
15. There have been few takers in the equity markets in the recent past.

Directions (16-20) :

From the beginning of the new year, the good news continues on the economic front. Following on the heels of encouraging GDP growth figures for the second quarters, we now have happy tidings on the trade front as well. November 2005 saw the country's exports record a healthy 20% increase compared to the corresponding period last year. With this, the growth rate in exports for the first eight months of the current fiscal now stands at a robust 20%. Of course part of the reason for the apparently encouraging performance is because of the base effect – exports actually fell 0.6% during 2004-2005. But that is only part of the reason. For the rest, recovery in foreign trade and to give credit

where it is due, concerted efforts by exporters have played important.

16. The percentage growth in exports during 2005-2006 was mainly due to the decreased volume of exports during 2004-2005.
17. The efforts put in by the Indian exporters were comparatively less than their counterparts in developed countries.
18. There has been substantial increase in the extent of trade all over the world during the last financial year.
19. During 2004-2005, the quantum of the country's exports was about three-fourths of that in 2005-2006.
20. There has been a consistent drop in quantum of exports during last three years.

Directions (21-25) :

One of the promising features of the current market is that domestic institutions seem to have turned buyers after very long duration. They have been net buyers this month with inflows exceeding by Rs. 60 crore till early this month. That's admittedly a small amount, but its significance lies in the fact that domestic institutions have been net sellers every month this financial year except in August when their net purchases amounted to a microscopic Rs. 25 crore. This financial year's net sales by domestic institutions amounted to Rs. 3214 crore, which has substantially offset the net inflows of Rs. 3476 crore by FIIs. The net purchases by domestic institutions could indicate that money is once again flowing into equity funds, eager not to miss the widely expected rally. Part of this reason could be a change in investor portfolios, as people lighten up on debt and put that money into equity.

21. Domestic institutions have been consistently selling only in all the months in this financial year.
22. FIIs bought more than what was sold by domestic institutions this financial year.
23. The equity market is expected to experience a subdued activity in near future.
24. The activities in equity market has direct relationship with the debt market.
25. It is expected that in the early next financial year the gap between the net sales and net purchases will reduce substantially.

Directions (26-30) :

One of the avowed goals of primary education is improving learner achievement, apart from access and retention. This is a essential area of concern to planners and educationists as investment in primary education has not been giving extent returns. The scenario with regard to learner achievement has been pretty bleak over the decades. Two national surveys of achievement of primary school children conducted by NCERT are a case in point. The survey on achievement in mathematics was conducted in 1968-69. The second on attainment in language and mathematics was conducted in 1992.

26. Retention is not an avowed goal of primary education.
27. Primary education is an investment as well as a duty of the government

28. Planners have not paid due attention to learner achievement while planning primary education schemes.
29. NCERT is the only body related with the schemes of primary education.
30. The rate of learner achievement has improved very marginally after 1992.

15 Cause & Effect

It is a basic property of nature that events do not just happen, they happen because there was a cause behind them. These causes are the conditions under which these effects happen. In order to solve these types of problems, we have to find –

- (i) *Events are related to each other or not.*
 - (ii) *If events are related to each other, then which one is cause and which one is effect.*
 - (iii) *Cause in principal cause or not.*
- *Immediate Cause: It means a cause that immediately precedes the effect.*
 - *Principal Cause: It means a cause that was the most important reason behind the effect.*

Solved Examples

Ex. 1 : Event A : Rama died while on way to the hospital

Event B : A bus dashed into the scooter Rama was driving.

Answer :

So, Event A is the effect and B is its immediate and principal cause, Rama died because of the accident.

Ex. 2 : Event A : Mohan succeeded

Event B : Mohan worked hard.

Answer :

Event A is effect and B is its immediate and principal cause, because we take hard work to be sufficient cause for success.

Ex. 3 : Event A : Ravi failed

Event B : Ravi did not buy books of xyz institute.

Answer :

There is no link between the two statements, they are uncorrected.

Ex. 4 : Event A : The private engineering colleges have increased the tuition fees in the current year by 150% over the last year's fees to meet the expenses.

Event B : The government engineering colleges have not increased their fees in spite of price escalation.

Answer :

The increase in the fees of the private colleges and there being no increase in the same in government colleges seem to be policy matters undertaken by the individual decision boards at the two levels.

Practice set:

Directions (Q. 1-30) : Given below are pairs of event 'A' and 'B'. You have to read both the events 'A' and 'B' and decide their nature of relationship. You have to assume that the information given in 'A' and 'B' is true and you will not assume anything beyond the given information in deciding the answer. Mark answer.

- (a) *If „A” is the effect and „B” is its immediate and principal cause*
- (b) *If „A” is the immediate and principal cause and „B” is its effect*
- (c) *If „A” is an effect but „B” is not its immediate and principal cause*

(d) If „B’ is an effect but „A’ is not its immediate and principal cause.

(e) None of these

1. Event A : The prices of petrol dropped marginally last week.
 Event B : The State Govt. reduced the tax on petrol last week.

2. Event A : Majority of the people in the locality belong to higher income group.
 Event B : The sales in the local supermarket are comparatively much higher than in other localities.

3. Event A : A major fire destroyed part of the oil refinery owned by a private company.
 Event B : Govt. has decided to increase the supply to retailers from the public sector refineries.

4. Event A : The Govt. management college has decided to increase the number of seats in undergraduate course from the next academic session.

Event B : The Govt. has decided to withdraw its grant from all the Govt. management colleges from the next academic session.

5. Event A : Every year a large number of people spend their vacation in various historical places within the country.
 Event B : Every year large number of people spend their vacation in various historical places outside the country.

6. Event A : Party „A’ won clear majority in the recently held state assembly election.

Event B : Of late, there was unrest in public and also among the members of the power party in of the state.

7. Event A : Professors of the university decided to go on strike in protest during the Examinations.

Event B : The university administration made all the arrangements for smooth conduct of examination with the help of outsiders.

8. Event A : In the university examination, overall performance of students from college „A’ was better than that of students from college „B’.

Event B : Majority of the students depend upon tuitions for university examinations.

9. Event A : The Government of state „A’ decided to ban working of women in night shifts and also in late evening hours.

Event B : The percentage of working women has a significant rise in the last one decade.

10. Event A : Frequent loots in jewellery shops were recorded in distant small towns of the city.

Event B : Shop owners in the small towns demanded improvement in security situation from the police authorities.

11. Event A: The second World War stopped after the US dropped two atomic bombs in Japan.

Event B : Hitler never surrendered during or after the War.

12. Event A : The Government has announced that it will take measures to remove subsidies on diesel in a phased manner.

Event B : Subsidies on diesel results in a extra burden on the government treasures.

13. Event A : Sunanda Pushkar is said to have had illicit relations with the MOS for external affairs.

Event B : A lot of journalists are reporting interviews of Monica Lewinsky and giving her media attention.

14. Event A : ABC Co. has benefited immensely by the Finance ministry’s decision to free naphtha from import duty.

Event B : The turnover of ABC co. has almost doubled in the last financial year.

15. Event A : Japan is very prone to earthquakes.

Event B : According to seismologists, there is a lot of tectonic activity going on the belt below Japan.

16. Event A : The US crushed Iraq in the gulf war.

Event B : The US had almost total Global support in the gulf war.

17. Event A : India won the world cup cricket in 1983 despite being the underdogs.

Event B : Kapil Dev played very well in the 1983 world cup.

18. Event A : Dhirendra Singh has been expelled from the Election party.

Event B : Dhirendra Singh was the founder member of Election party.

19. Event A : Sushil Kumar has been awarded the Arjuna Award for excellence in Sports.

Event B : Sushil Kumar is a very dedicated wrestler.

20. Event A : Ramlal succeeded.

Event B : Ramlal worked hard.

21. Event A : Rahul failed.

Event B : Rahul did not buy books of XYZ Publishing House.

22. Event A : Dharmendra Singh has been expelled from Party.

Event B : Dharmendra Singh was planning to form a new party, it was heard some time back.

23. Event A : The crowed pelted stones at the policemen.

Event B : The policeman resorted to lathi-charge.

24. Event A : There has been a communal riot in the city following rumours that an important Muslim leader has been assassinated.

Event B : The collector has declared curfew in the city.

25. Event A : Annual production of diamonds (for which this city is famous) is going to drop.

Event B : Curfew has been declared in the city.

26. Event A : People in Uttarakhand take bath early in the morning even if is very cold.

Event B : In Uttarakhand cleanliness is valued more than in the rest of the India.

27. Event A : The doctor has advised Rani to take Vitamin C tablets.

Event B : Rani complained of cough and cold.

28. Event A : Pakistan's proposal for a third party mediation in Kashmir has been rejected by India.

Event B : India considers Kashmir to be a purely bilateral issue.

29. Event A : Ram Verma has been expelled from Party.

Event B : Verma has formed a new Party.

30. Event A : There is hardly any visible activity in the city and the shops are closed.

Event B : Curfew has been declared in the city.

16 Coded Inequalities

The problem involves essentially a combination of two elementary problems.

(i) Inequalities

(ii) Coding

Some important points for solving such types of problems.

(1) Two inequalities can be combined if and only if they have a common term.

(2) Two inequalities can be combined if and only if the common term is greater than (or "greater than or equal to") one and less than (or "less than or equal to") the other.

i.e. i) $B < A, B \geq C$

Sol. $B < A, B \geq C$. Here, common term B is less than one term, A; and greater than (or equal to) the other term, C. Hence, combination is possible.

Combined inequalities : $A > B \geq C$

ii) $A \geq B, B < C$

Sol. $A \geq B, B < C$. Here, common term B is less than (or equal to) both terms, No combination possible.

(3) The conclusion-inequality will have an ' \geq ' sign (or a ' \leq ' sign) if and only if both the signs in the combined inequality were ' \geq ' (or ' \leq '); as the case may be

Ex. 1 : Statements :

$A > B, P = A, Q < B, P \leq R$

Conclusions :

I. $A < R$

II. $P > B$

Sol. : Conclusion I : $P = A, P \leq R$ combining, we get $A \leq R$. This does not match the given conclusion, $A < R$.

Conclusion II : $A > B, P = A$ combining we get $P > B$. Hence only conclusion II follows.

Ex. 2 : Statements :

$E = F, A < E, F \geq G, B > E$

Conclusions :

I. $E > G$

II. $A = E$

Sol. : Conclusion I : $E = F, F \geq G$. combining we get $E \geq G$. This does not match the given conclusion, $E > G$

Conclusion II : $A < E, B > E$ combining we get $A < E$. This does not match with $A = E$.

Hence both conclusions are rejected.

Ex. 3 :

Statements : $L \geq A, O = N, L < H, A = O$

Conclusions :

I. $L = N$

II. $L > N$

Sol. : Conclusion I : $O = N, A = O, L \geq A$. combining we get $A = N$ combining this with

$L \geq A$. we get $L \geq N$. This means conclusion I does not follow.

Conclusion II : $L \geq N$ this is different from $L > N$. So conclusion II does not follow.

Ex. 4 :

Statements : $Z \leq Y, K = L, Y < X, Z > K$

Conclusions :

I. $Y > L$

II. $Y = L$

Sol. : Conclusion I : $Z \leq Y, Z > K, K = L$ combining we get $Y > K$. now combining it with

$K=L$. we get $Y > L$. so conclusion I follow.

Conclusion II : $Y = L$ which is not true, $Y > L$.

Ex. 5 :

Statements : $Q < I, S = C, S \geq I, C > O$

Conclusions :

I. $C < I$

II. $S > Q$

Sol. : Conclusion I : $S = C$ and $S \geq I$ combining we get $C \geq I$ this means conclusion I is not true

Conclusion II : $Q < I$ and $S \geq I$. combining we get $Q < S$. So conclusion II follows.

Practice set:

Directions (Q. 1-30) :

In all the questions that follow different symbols have been used with different meanings. For each set of questions you have to assume given statements to be true and then decide which of the two given conclusions is/are definitely true.

- (a) if only I is true
- (b) if only conclusion II is true
- (c) if either conclusion I or II is true
- (d) if neither I nor II is true
- (e) if both are true

Directions (Q. 1-5) : In which following questions, the symbols @, \$, =, ©, % are used with the following meaning :

Please Note : @ = \$, © = %

$A @ B$ means A is greater than B .

$A \$ B$ means A is either greater than or equal to B .

$A © B$ means A is smaller than B .

$A \% B$ means A is either smaller than or equal to B .

$A = B$ means A is equal to B .

1. Statements : $E \$ F, F © G, G \% H$
 Conclusions : I. $E @ H$. II. $G = H$

2. Statements : $J © I, K © L, I = K$
 Conclusions : I. $L @ J$. II. $I © L$

3. Statements : $O @ M, N \% R, M = N$
 Conclusions : I. $O @ R$. II. $M = R$

4. Statements : $A \$ B, R \% S, S = B$
 Conclusions : I. $S © A$. II. $S = A$

5. Statements : $X \% Y, K = X, Y \% L, H \$ Y$
 Conclusions : I. $Y = L$. II. $X \% H$

Directions (Q. 6-10) : in these questions symbols @, #, \$, % and © are used with different meaning as follows :

' $A @ B$ ' means ' A is smaller than B '

' $A \# B$ ' means ' A is greater than B '

' $A \% B$ ' means ' A is either greater than or equal to B '

' $A \$ B$ ' means ' A is either smaller than or equal to B '

' $A © B$ ' means ' A is neither greater than nor smaller than B '.

6. Statements : $P \# Q, Q \% H, H @ F$

Conclusions : I. $H @ P$. II. $F © P$

7. Statements : $A \$ B, B @ M, J \% M$

Conclusions : I. $A @ M$. II. $B @ J$

8. Statements : $F © D, D \# V, V @ P$

Conclusions : I. $F © P$. II. $V © F$

9. Statements : $P \$ R, R @ Q, Q \% H$

Conclusions : I. $P \$ Q$. II. $P © H$

10. Statements : $A © B, B \# W, W \% R$

Conclusions : I. $A \# R$. II. $B \% R$

Directions (Q.11-15) : In the following questions, the symbol

⊕, © =, @ and © are used with the following meaning :

$M \oplus N$ means M is greater than N .

$M \circledcirc N$ means M is either greater than or equal to N .

$M = N$ means M is the equal to N .

$M @ N$ means M is smaller than N .

$M \# N$ means M is either smaller than or equal to N .

11. Statements : $A @ L, S \oplus P, A = N, S \# N$

Conclusions : I. $A \oplus S$. II. $A = S$

12. Statements : $B @ N, T = Q, R \circledcirc N, T \# R$

Conclusions : I. $B @ R$. II. $N = Q$

13. Statements : $X @ Y, D \# E, C = D, C \circledcirc Y$

Conclusions : I. $E \oplus Y$. II. $Y = E$

14. Statements : $M \oplus U, Y = P, Z @ Y, P \circledcirc M$

Conclusions : I. $Z = M$. II. $P \oplus Z$

15. Statements : $R \circledcirc A, U \oplus L, A = H, H \circledcirc U$

Conclusions : I. $H = L$. II. $L @ H$

Directions : (Q. 16-20) : In the following questions the symbols

\$, @, *, ** and # are used with the following meaning:

$P \$ Q$ means P is greater than Q

$P @ Q$ means P is either greater than or equal to Q .

$P ** Q$ means P is smaller than Q .

$P \# Q$ means P is either smaller than or equal to Q .

$P * Q$ means P is equal to Q .

16. Statements : $A @ B, M \# N, N ** B$

Conclusions : I. $A \$ M$. II. $N \# A$

17. Statements : $P ** Q, F @ Y, P \$ F$

Conclusions : I. $Q @ Y$. II. $Y \# P$

18. Statements : $A ** Q, S \$ T, A @ T$

Conclusions : I. $S * A$. II. $T ** Q$

19. Statements : $P * Q, X \$ W, P ** W$

Conclusions : I. $W \$ Q$. II. $P ** X$

20. Statements : $G \$ H, J \# K, H * K$

Conclusions : I. $H \$ J$. II. $J * H$

Directions (Q. 21-25) : in the following questions, the symbols

\oplus , $!$, $=$, $@$ and $*$ are used with the following meanings :

$X \oplus Y$ means X is greater than Y .

$X ! Y$ means X is either greater than or equal to Y .

$X @ Y$ means X is smaller than Y .

$X * Y$ means X is either smaller than or equal to Y .

$X = Y$ means X is equal to Y .

21. Statements : $K * V, M = Z, K ! Z, F \oplus V$

Conclusions : I. $M = K$ II. $K \oplus M$

22. Statements : $A @ R, E \oplus D, F ! R, D = F$

Conclusions : I. $A @ E$ II. $E \oplus F$

23. Statements : $M = X, L @ O, N \oplus M, L * X$

Conclusions : I. $N \oplus L$ II. $X @ O$

24. Statements : $A \oplus O, R ! A, P = R, J @ P$

Conclusions : I. $P = A$ II. $P \oplus A$

25. Statements : $P * Q, K @ P, B = K, R \oplus B$

Conclusions : I. $Q \oplus K$ II. $K @ R$

Directions (Q 26-30) : in the following questions, the symbols

$\oplus, \odot, =, @$ and $@$ are used with the following meaning :

$X \oplus Y$ means X is greater than Y .

$X \odot Y$ means X is either greater than or equal to Y .

$X = Y$ means X is equal to Y .

$X @ Y$ means X is smaller than Y .

$X & Y$ means X is either smaller than or equal to Y .

26. Statements : $A @ B, L \oplus A, K = L, B = D$

Conclusions : I. $L = B$ II. $D \oplus A$

27. Statements : $M \odot A, T @ E, A = T, G \oplus M$

Conclusions : I. $A @ E$ II. $G \oplus A$

28. Statements : $L = I, A \oplus L, S & I, S = K$

Conclusions : I. $L = K$ II. $K @ L$

29. Statements : $A & B, D @ A, E = C, B \oplus E$

Conclusions : I. $B \oplus C$ II. $A = B$

30. Statements : $Y \oplus N, R \odot O, N @ D, O = Y$

Conclusions : I. $N @ R$ II. $Y = D$

17 Input-Output

In input-output problems you are asked to imagine that there is some kind of computer or a word-processing machine & this machine performs some operation on a given input. These operations are performed repeatedly as per a prefixed pattern & subsequently we have different output in different steps.

There are two basic types of questions that are usually asked. They are

(1) **Shifting** - In this type of questions, we usually shift the given words (or numbers) of the given input as per a fixed pattern.

(2) **Arranging** – In this type of questions, the words or the numbers are arranged as per a fixed order. This order can be an alphabetical order in case of words. It can be an increasing or decreasing order in case of numbers.

* Shifting goes on endlessly arranging ends as soon as the order intended is achieved.

Example Based on Shifting

Direction (Q 1 to 5) : A word arrangement machine, when given a particular input, rearranges it following a particular input. The following is the illustration of the input & the steps of arrangement.

Input : cry end yes stay che.

Step I : yes che cry end stay

Step II : yes che stay end cry

Step III : stay cry yes che end

Step IV : stay cry end che yes

And so on goes the machine, study the logic & answer the question that follows.

Ex. 1 : If step VII of an input is ‘over the pre new bone’ what is step IV of that input ?

(a) bone the pre over new (b) the pre bone new over

(c) the bone pre over new (d) pre bone the over new

(e) none of these

Ex. 2 : Given the following input – ‘sym reach lad photo cal’ What step will be the following arrangement?

Arrangement: reach lad photo sym cal.

(a) VI (b) V (c) IV (d) III

(e) none of these

Ex. 3 : If Step VI of a given input be ‘map ind pak rus eng’. What would be the input ?

(a) ind map pak rus eng (b) ind map end rus pak

(c) eng rus ind pak map (d) rus map ind eng pak

(e) none of these

Sol. : We can see in the direction a certain pattern is repeated after every two steps.

For convenience, we plot the movement of each word in each step by the numbers assigned to them in the input. i.e. cry-1, end-2, yes-3, stay-4, che-5.

Input :	1	2	3	4	5
Step 1 :	3	5	1	2	4
Step 2 :	3	5	4	2	1
Step 3 :	4	1	3	5	2
Step 4 :	4	1	2	5	3
Step 5 :	2	3	4	1	5

Step 6 : 2	3	5	1	4
Step 7 : 5	4	2	3	1
Step 8 : 5	4	1	3	2
Steo 9: 1	2	5	4	3
Step 10 : 1	2	3	4	5

1.(c) From the table the numbers in step VII are

5 4 2 3 1

over the pre new bone

In step IV, we have numbers rearranged as

4 1 2 5 3

The bone pre over new

2.(b) From the table the numbers in input are

1 2 3 4 5

Sym reach lad photo cal

Now the given arrangement is

reach lad photo sym cal

2 3 4 1 5

Which is step (V)

3.(d)

Example based on Arrangement

Direction (Q. 4-8) :

A word arrangement machine arranges the given input of words in a particular manner. The following is the illustration of the input & the steps of arrangement.

Input : fam mus tan san vic div ith

Step 1 : div fam mus tan san vic ith

Step 2 : div fam ith mus tan san vic.

Step 3 : div fam ith mus san tan vic.

This is the final arrangement & Step III is the last step for this input.

4. If second step of a given input is "cen fro hum gin turn in tee" then what would be the fourth step?

(a) cen fro gin hum in turn tee

(b) cen fro gin hum in tee turn

(c) cen fro gin in hum tee turn

(d) cen fro gin hum turn in tee

(e) none of these

5. If the code for the first step is "amb dek dah pai con sem ned" what would be the code for the fifth step?

(a) amb con dah dek pai sem ned

(b) amb con dek dah pai sem ned

(c) amb con dah dek ned pai sem

(d) there would be no fifth step

(e) none of these

6. Which of the following could be the code for the input if the step 4 is "do ele mex reh tem tru"?

(a) do reh ele tem tru mex (b) reh tru do ele tom mex

(c) reh ele tem tru do mex (d) Can't be determined

(e) none of these

7. If the code for the second step is "ato fir har waj neh rus mot". Which of the following step read as "ato fir har mot neh waj rus"?

(a) fifth (b) third (c) sixth (d) fourth

(e) none of these

8. If the code for the input is "tod tex til ide nol lus ros", what would be the code for the third step?

(a) ide tod tex til nol lus ros

(b) ide lus tod tex til nol ros

(c) ide lus nol ros tod tex til

(d) ide lus nol ros tex tod til

(e) none of these

Answers (4-8) : The logic is very simple it is a alphabetical arrangement.

4.(a) 2nd step : cen fro hum gin turn in tee

3rd step : cen fro gin hum turn in tee

4th step : cen fro gin hum in turn tee.

5.(d) 1st step : amb dek dah pai con sem ned.

2nd step : amb con dek dah pai sem ned

3rd step : amb con dah dek pai sem ned

This is the last step of above arrangement.

6.(d)

7.(d) step II : ato fir har waj neh rus mot

Step III : ato fir har mot waj neh rus

Step IV : ato fir har mot neh waj rus

8.(e) Input : tod tex til ide nol lus ros.

Step I : ide tod tex til nol lus ros

Step II: ide lus tod tex til nol ros

Step III: ide lus nol ros tod tex til ros

Practice set:

Directions (Q. 1-5) : A number and word arrangement machine, when given a particular input, rearranges it following a particular rule. The following is the illustration of the input and the steps of arrangement:

Input : Wap 33 72 Victory 25 New Dog 18.

Step I : 72 Wap 33 Victory 25 New Dog 18.

Step II : 72 Dog Wap 33 Victory 25 New 18.

Step III : 72 Dog 33 Wap Victory 25 New 18.

Step IV : 72 Dog 33 New Wap Victory 25 18.

Step V : 72 Dog 33 New 25 Wap Victory 18.

Step VI : 72 Dog 33 New 25 Victory Wap 18.

Step VII : 72 Dog 33 New 25 Victory 18 Wap.

1. The IInd step of an input is : 52 brown 21 34 49 cloud sky red How many more steps will be required to get the final output from the following input

(a) three (b) four (c) five (d) six

(e) None of these

2. The IIIrd step of a given input is : 57 dine 42 19 tower silver mat 24

What will be the step VI for the input?

(a) 57 dine 42 mat 24 silver 19 tower

(b) 57 dine 42 mat 24 19 tower silver

(c) 57 dine 42 mat 19 tower silver 24

(d) Can't be determined

(e) None of these

3. Input : 84 22 90 case over for 42 win

What will be the final step of the following input?

- (a) four (b) seven (c) five (d) six
 (e) None of these

4. Step IV : 62 car 52 eyes 20 30 store lane

Following is step IV for an input, What will be the input?

- (a) eyes car 20 62 52 store lane
 (b) eyes 20 car 62 52 30 store lane
 (c) eyes car 52 62 30 store lane
 (d) Can't be determined
 (e) None of these

5. Input : Field eyes 90 30 house rent 40 29.

What will be the second last step for the following input?

- (a) VI (b) V (c) VII (d) VIII
 (e) None of these

Directions (Q. 6-10) : The following is the illustration of the input and the steps of arrangement:

Input : 50 Poor 31 Star Now 20 40 Home

Step I: 20 50 Poor 31 Star Now 40 Home

Step II : 20 Star 50 Poor 31 Now 40 Home

Step III : 20 Star 31 50 Poor Now 40 Home

Step IV: 20 Star 31 Poor 50 Now 40 Home

Step V : 20 Star 31 Poor 40 50 Now Home

Step VI : 20 Star 31 Poor 40 Now 50 Home

Step VI is the last step for the given input

6. The IIInd step of an input is : 17 task bea cold dish 82 62 35

How many more steps will be required to get the final output?

- (a) 3 (b) 4 (c) 5 (d) 6
 (e) None of these

7. Input : 71 58 38 gone for picnic 20 job

How many more steps will be required to get the final output?

- (a) 3 (b) 4 (c) 5 (d) 6
 (e) None of these

8. Input : nice flower 34 12 costly height 41 56

For the given input, which of the following will be the IIIrd step?

- (a) 12 nice 34 height flower costly 41 56
 (b) 12 nice 34 height 41 flower costly 56
 (c) 12 nice 34 flower costly height 41 56
 (d) 12 nice flower 34 costly height 41 56
 (e) None of these

9. The IIInd step of an input is : 10 victory 18 30 53 stay look too

What will be the Vth step?

- (a) 10 victory 18 too stay 30 53 look
 (b) 10 victory 18 too 30 stay 53 look
 (c) 10 victory 18 too 30 53 stay look
 (d) Can't be determined
 (e) None of these

10. Input : Milk pot 17 28 our go 37 52

What will be the second last step for the following input ?

- (a) VI (b) V (c) VII (d) VIII
 (e) None of these

Direction (Q. 11-15) : This rearrangement starts at 10 :00 am and each step takes one hour. There will be a break at 2:00 pm for 1 hour after that every step take 45 minutes.

Input : Truck 40 care 36 mass 27 lot 10

Step I : Care truck 40 36 mass 27 lot 10

Step II : Care 10 truck 40 36 mass 27 lot

Step III : Care 10 lot truck 40 36 mass 27

Step IV : Care 10 lot 27 truck 40 36 mass

Step V : Care 10 lot 27 mass truck 40 36

Step VI : Care 10 lot 27 mass 36 truck 40

Step VI is the last step for the given input.

11. Input is : is 5 matter 30 temp 16 packed 60

Following is the step III for an input, what will be the last step?

- (a) is 5 matter 16 packed 60 temp 30
 (b) is 5 matter 16 packed 30 temp 60
 (c) is 5 matter 16 temp 30 packed 60
 (d) There are only 4 steps
 (e) None of these

12. Input : "Mini 26 solve 37 the 81 prob 64"

For the given input, which of the following will be the IIIrd step?

- (a) Mini 26 prob 37 solve 81 the 64
 (b) Mini 26 prob 37 solve 64 the 81
 (c) Mini 26 prob 37 the 81 solve 64
 (d) Mini 26 solve 37 prob 81 the 64
 (e) None of these

13. Input : "the 30 issue 48 be 8 series 20".

In how many steps will the following input be fully arranged?

- (a) three (b) four (c) five (d) six
 (e) None of these

14. How much time it will take to rearrange the input : "you 40 visit 82 their 10 relative 20" If break time will not be included.

- (a) 5 hr. 45 min (b) 5 hour (c) 5 hr. 30 min.
 (d) 4 hr. 45 min (e) None of these

15. Given Step IV : "Mot 10 pee 20 star 82 the 30"

Following is the step IV for an input. What will be the input?

- (a) mot 20 pee 10 star 82 the 20
 (b) mot 20 pee 10 the 82 star 30
 (c) mot 10 pee 20 the 30 star 82
 (d) Can't be determined
 (e) None of these

Directions (Q. 16-20) : The following is the illustration of the input and the steps of arrangement:

Input : 57 drow fee shy 30 60 70 off

Step I : 70 57 drow fee shy 30 60 off

Step II : 70 shy 57 drow fee 30 60 off

Step III : 70 shy 60 57 drow fee 30 off

Step IV : 70 shy 60 off 57 drow fee 30

Step V : 70 shy 60 off 57 fee drow 30

Step VI : 70 shy 60 off 57 fee 30 drow

Step VI is the last step for the given input.

16. The IIInd step of an input is : 52 wind 43 50 door lock kee 38

How many more steps will be required to get the final output?

- (a) 3 (b) 4 (c) 5 (d) 6
 (e) None of these

17. Following is the step IV for an input : 63 sour 58 sleep roam

present 32 48

What will be the input?

- (a) sour 63 sleep 58 roam present 32 48
 (b) sleep sour 63 58 roam present 32 48
 (c) 63 sour sleep 58 roam present 32 48

- (d) Can't be determined
(e) None of these

18. Input : "Jocker fee 37 42 grow champ 21 46".

What will be the IIIrd step for the following input ?

- (a) 42 jocker grow fee 37 champ 21 46
(b) 46 jocker 42 fee grow 37 champ 21
(c) 46 jocker 42 grow 37 fee champ 21
(d) 46 jocker 42 fee 37 grow champ 21
(e) None of these

19. Following is the step II for an input : "62 sour 17 57 grapes healthy 34 rise"

What will be the last step?

- (a) IV (b) V (c) VIII (d) VII
(e) None of these

20. Following is the step I for an input : "85 journey train 36 54 daily 28 mansion"

What will be the step V?

- (a) 85 train 54 mansion 28 journey daily 36
(b) 85 train 54 mansion journey 36 daily 28
(c) 85 train 54 mansion 36 journey daily 28
(d) There is no such step
(e) None of these

Directions (21-25) : The following is the illustration of the input and the steps of arrangement:

Input : talk star 32 49 given 82 like 63
Step I : 32 talk star 49 given 82 like 63
Step II : 32 talk 49 star given 82 like 63
Step III : 32 talk 49 star 63 given 82 like
Step IV : 32 talk 49 star 63 like given 82
Step V : 32 talk 49 star 63 like 82 given
Step V is the last step for the given input.

21. The step II of an input : "22 work 48 32 pee blue 27 game"

What will be the Vth step ?

- (a) 22 work 27 pee 48 32 blue game
(b) 22 work 27 pee 32 48 blue game
(c) 22 work 27 32 pee 48 blue game
(d) 22 work 27 48 pee 32 blue game
(e) None of these

22. The Step IIInd of an input : "11 where 81 31 gem wap 41 ask

What will be the last step?

- (a) VI (b) VII (c) VIII (d) IV
(e) None of these

23. Input : "Phone cat 31 lamp 17 70 43 dairy".

What will be the IIIrd step for the following input?

- (a) 17 phone 43 lamp cat 70 31 dairy
(b) 17 phone 31 lamp 43 cat 70 dairy
(c) 17 phone 31 cat lamp 70 43 dairy
(d) 17 phone 31 lamp cat 70 43 dairy
(e) None of these

24. If the step II is given below, which of the following was the input?

"21 unit 38 trading kill 47 73 jogger"

- (a) Unit 21 38 jogger 47 trading 73 kill
(b) Unit trading 21 38 jogger 47 73 kill

- (c) Unit 21 trading jogger 38 kill 47 73

- (d) Can't be determined
(e) None of these

25. If the Ist step of an input is : "18 43 fun rule exam 31 80 home"

Which of the following will be its IIIrd step?

- (a) 18 rule 31 43 fun exam 80 home
(b) 18 rule 31 43 fun 80 exam home
(c) 18 rule 31 43 fun 80 exam home
(d) Can't be determined
(e) None of these

Directions (Q. 26-30) : The following is the illustration of the input and the steps of arrangement:

Input : Sun day 41 90 get 30 kite 62

Step I : 90 sun day 41 get 30 kite 62

Step II : 90 day sun 41 get 30 kite 62

Step III : 90 day 30 sun 41 get kite 62

Step IV : 90 day 30 sun 62 41 get kite

Step V : 90 day 30 sun 62 get 41 kite

Step V is the last step for the given input.

26. If the IIInd step of an input is : "92 go 27 man pet 42 lamp 38".

Then what will be the last step?

- (a) VIII (b) VII (c) VI (d) V
(e) None of these

27. If following is the step II : "53 at deep follow 42 17 road 33".

For an input, what will be the step V?

- (a) 53 at 17 road 33 deep follow 42
(b) 53 at 17 road 42 deep follow 33
(c) 53 at 17 road 33 follow 42 deep
(d) There is no such step
(e) None of these

28. If following is the step III : "60 daily 11 tie 40 27 foreign urgent"

For an input then what will be the input?

- (a) Foreign 60 tie urgent 11 40 27 daily
(b) Foreign 60 urgent tie 40 daily 27 11
(c) Foreign 60 11 urgent tie 40 daily 27
(d) Can't be determined
(e) None of these

29. If following is the step II : "70 from 49 super itself 57 10 went"

For an input, So how many more step will be required to get the final output?

- (a) Five (b) Six (c) Four (d) Three
(e) None of these

30. Input : "thirty days from now 33 50 88 25". What will be the IIIrd step for the following input?

- (a) 88 thirty days from now 33 50 25
(b) 88 days thirty from now 33 50 25
(c) 88 days 25 thirty from now 33 50
(d) 88 thirty 25 days 33 from now 50
(e) None of these

18 Statement And Assumptions

An assumption is something which is assumed, supposed and taken for granted. It is the missing link of the logical structure of an argument, it is left unsaid and therefore, assumed.

When an assumption is invalid :

- (a) An assumption will be invalid if it is a restatement. Putting it in different words of the given statement.
- (b) When we restate a sentence in a negative sense, which changes its appearance but its meaning remains the same.
- (c) Some keywords like only, always, no other way, make the sentence invalid.

Solved Examples

Ex. 1 : Statements :

The book is intended to guide the naive to study English in the absence of a teacher.

Assumption :

- I. A teacher of English may not be available to everyone.
- II. English can be learnt with the help of a book.

Answer : Both assumptions are correct.

Ex. 2 : Statement : Ram is clever to fail in the examination.

Assumption : Very clever boys do not fail in the examination.

Answer : The assumption is correct. Obviously it is assumed that very clever boys do not fail.

Ex. 3 : Statement : Of all the mobile sets manufactured in India, brand „A’ has the largest sale.

Assumption : No, other brand of mobile sets has as high a sale as brand „A’.

Answer : The assumption is invalid because it is a restatement.

Ex. 4 : Statement : “Smoking is injurious to health” – a notice

Assumption : Non-smoking promotes health.

Answer : Invalid assumption, because it is a restatement in a negative sense.

Ex. 5 : Statement : If you are a western dancer, we have a challenging job for you.

Assumption : I. We need a western dancer.

II. You are a western dancer.

Answer : Assumption I is implicit otherwise there wouldn’t have been the advertisement. But II is not necessarily implied.

Practice set:

Directions (1-17) : In each question below are given a statements followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumption and decide which of the assumption is implicit in the statement.

Give answer

- (a) If only assumption I is implicit
- (b) If only assumption II is implicit
- (c) If either I or II implicit
- (d) If neither I nor II is implicit
- (e) If both I and II are implicit

1. Statement : It is desirable to put the child in the school at the age of 4 or so.

Assumptions : I. At that age the child reaches appropriate level of development and ready to learn.

II. The school do not admit children after 4 years of age.

2. Statement : Warning : Smoking is injurious to health.

Assumptions : I. Non smoking promotes health

II. Really, this warning is not necessary.

3. Statement : “You must refer to learn to dictionary if you want to become a good writer” – Ram advises Shyam.

Assumptions : I. Only writers refer to the dictionary

II. All writers, good or bad, refer to the dictionary

4. Statement : If it does not rain throughout this month, most farmers would be in difficulty this year.

Assumptions : I. Timely rain is essential for farming

II. Most of the farmers are generally dependent on rains.

5. Statement : X advises Y, “If you want to study Maths, join Institute A”

Assumptions : I. Y listens to X’s advise

II. Institute A provides good coaching for Maths.

6. Statement : If you bother me, I will slap you. – A mother warns her child.

Assumptions : I With the warning, the child may stop bothering her.

II. All children are basically naughty.

7. Statement : “A car is available on rent” – an advertisement

Assumptions : I. All types of vehicles are available on rent.

II. People will respond to the advertisement

8. Statement : Unemployed allowance should be given to all unemployed Indian youths above 18 years of age.

Assumptions : I. There are unemployed youths in India who need financial support

II. The Government has sufficient funds to provide allowance to all unemployed youth.

9. Statement : Everybody loves reading comic stories

Assumptions : I Comic stories are the only reading material

II. Nobody loves reading any other material

10. Statement : Please consult before making any decision on export from the company.

Assumptions : I. You may take wrong decision if you don’t consult me

II. It is important to take a right decision.

11. Statement : “Do not lean out of the door of the bus” – a warning in a school bus

Assumptions : I. Leaning out of a running bus is dangerous

II. Children do not pay any attention to such warnings.

12. Statement : A statement in the letter to the candidates called for written exams- “You have to bear your travel expenses.”

Assumptions : I. If not clarified, all the candidates may claim reimbursement of travel expenses.

III. The mother cares for her child's health.

- | | |
|-----------------------------|---------------------------|
| (a) Only II is implicit | (b) I and II are implicit |
| (c) II and III are implicit | (d) Only III is implicit |
| (e) All are implicit | |

28. Statement : "I think we will win. We have got the most talented players on our side" – The national cricket coach in an interview.

Assumptions : I. Talented players are crucial for any team's victory.

II. Cricket is different from other sports.

III. Chances of victory are different from actual occurrences of victory.

- | | |
|----------------------------|---------------------------|
| (a) Only I is implicit | (b) Only II is implicit |
| (c) Only III is implicit | (d) I and II are implicit |
| (e) I and III are implicit | |

29. Statement : "This is gun in my hand. So you better behave like a good girl and bring out all your valuable things without calling the police" – A thief tells a lady

Assumptions : I. When people see a gun they behave like good girl

II. Fear brings a sense of surrender

III. The police should not be called when people are afraid

- | | |
|----------------------------|-----------------------------|
| (a) I and II are implicit | (b) II and III are implicit |
| (c) I and III are implicit | (d) Only II is implicit |
| (e) Only I is implicit | |

30. Statement : "The death of the convict in the police custody was a result of excessive torture. His autopsy proves it" – An advocate to the court

Assumptions : I. The convict died in police custody

II. Autopsy can be used to find the reason of death

III. An advocate is an expert on autopsy

- | | |
|----------------------------|---------------------------|
| (a) Only I is implicit | (b) Only II is implicit |
| (c) Only III is implicit | (d) I and II are implicit |
| (e) I and III are implicit | |

19 Course Of Action

A Course of Action is, a step or administrative decision to be taken for development, follow-up or further action in regard to the problem, policy etc. on the basis of information given in the statement'.

This kind of questions thus, involve finding proper Course of Action, assuming the problem or policy being discussed about in the statement.

In this kind of questions, a statement is given followed by two courses of action numbered I and II and we are required to understand the statement and analyses the problem, and then decide which of the courses of action logically follow.

Solved Examples

Ex. 1 : Statement : A child was caught in a bus while attempting to steal the purse of a respectable lady.

Course of Action :

I. The child should be severely beaten

II. The child, should be handed over to child welfare society.

Answer : II will tend to solve the problem but I will not. Hence II will follow.

Ex. 2 : Statement : The Central Vigilance Commissions of Investigation receives the complaint of an officer taking bribe to do the duty he is supposed to.

Course of Action :

I. CVC should try to catch the officer red-handed and then take a strict action against him.

II. CVC should wait for some more complaints about the officer to be sure about the matter.

Answer :

When the CVC receives even a single complaint against an officer, it is a serious matter. The CVC should try to do something and not wait for some more complaints. The CVC should investigate the matter and, if possible try to catch the officer red handed if he is corrupt. Hence I. follows and II does not.

Ex. 3 : Statement : The Railway Minister submits his resignation a month before the new budget is to be presented in the Parliament.

Course of Action :

I. The resignation should be accepted and another person should be appointed as the Railway Minister.

II. The resignation should not be accepted.

Answer :

We don't have any information about the circumstances behind his resignation and in such a case we can only take "either follows". Hence either I or II follows.

Ex. 4 : Statement : The Hepatitis has so far claimed 100 lives in some tribal villages in Maharashtra during the past three weeks.

Course of Action :

I. The residents of these villages should immediately be shifted to a non-infected area.

II. The Government should immediately send a medical squad to this area to restrict spread of the disease.

Answer : Clearly I is vague because if infected people are shifted to non- infected area, the infection will spread there as well . So, only II follows.

Ex. 5 : Statement : It is rumored that there is a bomb in the Prime Minister Office.

Course of Action :

I. The Prime Minister should be escorted to a safe area.

II. A proper search of a bomb should be carried out.

III. No attention should be paid to such baseless rumors.

Answer :

We cannot treat such rumors as involve the prime minister life as baseless. Hence III does not follows and instead I and II follow.

Practice set:

Directions (1-20) : In each question below are given a statements followed by two courses of action. Course of action is a step for administrative decision to be taken for improvement, follow up or further action in regard to the problem, policy, etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the given suggested courses of action logically follows for pursuing

Give answer :

(a) If only I follows

(b) If only II follows

(c) If either I or II follows

(d) If neither I nor II follows

(e) If both I and II follows

1. Statement : Misuse of aids offered to the peasants was observed and brought to the notice of the concerned authorities.

Course of Action :

I. Government should issue orders to the concerned officials to the harsh and more careful while verifying the required documents while granting aid.

II. Government should take stringent action against those making false claim of subsidy.

2. Statement : Air export volumes have raised substantially over the past decade causing accumulation and difficulties for air cargo agents because of increased demand for space and service.

Course of Action :

I. Airlines and air cargo agents should jointly work out a solution to come out of the problem

II. The reasons for the increases in the volume of air export should be figured out.

3. Statement : Expensive clothes and accessories are becoming a growing need among college going teenagers of middle income group.

Course of Action :

I. Colleges should notify a dress code.

II. Children should be counseled emphasizing the importance of many other things.

4. Statement : The world conference of "Education for All" took place in 2000. members who attended conference endorsed the frame work of action for meeting the basic learning needs of all kids.

Courses of Action :

I. India should suitably implement the action points of this conference

II. India should initiate in organizing this type of conference.

5. Statement : People in the locality were agitated as more than forty people died in a building collapse.

Course of Action :

I. Government should immediately announce compensations for the affect families.

II. Authorities should take a strong action against builders for using substandard quality of material used.

6. Statement : About 20% to 30% of children, who are enrolled, do not attend the school on any scheduled day.

Course of Action :

I. More schools should be started

II. Reasons for this irregularity should be found out.

7. Statement : With the onset of South-western monsoon all the hospitals are getting increased number of patients due to various seasonal diseases.

Course of Action :

I. Municipal should educate the public the need for observing minimum required hygiene.

II. Municipal authorities should make arrangements to equip the hospitals with required medicines and other facilities.

8. Statement : Although the Indian economy is still heavily dependent on agriculture, its share in global agriculture trade is less than the share of agriculture based exports to total exports.

Course of Action :

I. Efforts should be made to increase our agricultural production

II. The exports of non-agricultural commodities should be reduced.

9. Statement : More number of candidates passing SSC examination has resulted into frustration among children for not getting admissions into institutions of their choice.

Course of Action :

I. Government should permit the institutions to increase the number of seats.

II. Students and their parents should be counseled for being flexible on the choice of college.

10. Statement : Large amount of resources are needed to develop tourist places in a country like India, which is endowed with vast coastlines, rivers, forests, with rich flora and fauna temples etc

Course of Action :

I. More tourist resorts along the coastal line only should be started.

II. The tourist potential of India should be developed

11. Statement : The Chairman stressed the need for making education system more flexible and regretted that the curriculum has not been revised in keeping with the pace of the advances taking place

Course of Action :

I. Curriculum should be reviewed and revised periodically

II. System of education should be made more adaptable.

12. Statement : Researchers are feeling agitated as libraries are not equipped to provide the right information to the right users

24. Statement : Country has been facing the problem of child labor despite several legislations.

Course of Action :

I. Government should treat child labor as a trivial issue

II. Child labor should be declared civil offence

III. Children indulging in such activities should be punished.

- | | |
|----------------------|------------------------------|
| (a) Only I follows | (b) Only II follows |
| (c) Only III follows | (d) Either II or III follows |
| (e) None of these | |

25. Statement : After the success of films such as, 'Rab ne bana di Jodi' and, 'Vivah' good music and clean entertainment are back again.

Course of Action :

I. Movies having good music and clean entertainment should be promoted

II. The two movies mentioned above should be awarded for their clean entertainment

III. The government should criticize movies that are not on the models of these two films

- | | |
|-----------------------|----------------------|
| (a) Only I follows | (b) Only II follows |
| (c) I and II follow | (d) I and III follow |
| (e) II and III follow | |

26. Statement : The economic scenario of the country is improving day by day. But some states like Madhya Pradesh seem's to be going from bad to worse.

Course of Action :

I. President rule should be imposed in Madhya Pradesh.

II. Heavy privatization should be pursued in such states.

III. The governments of such states should be asked to re-evaluate their economic planning.

- | | |
|------------------------------|----------------------|
| (a) Only II follows | (b) I and II follow |
| (c) II and III follow | (d) Only III follows |
| (e) Either II or III follows | |

27. Statement : An IAS officer has been murdered in Madhya Pradesh by irate mobs. It is being suspected that the police played a deliberately inert role during the incident.

Course of Action :

I. All IAS officers in Madhya Pradesh should be given tight security.

II. The police officials concerned should be suspended.

III. The Chief Minister of Madhya Pradesh should resign on moral grounds.

- | | |
|---------------------|-----------------------|
| (a) Only I follows | (b) Only II follows |
| (c) I and II follow | (d) I and III follows |
| (e) All follow | |

28. Statement : The pollution level in some parts of Mumbai has reached an alarming level. Already, one day in Mumbai means an involuntary smoking of 24 cigarettes.

Course of Action :

I. Automobiles exceeding the pollution limit should be dealt with severely.

II. The government should close down some of the high-pollution industries in Mumbai.

III. Cigarettes should be rationed in Mumbai.

- | | |
|-------------------------|-----------------------|
| (a) Only I follows | (b) Only II follows |
| (c) I and II follow | (d) I and III follows |
| (e) II and III follows. | |

29. Statement: The salaries of private sector employees has nearly increased in the past two years.

Course of Action :

I. Higher income tax rate should be imposed on private sector employees.

II. The wages of public sector employees should also be increased.

III. A further rise should not be allowed.

- | | |
|---------------------------------------|---------------------|
| (a) Only I follows | (b) Only II follows |
| (c) Either I or II follows | (d) None follows |
| (e) At least one of the above follows | |

30. Statement : Some bottles of soft drinks have been found to contain dead insects, flies and even lizards.

Course of Action :

I. People should be told about these incidents.

II. Soft drink manufacturers should be punished and imprisoned for selling hazardous products.

III. The sale soft drinks should be banned.

- | | |
|----------------------|------------------------|
| (a) Only I follows | (b) I and II follow |
| (c) Only II follows | (d) II and III follows |
| (e) Only III follows | |

20 Arguments

In such types of problems, question consist of a statement. The statement is usually in the form of a suggested course of action. Followed by two arguments one argument advocates the suggested course of action by pointing. Out of the positive features & other argument against the suggested course of action by pointing out the negative features. Our job is to determine whether a given argument is forceful or not.

When argument is weak

- (1) In case of example & analogies argument is weak.
- (2) In case of question back argument is weak.
- (3) In case of too simple argument is weak.
- (4) In case of negative approach argument is weak.
- (5) In case of superfluous arguments.
- (6) Some keywords like only, always and no other way, make the sentence weak.

When argument is strong

- (1) In case of established fact
- (2) Logically the result is probable
- (3) Experience indicates this that result will follow

Example (1) : Statement : Should private sector be permitted to operate telephone services.

Argument :

- (i) Yes, they are operated in advanced western countries
- (ii) No, it is risking to put them in private hands.

Answer :

None is strong. First is based on example while second is superfluous argument.

Example (2) : Statement : Should so much money spent on games or sports ?

Arguments :

- (i) Yes, we are a rich nation & can easily spent any amount of money for games.
- (ii) No, our team are unable to put up a good show in international competitions.

Answer :

None is strong. It is not true that we are a rich nation. Similarly, the reasons mentioned in the second are not sufficient to put a stop on money spending.

Example (3) : Statement : Should new big industries be started in Delhi ?

Argument :

- (i) Yes, it will create new job opportunities
- (ii) No, it will further add to the pollution of the city.

Answer :

Both are correct & strong arguments.

Example (4) :

Statement : Should workers be allowed to participate in the management of factories in India ?

Arguments :

- (i) Yes, it is the present management theory.
- (ii) No, many workers are illiterate & so their contributions will not be of any value.

Answer :

None is strong. First based on example. Second says that many workers are illiterate what about the remaining one & who are literate & whose suggestions will be of same value ?

Example (5)

Statement : Should government jobs in rural areas have more incentives

Argument :

- (i) Yes, incentive are essential for attracting government servants there
- (ii) No, rural areas are already cheaper, healthier, & less complex than big towns. So why offer extra incentives.

Answer :

Both are strong. Incentives do cure people. Second is also an established fact.

Practice set:

Directions : Each question given below is followed by two arguments numbered I and II. You have to decide which of the arguments is a "strong" argument and which is a "weak" argument.

Give answer

- (a) if only argument I is strong ;
- (b) if only argument II is strong ;
- (c) if either I or II is strong ;
- (d) if neither I nor II is strong ; and
- (e) if both I and II strong.

1. Statement: Should primary school education be made free in India ?

Arguments:

- I. Yes, this is the only way to improve the level of literacy.
- II. No, it will add to the already heavy burden on the exchequer.

2. Statement : Should there be complete ban on production of fire crackers in India?

Arguments : I. No, this will render thousands of workers jobless
II. Yes, the fire cracker producer use child labor to a large extent.

3. Statement : Should more universities be established in India ?

Arguments : I. No, we have not yet achieved the target of literacy.

II. No, we have to face the problems of highly educated but unemployed youths.

4. Statement : Should all the state owned educational institutions be given to private sector ?

Arguments : I. Yes, there will be upgradation of educational standard in these institutions

II. Yes, the educational standard of these institutions will decrease.

5. Statement : Should the tuition fees in all post graduate courses be increased considerably ?

Arguments : I. Yes, this will bring in some sense of seriousness among the students and will improve the quality.

II. No, this will force the meritorious poor students to stay away from post-graduate courses

6. Statement : Should India allow the international companies to explore the resources available under sea in its vast economy zone ?

Arguments : I. Yes, India do not have enough technical and financial resources to conduct such explorations.

II. No, this will be threat to the sovereign status of the country

7. Statement : Should corporate be allowed to operate passenger train services in India ?

Arguments : I. Yes, this will improve the quality of service in Indian Railways as it will have to face severe competition

II. No, the private companies may not agree to operate in the non profitable sectors.

8. Statement : Will the newly elected MP's fulfill their promises ?

Arguments: I. Yes, otherwise their very existence will be at risk.

II. No, elected members never seem to remember their promise

and commitments.

9. Statement : Should words like "smoking is injurious to health" necessarily appear on cigarette packs?

Arguments: I. Yes, it is a sort of brain wash to make the smokers realize they are inhaling toxic stuff.

II. No, it hampers the enjoyment of smoking

10. Statement : Should poaching be banned completely ?

Arguments : I. Yes, it has been proved to be a definite environmental hazard.

II. No, what will poachers do ?

11. Statement : Does synonym mean exactly the same ?

Arguments : I. Yes, a rich language has many words for one word.

II. No, each so called synonym is different from the other word and if used in its place, it changes the meaning slightly.

12. Statement : Should the age for marriage for boys be increased to 25 years ?

Arguments : I. No, it is arbitrary

II. Yes, it may solve the population problem.

13. Statement: Should there be reservation of seats and posts on the basis of religion ?

Arguments : I. Yes, it will check most of the inter religion basis.

II. No, ours is a secular state.

14. Statement: Should there be a ban on commodity advertising ?

Arguments: I. No, it is an age of advertising. Unless your advertisement is better than your other competitors, the product will not be sold.

II. Yes, the money spent on advertising is very huge and it inflates the cost of the product.

15. Statement: Should be abolished the Public Distribution System in India ?

Arguments: I. Yes, protectives is over everyone must get the bread on his/her own.

II. Yes, the poor do not get any benefit because of corruption.

16. Statement: Should an organization like UNO be abolished?

Arguments: I. Yes, with cold war coming to an end, such organizations have no role to play

II. No, in the absence of such organizations there may be a world war.

17. Statement: Should there be a complete ban on strike by public servants in India ?

Arguments : I. Yes, this is the only way to teach discipline to the employees ?

II. No, this deprives the citizens of their democratic rights.

18. Statement : Should 5 star hotels banned in India ?

Arguments: I. Yes, they are places from where international criminals operate.

II. No, Affluent foreign tourists will have no place to stay.

19. Statement : Should internal assessment in college be removed?

Arguments : I. Yes, this will help in reducing the possibility of bias.

II. No, teaching faculty will lose control over students.

20. Statement: Should there be only one central university throughout India?

Arguments : I. Yes, This is the only way to bring about uniformity in educational standards

II. No, This is administratively impossible.

21. Statement: Should new big industries be started in Pune?

Arguments: I. Yes, It will create new job opportunities

II. It will further add to the pollution of the city.

22. Statement: Should computers be used in all sectors in India?

Arguments : I. Yes, It will bring efficiency and accuracy in the work

II. No, It will be an injustice to the monumental human resources which are at present underutilized

23. Statement: Should our nation not fully utilize go in for computerization in industry?

Arguments: I. No, computerization requires a lot of money. We should not waste money on it

II. Yes, when advanced countries are introducing computers in various areas, how can we afford to lag behind?

24. Statement: Should we take care of the ozone layer?

Arguments: I. Yes, it protects us from the harmful ultraviolet rays

II. There is no harm from it

25. Statement: Should shifting agriculture be practiced?

Arguments: I. No, it is a wasteful practice

II. Yes , modern methods of agriculture are too costly.

26. Statement: Should political parties be restricted?

Arguments: I. Yes, it is necessary, to teach a lesson to the politicians.

II. No, it will lead to an end of democracy.

27. Statement: Should so much money be spent on games and sports infrastructure?

Arguments: I. Yes, we are a rich nation and can easily spend any amount of money for games and sports infrastructure.

II. No, our teams are unable to put up a good performance in international events.

28. Statement: Should those who demand dowry, despite the law prohibiting it, be punished?

Arguments : I. Yes, those who disobey the law must be punished

II. No, dowry system is firmly rooted in the society since time immemorial.

29. Statement: Are small families better than joint families?

Arguments : I. No, joint families ensure security and also reduce the burden of work.

II. Yes, small families ensure greater freedom.

30. Statement: Should taxes on Air conditioner be increased further?

Arguments: I. Yes, air conditioner is a luxury item and only rich people buy it.

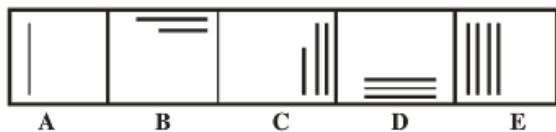
II. No, A.C. are bought by the poor too.

21 NON VERBAL REASONING

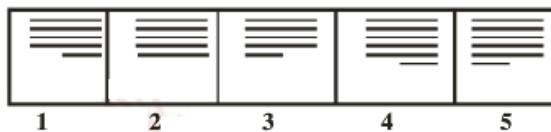
TYPE - 1 SERIES

This type of problem on series consists of five figures numbered A, B, C, D and E forming the set of Problem, followed by five other figures numbered 1,2, 3, 4 and 5 forming the set of Answer Figures. The five consecutive Problem Figures form a define sequence and it is required to select one of the figures from the set of Answer Figures which will continue the same sequence.

Problem Figures



Answer Figures



So. The figure rotates 90° CW in each step and half a line segment and one complete line segment are added to the figure alternately. Clearly, Fig. (1) is the answer.

TYPE - 2 ANALOGY

"Analogy " implies "Corresponding". In the problems based on analogy, a pair of related figures is provided and a similar relationship is to be established between two other figures, by selecting one or both of them from a set of alternatives.

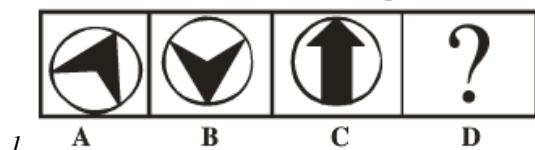
The various types of problems upon Analogy have been discussed with examples and exercises in this chapter.

This type of Analogy involves problems consisting of four figures marked A, B, C and D forming the Problem Set and five other figures marked 1, 2, 3, 4 and 5 forming the Answer Set. The figures A and B of the Problem set are related in a particular manner and a similar relationship is to be established between figure C and D by choosing a figure from the Answer set which would replace the question mark in fig. (C) or fig. (D)

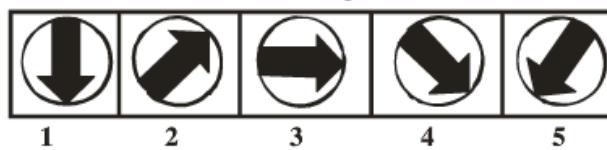
Solved Examples

Direction : Figure A and B are related in a particular manner. Establish the same relationship between figures C and D by choosing a figure from amongst the five alternatives, which would replace the question mark in fig. (D).

Problem Figures



Answer Figures



Sol. Clearly, fig. (A) rotates through 135° CW to form fig. (B) similar relationship will give fig. (4) from fig. (C). Hence, fig (4) is the answer.

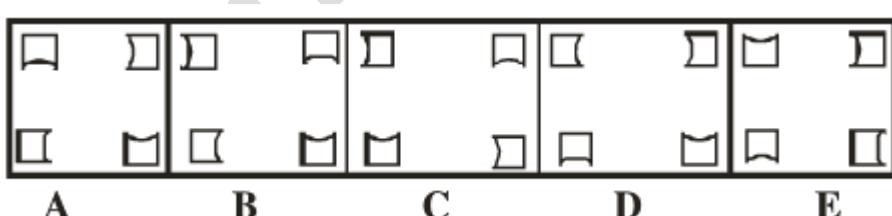
TYPE - 3 CLASSIFICATION

In such type of problems, we are given a set of five/four figures, out of which all except one are alike in some manner. We have to select the exclusively different figure in the given set.

Following examples will make understanding easier.

Solved Example

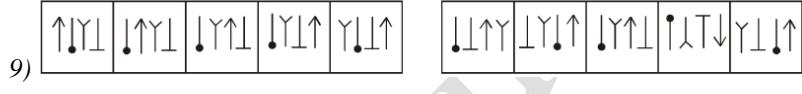
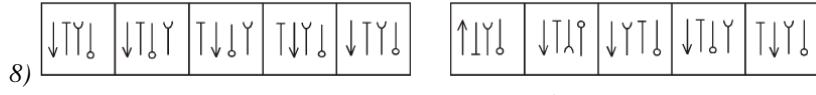
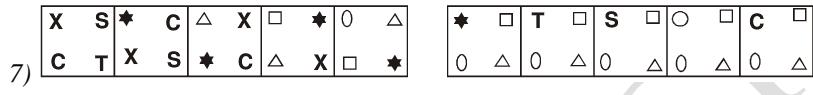
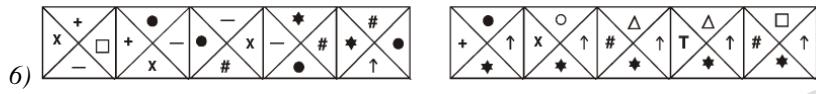
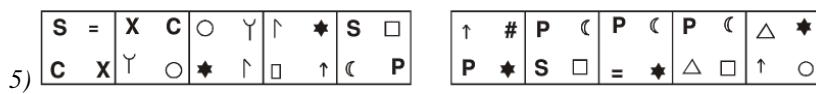
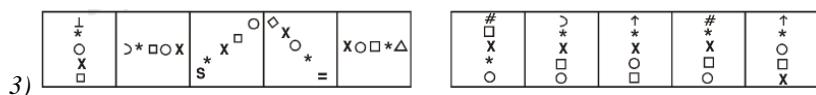
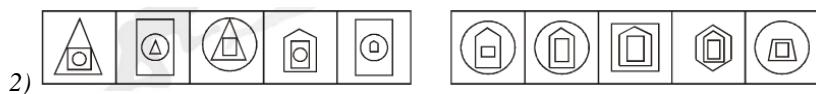
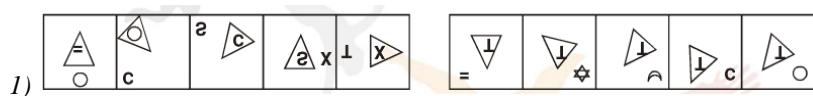
Ex.1



Sol. Only in fig.(c), two of the four element are oriented into each other. Hence, fig. (c) is the answer.

Practice set:

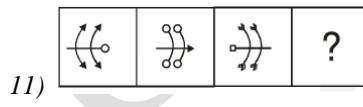
Direction (1–10): There are 5 design given in each question below (1), (2), (3), (4), (5), followed by 5 Answers (a), (b), (c), (d) and (e) in which only one answer design is the next design to follow the series of given question.



Direction (11 – 20): In following questions, the first two picture below each between the shapes in question is concerned. The answer to the third question shapes the counter a, b, c, d and e. Find the correct answer.

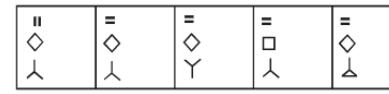
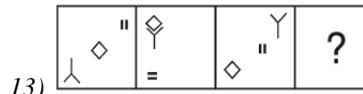
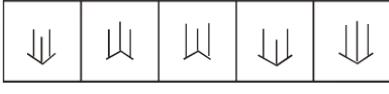
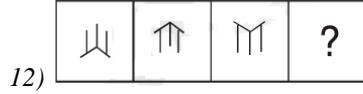
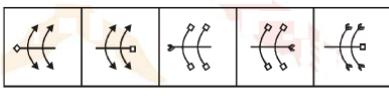
Question Diagram

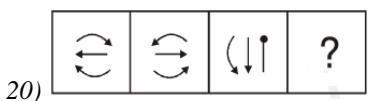
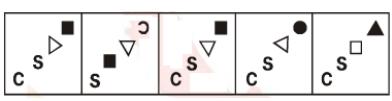
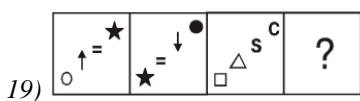
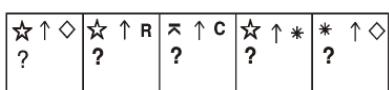
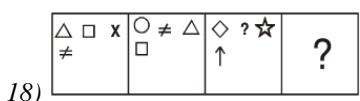
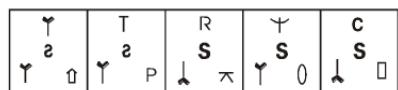
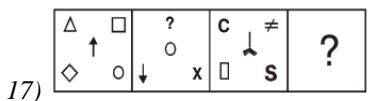
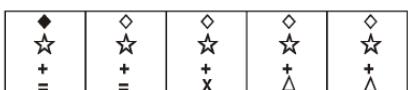
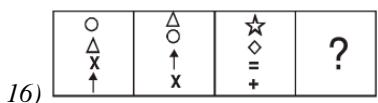
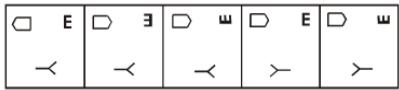
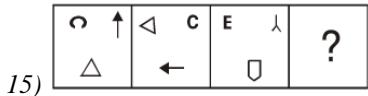
(i) (ii) (iii) (iv)



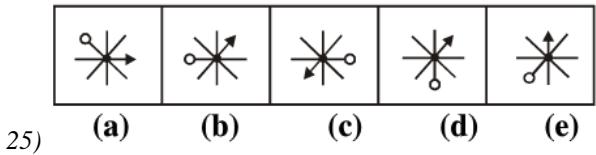
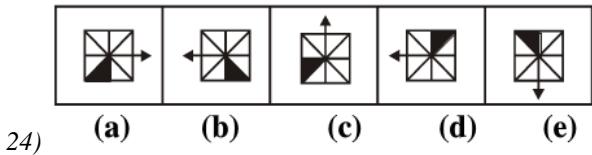
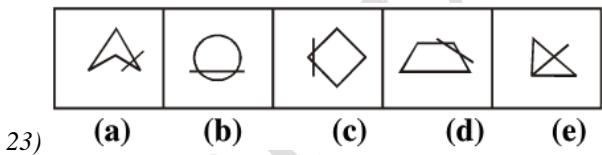
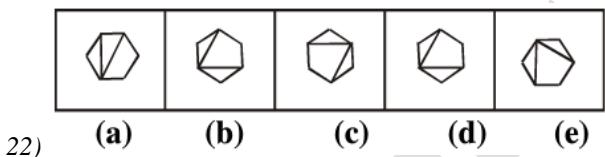
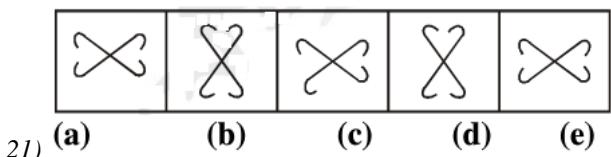
Answer Diagram

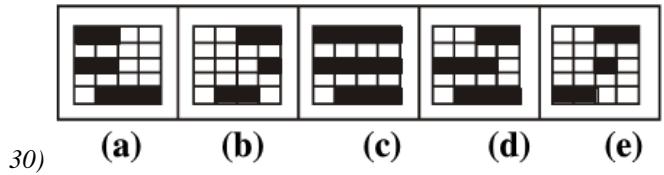
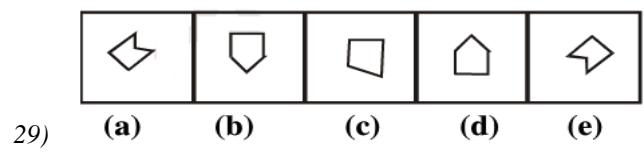
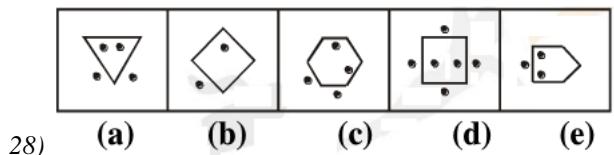
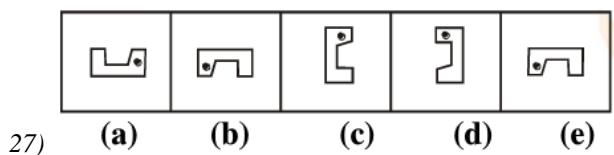
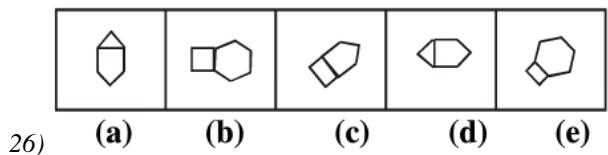
(a) (b) (c) (d) (e)





Direction (21 – 30): There are 5 design given in each question. In which 4 figures are same and other one is different. Then find the different figure.





Logical reasoning Solutions:

01) Alphabet Test

1. (c) Franchise, Frappe, Fraud, Fraught, Fray

2. (e) Genealogist, Genepoll, Generality, Genealize, Generate

3. (b) Hair-net, Hairy, Hake, Hale, Halt

4. (a) Elect, Elector, Electric, Electrode, Electron

5. (e) Legacy, Legal, Legal, Legible, Length, Lenient

6. (b)

Writing the given alphabet in reverse order, we have :

Z Y X W V U T S R Q P O N M L K J I H G F E D C B A

Cancelling every second letter, the new series becomes : Z X V
T R P N L J H F D B

There are 13 letters in the above series. So, the middle letter is the seventh letter, i.e. N.

7. (c) The new alphabet series is : B A D C F E H G J I L K N
M P O R Q T S V U X W Z Y

Clearly, the 16th letter in the above series is o.

8. (e) The given number is 8314629. Arranging the digits in ascending order, we get 1234689. We have the following four pairs of digits, satisfying the given conditions :

Digits in given no.

4 6 4 6 2 4 6 2 9 6 2 9

Digits in descending order

4 6 4 3 2 9 8 6 4 9 8 6

9. (d) The new series becomes :

A B * D E * G H * J K * M N * P Q * S T * V W * Y Z

10. (b) The pairing up to letters may be done as shown below :

AZ, BY, CX, DW, EV, FU, GT, HS, IR, JQ, KP, LO, MN

11. (d) The new letter series becomes : A b C d E f G h I j K l M
n O p Q r S t U v W x Y z

12. (c) The thirteenth letter from the right is L. The seventh letter to the right of L is S.

13. (d) Original number = 2 1 3 6 5 9 4 8 7

Number formed by arranging digits in ascending order = 1 2 3
4 5 6 7 8 9

Clearly the position of 3, 5 and 8 remain unaltered.

14.(b) G is to the immediate left of H. Three places to the right of G is J. I is to the immediate left of J, and H is to the immediate left of I. Four places to the right of H is L.

Questions 15 to 17.

The given alphabet series becomes:

A N B Q C P D Q E R F S G T H U I V J W K X L Y M Z

15.(d) The ninth letter from the left is E. The fourth letter to the right of E is G.

16. (c) There are 13 letters between Q and X. So, the middle letter is seventh to the right of Q, which is H.

17. (b) The nineteenth letter from the beginning is J, and the eighteenth letter from the end is

E. There are 9 letters between E and J. So, the middle letter is T.

Questions 18 to 22

The given alphabet series becomes :

A Z C X E V G T I R K P M N O L Q J S H U F W D Y B

18. (d) The fifteenth letter from the left is O. Clearly, L is to the right of O.

19. (c)

The nineteenth letter from the left is S and the fifteenth letter from the right is P. Clearly, O and L lie in the middle of S and P.

20. (d) U lies between H and F.

21. (b) Clearly, there are two pairs in the series containing letters in alphabetical order – MN and NO.

22. (d) K is to the right of R and I is to its left.

23. (c)

It is clear from the series. B is exactly middle of F&D, & A is 5th right of B.

24. (b) In all other alternatives, the second letter is two steps behind the first letter, while the third letter is four steps ahead of the second letter, in the given arrangement.

25. (e) The corresponding letters of the first and second groups of each pair occupy the same positions from the beginning and end of the given series, respectively.

26. (e) The new number formed is 45729. Required sum = (4 + 5 + 7 + 2 + 9) = 27

27. (e)

The numerical values may be allocated to the letters as shown below :

F J M P O W R N B E Y C K A V L D G X U H Q I S Z T
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26

Sum of the values of the vowels = A + E + I + O + U = 14 + 10 + 23 + 5 + 20 = 72.

28. (a) Since there are no three ‘A’s in consecutive order, so no such ‘A’ can be found

29. (a) Z Q S M N Q N Y T U V X Y P T A S P T Q Y S P T

30. (c) The new number formed after rearrangement is 5 4 6 8 2 3 1 9. Clearly, the third digit to the left of 3 is 6.

02 Coding And Decoding:

W I N D O W
 ↓ ↓ ↓ ↓
 4 5 2 3 6 4

S H A D E
 ↓ ↓ ↓
 1 7 8 3 9

H I D D E N
 ↓ ↓ ↓ ↓ ↓
 7 5 3 3 9 2

1.(e)
 ∴ HIDDEN is coded as 753392

2. (c) The first letter of the word is moved one step backward, while the two middle letters are each moved one step forward to obtain the corresponding letters of the code.

3.(b) The first, second, third, fourth, fifth, sixth and seventh letters in the word are moved one, two, three, four, five, six and seven steps forward respectively to obtain the corresponding letters of the code.

4. (b) Each consonant in the word is moved one step forward to obtain the corresponding letter of the code, while the vowels remain unchanged.

5.(d) The first and third letters are each moved one step backward, while the second and fourth letters are each moved one step forward to obtain the corresponding letters of the code. Finally, in the code so obtained, the last letter of the word is inserted at the end.

6. (d) The word is divided into groups of two letters each and then the letters of each group are written in a reverse order.

7. (d)
 E X P L A I N I N G P R O D U C T I O N
 ↖ ↖ ↖ ↖ ↖ ↖ ↖ ↖ ↖ ↖ ↖ ↖
 P X E A L N I G N I O R P U D T C N O I

8. (b) The middle letters remains unaltered in the code. Let us label the five letters before the middle letter as well as those after it, from 1 to 5. Then, the code contains the letters of each group in the order 5, 4, 1, 3, 2

Thus we have:

C O M P E T I T I V E	→	E P C M O T E V I I
1 2 3 4 5 1 2 3 4 5		5 4 1 3 2 2 5 4 1 3

9.(b) Divide the word into six sets of two letters, each and label these sets from 1 to 6. Then, the code contains these sets in the order 4, 3, 5, 2, 6, 1 with the letters of sets 3, 2, 1 written in a reverse order. Thus, we have :

I N T R O D U C T I O N	→	U C O D T I T R O N I N
1 2 3 4 5 6		4 3 5 2 6 1

10.(b)Divide the word into five sets of two letters each and label these sets from 1 to 5. Then, the code contains these sets in the order 5, 4, 3, 2, 1 with the letters of sets 5, 3, 1 written in a reverse order. Thus we have:

C O N T R I B U T E	→	E T B U I R N T
1 2 3 4 5		5 4 3 2

11.(b) Each letter of the word except the first and last letters, is moved one step forward and then the order of the letters so obtained, is reversed to get the code.

12.(c) The letters in the first half and second half of the word are written in the reverse order and then each letter of the group so obtained is moved one step forward to get the code. Thus, we have :

DESIRE → DES/IRE → SED/ERI → TFE/FSJ

13.(a) The letters in the first half and second half of the word are written in the reverse order and then in the group of letters so obtained, the first , third, fifth and seventh letters are each moved one step forward and other one step backward to get the code. Thus, we have :

COMPUTER → COMP/UTER → PMOC/RETU → QLPBSDUT

14.(b) The last four letters of the word are written in the reverse order, followed by the first three letters in the same order. In the group of letters so obtained, each letter except the middle letter is moved one step backward while the middle letter is moved one step forward to get the code. Thus, we have :

SUPREME → SUP/R/EME → EME/R/SUP → DLD/S/RTO

RESERVE → RES/ERVE → EVR/E/RES → DUQ/F/QDR

15.(c)

16.(d)Divide the word into three groups of two letters each and write the letters of each group in the reverse order. In the group of letters so obtained, the second, fourth and sixth letters are each moved one step forward to get the code. Thus, we have :
 AN SW ER → NA WS RE → NBWTRF

17.(d) If in the word, a letter is the nth letter from the beginning of the English alphabet, then in the code the corresponding letter is the nth letter from the end

18.(d)Each letter in the word is replaced by the letter which occupies the same position from the other end of the English alphabet, and the group of letters so obtained is then written in the reverse order to get the code. Thus, we have :

FATHER → UZGSVI → IVSGZU

CRUELTY → XIFVOGB → BGOVFIX

19.(b)Each letter of the word is one step forward the corresponding letter of the code

20.(c) The order of letters of the word is reversed in the code. So, reverse the order of the letters in the code to get the word

21.(b)By equating statement II and III, ‘winter’ means ‘de’

22.(c) The word is divided into groups of two letters each and then these groups are written in the reverse order.

NOVEMBER → NO/VE/MB/ER → ER/MB/VE/NO → ERMBVENO

I E U A A C E V → IE/UA/AC/ E V → EV/AC / UA / IE → E V
 A C U A I E

23.(c) Substituting the letters of the given word with their respective codes, we have

I	N	D	U	S	T	R	E
↓	↓	↓	↓	↓	↓	↓	↓
A	P	E	C	O	S	N	M

Hence, the answer is (c)

24.(d) Observed the above question, we may notice that RESERVE consists of the same letters as REVERSE and the four possible codes given as alternatives also consist of the same letter codes as those in the code for REVERSE. This indicates that this is a question on direct-coding. Thus we have :

Letter R	E	V	S
Code A	P	U	T

R	E	F	I	G	A	T	O
↓	↓	↓	↓	↓	↓	↓	↓
S	P	Q	N	N	B	Z	Y

25. (c) Letter	T	A	B	L	E
Code	P	B	C	M	E
Q	S	H			

The code for BLADE is CMBHE

27.(d) Letter	M	I	R	A	C
Code	Q	V	S	T	U
L	E	G	B		
Z	W	A	C		

The code for REAL is SWTZ.

28. (c) The desired code is *5078*.

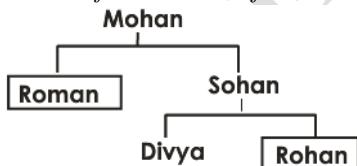
29. (d) Clearly, the given letter-group begins with a consonant and ends with a vowel.

The desired code is 649025

30. (b) The desired code is 263857.

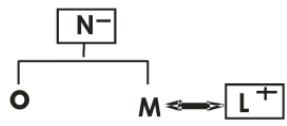
03 Blood Relation

1.(c) Raman is the brother of Diya and Diya is daughter of Sohan. Therefore Sohan is the father of Raman. Rohan is the brother of Sohan. Therefore, Rohan is the uncle of Raman.

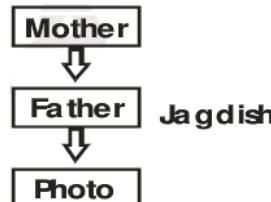


So Rohan is the Uncle of Raman.

2.(d) N is the mother of M, and L is the husband of M. N is the mother-in-law of L .

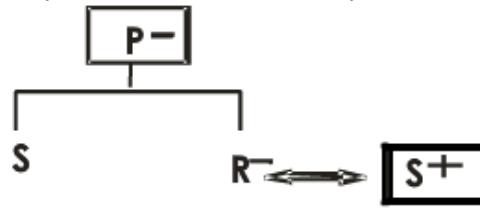


3.(d) Since the only son of the mother of Jagdish, is Jagdish, therefore, the photo belongs to Jagdish's son.

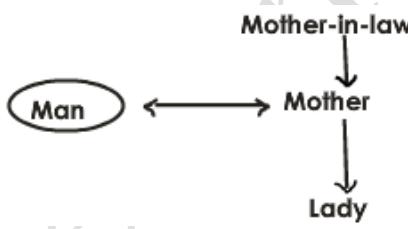


So the photo is son of Jagdish.

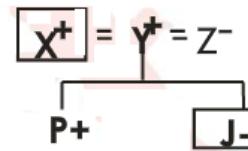
4.(c) Since S is the husband of R, and P is the mother of R, therefore P is the mother in law of S.



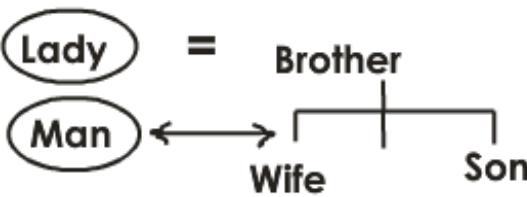
5.(e) Since the mother in law of the man is the mother of the mother of the lady, therefore, the lady is the daughter of the man.



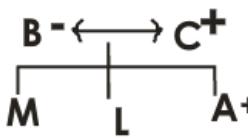
6.(d) Since P is the brother of J and J is the daughter of Y but X is the brother of Y therefore, X is the uncle of P.



7.(c) Since the son of the only brother of the lady is the nephew of the lady, therefore, the wife of the man is the niece of the lady. Hence the lady is the sister of the father-in-law of the man. Is the niece of the lady. Hence the lady is the sister of the father in law of the man.



8.(b) In the family C is the father whose wife is B. C has three children L, M and A out of which L is the son. Hence L cannot be the father of A.



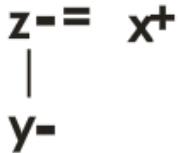
9.(a) Only daughter of my mother – Myself.

Mother

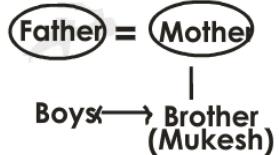
Mother

Man

10.(c) $Y \bullet Z$ means Y is daughter of Z and $Z \Delta X$ means Z is the sister of X . Hence X is the maternal uncle of Y .



11.(d) The mother of the only brother of the boy is the wife of Mukesh's father. Therefore, she is mother of Mukesh. Hence Mukesh is the brother of the boy.

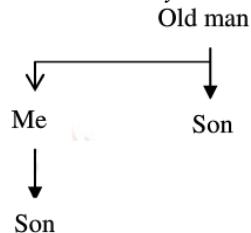


12.(e) X 's mother was the sister of Y . Hence Y is the maternal uncle of X .

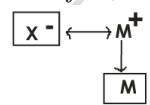
13.(d) Her mother's husband means her father and her father's sister is man's aunt. Therefore, the man and woman may be cousins.

14.(c) O and P are the daughters of M and N is the uncle of O .

15.(b) Since the old man's son is my son's uncle, therefore, old man's son is my brother. Hence the old man is my father.



16.(a) $X + M - Y$ means X is the sister of M who is the father of Y . Therefore, X is the aunt of Y .



17.(b) Bhakti is wife of Mukesh, and Mukesh is grandfather of Soni. So, Soni is Bhakti's grandson. Hence the answer is (b)

18.(c) Manu is Mukesh's daughter, Mayank is Bhakti's son and Mukesh is Bhakti's husband. So, Mayank is Manu's brother and his wife is Manu's sister-in-law. Hence the answer is (c)

19.(d) The female members in the family are mother, wives of married sons, unmarried daughter and 2 daughters of each of

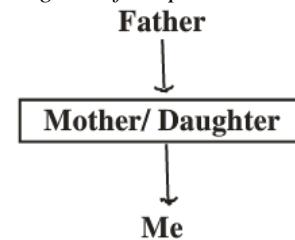
the two sons. Number of female members = $(1 + 3 + 1 + (2 * 2)) = 9$

20.(c) F is mother of A .

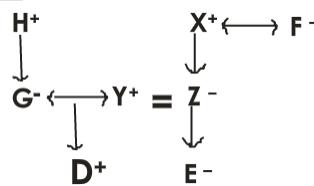
21.(e) X 's father is Y 's son. So, Y is X 's grandfather. O is the paternal uncle of X . So, O is the brother of X 's father. This means that O is also Y 's son. R is the brother of Y . Thus, R is the paternal uncle of X .

22.(b) S is the son-in-law of P and brother in law of Q . This means that P is the father/mother of S 's wife, and Q is the brother of S 's wife. Thus, Q is P 's son.

23.(c) The person in the photograph is the daughter of maternal grandmother of the woman who is pointing of the person in the photograph is the mother of the woman. Hence the woman is the daughter of the person in the photograph.



24.(c) Y is the brother of Z and X is the father of Z . therefore, X is the father of Y and F is the mother of Y . But D is the son of Y , hence F is the grandmother of D .



25.(d) Since F is the mother of Y therefore, Y is the son of F .

26.(a) Vandana is the daughter of Abhay and Nanu is the son of Abhay's sister. So, Nanu and Vandana are cousins.



27.(b) Diya is Abhay's wife and Payal is Abhay's sister. So, Payal is Diya's sister-in-law.

28.(c) Varun is the father of Abhay and Diya is Abhay's wife. So, Vandana is Payal's niece.

29.(b) The wife of A is D and C is the brother of D . B is the brother in law of D . Hence A is the brother in law of C and the brother of B .

30.(d) Though it is clear that my grandfather has only one daughter but this is not clear how many son he has.

04 Number Series

1. (c) In the given series each no. is obtained by dividing the preceding number by 5.

$$\therefore \text{Next no.} = \frac{625}{5} = 125$$

$$2.(a) \begin{array}{ccccccc} 8 & 13 & 22 & 39 & 72 & 137 \\ \backslash & / & \backslash & / & \backslash & / & / \\ +5 & & +9 & +17 & +33 & 65 \\ \backslash & / & \backslash & / & \backslash & / & / \\ +4 & +8 & +16 & +32 & & & \end{array}$$

3.(d) The series is obtained by using one zero after decimal.
 \therefore Required no. is .0006.

4.(c) In the 1st pair the 1st digit of the second no. is the sum of the 1st and last digit of the 1st no. where the last two digit are same as that of the 1st no. Applying the same logic in the second pair we have the 1st digit of second no. as 6+1 = 7.
 And last two digit as 0 & 1 in that order, so the no. is 701.

$$5.(c) \begin{array}{cccccc} & 3219 & 5231 & 7243 & 9255 \\ \overline{-} & \backslash & \backslash & \backslash & \backslash \\ -2012 & -2012 & -2012 & -2012 & \end{array}$$

Hence, the no. is 1207.

6.(d) clearly, $8 \times 2 = 16$

$$\therefore 8 : 16$$

Hence, $12 \times 2 = 24$ $12 : 24$.

7.(d) The no's. at odd places, they are all consecutive natural nos.

$$8.(d) \begin{array}{ccccccc} 7 & 15 & 31 & 55 & \cdots & 87 & 127 \\ \backslash & +8 & \backslash & +16 & \backslash & +24 & \backslash \\ +8 & & +16 & & +32 & & +40 \end{array}$$

$$9.(c) 7 = 2^3 - 1$$

$$26 = 3^3 - 1$$

$$63 = 4^3 - 1$$

$$124 = 5^3 - 1$$

$$215 = 6^3 - 1$$

$$342 = 7^3 - 1$$

$$10.(b) 1 + 2^2 = 5$$

$$5 + 3^2 = 14$$

$$14 + 4^2 = 30$$

$$30 + 5^2 = 55$$

$$55 + 6^2 = 91$$

$$45 \quad 44 \quad 42 \quad 39 \quad \cdots$$

$$11.(b) \quad -1 \quad -2 \quad -3 \quad -4 \quad -5$$

$$3 \quad 7 \quad 13 \quad 21 \quad \cdots$$

$$12.(c) \quad +4 \quad +6 \quad +8 \quad +10 \quad +12$$

$$13.(b) 5^2 = 3^2 + 4^2$$

Similarly, $41^2 = x^2 + 9^2$

$$x^2 = 1600 \Rightarrow x = 40$$

$$14.(d) 18 \times 2 = 36, 36 \times 3 = 108, 108 \times 4 = 432$$

$$\therefore \text{req. no.} = 432$$

$$7 \quad 12 \quad 22 \quad 37 \quad 57 \quad \cdots$$

$$15.(c) \quad +5 \quad +10 \quad +15 \quad +20 \quad +25$$

$$\therefore \text{req. no.} = 82.$$

$$0 \quad \cdots \quad 10 \quad 18 \quad 28$$

$$16.(d)$$

$$\text{Req. no.} = 4$$

$$36 \quad 20 \quad 12 \quad 8 \quad 6 \quad 5$$

$$17.(d) \quad -16 \quad -8 \quad -4 \quad -2 \quad -1$$

$$\text{Req. no.} = 6 - 1 = 5$$

18.(d) In each sued, the whole no. part are all consecutive primes.

Hence, in the required surd the whole no. part is 7.

Now, the irrational part is.

$$\sqrt{10} = \sqrt{(2+1)^2 + 1}$$

$$\Rightarrow \sqrt{17} = \sqrt{(3+1)^2 + 1}$$

$$\sqrt{37} = \sqrt{(5+1)^2 + 1}$$

$$\therefore \sqrt{(7+1)^2 + 1} = \sqrt{65}$$

19.(b) The given no.s are consecutive primes.

\therefore After 19, the next prime is 23.

$$20.(d) \begin{array}{ccccc} 1 & 9 & 25 & 49 & 81 \\ I^2 & 3^2 & 5^2 & 7^2 & 9^2 \\ \therefore 11^2 = 121 \end{array} \quad \cdots$$

$$21.(d) 4 : 16 :: 16 : 256$$

$$NO : (NO)^2 :: NO : (NO)^2$$

$$22.(a) 6 : 84 :: 7 : 98$$

$$NO : NO \times 14 :: NO : NO \times 14$$

$$23.(b) \begin{array}{cccccc} 295, & 259, & 234, & 218, & 209, & 205 \\ \overline{-6^2} & \overline{-5^2} & \overline{-4^2} & \overline{-3^2} & \overline{-2^2} & \end{array}$$

$$24.(c) \begin{array}{cccccc} 5, & 6, & 14, & 45, & 184, & 925, \\ \overline{(5 \times 1)+1} & \overline{(6 \times 2)+2} & \overline{(14 \times 3)+3} & \overline{(45 \times 4)+4} & \overline{(184 \times 5)+5} & \end{array}$$

$$25.(d) 169 : 121 :: 361 : 289$$

$$(13)^2 : (11)^2 :: (19)^2 : (17)^2$$

26.(b) 412, 387, 362, 337, 312
-25 -25 -25 -25

27.(b) -4, -1, 4, 11, 20, 31
 $I^2 - 5, 2^2 - 5, 3^2 - 5, 4^2 - 5, 5^2 - 5, 6^2 - 5$

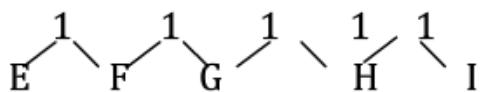
28.(a) 15, 16, 20, 29, 45, 70, 106
 $+12 +22 +32 +42 +52 +62$

29.(b) 0, 3, 8, 15, 24, 35
 $(I^2 - 1), (2^2 - 1), (3^2 - 1), (4^2 - 1), (5^2 - 1), (6^2 - 1)$

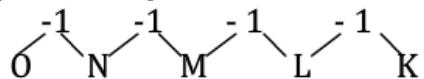
30.(c) 1, 8, 27, 64, 125, 216, 343
 $1^3, 2^3, 3^3, 4^3, 5^3, 6^3, 7^3$

05 Letter Series

1.(b) In this given series, the second letter of each term is replaced by a letter having one more place in the alphabetical order.

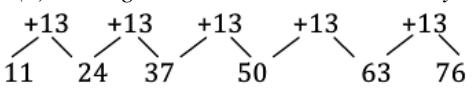


Now, 1st term of each term is replaced by letter having one less place in the alphabetical orders.

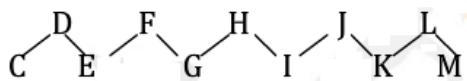


Hence, KI should be the missing term.

2.(c) In the given series no. is increased by 13.

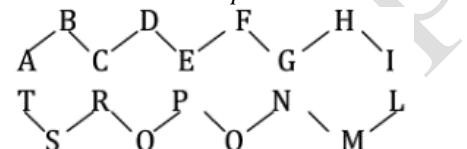


And alphabets replaced by alternate alphabet.



i.e. 76M is the missing term.

3.(c) In the given series, both the letters of terms is replaced by alternate letter in a alphabetical order such as:



i.e. IL

4.(c) In the given series, the place value of all the terms in the alphabetical order is

$$A = 1, I = 9, Y = 25, W = 23$$

$$7^2 = 49 = 26+23$$

It can be inferred that it is the series of square of odd no's.

$$\therefore \text{The missing term is } 9^2 = 81 \\ = [(26 \times 3) + 3] \text{ i.e., place C}$$

5.(c) The pattern of the given series is :

BC D EF G HI J KL
So, the next group is L NO

AB / EF / I / MN / QR
6.(c) CD GH KL OP

7.(b) $B \rightarrow 2, E \rightarrow 5, H \rightarrow 8, K \rightarrow 11, N \rightarrow 14$

Now, our series is given by 2B2, 5E5, 8H8, 11K11, 14N14.
Thus missing term is 11K11.

8.(a) In the series, the 1st letters of all terms are M, in the first two terms O is the second letters. In the second two terms, S is the second letter. So, in the last two letters terms, T should be the second letters.

\therefore From the option, MTSO is the required answer.

9.(c) 1st letter of each word, they are in alphabetical order A, B, C and D. It means missing term word should start with C.

2nd letter of each word. They are also in alphabetical order i.e. E, F, G, H second missing word \rightarrow G.

Hence, 3rd letter of missing word is Y.

4th letter of each word. They are also in alphabetical order. i.e. S, T, U, V

\therefore Missing word is CGYU.

10.(b) Clearly, the 1st, 2nd & 3rd letters of each term are respectively moved on, two and three steps forward to obtain the corresponding letter of the next term. So, the missing term, EJO

11.(b) Each term consists alternative letter in the alphabetical order. So in this order the term is YAC.

12.(d) In the given series, the place value of letter in each term is

$$\frac{3}{5}, \frac{5}{8}, \frac{8}{12}, \frac{12}{17}, \frac{17}{23}$$

From the above series we refer that the difference b/w the no. is increased by 1.

$$5 - 3 = 2, 8 - 5 = 3, 12 - 8 = 4 \quad 23 \rightarrow W$$

$$17 - 12 = 5, 23 - 17 = 6$$

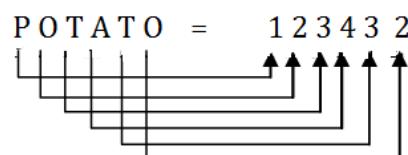
$$17 \rightarrow Q, 23 \rightarrow W$$

$\therefore Q/W$

13.(d) in the given series, the 1st, 2nd & 3rd letter of the term are shifted forward by 2, 3 and 3 respectively in alphabetical order.
 \therefore the missing term is INO.

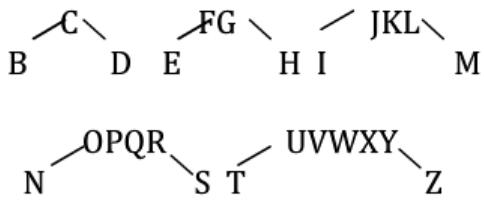
14.(c) In the given analogy, the 1st & 2nd letters of term shift backward & forward by 3.

\therefore The missing term is PK.

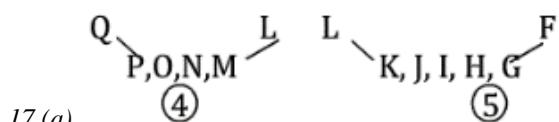
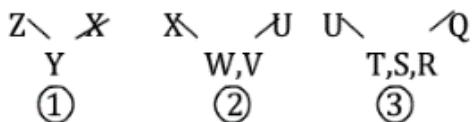


15.(d)

TP O O A T = 3 1 2 2 4 3



16.(d)
i.e. next term TZ



17.(a)
i.e. missing term is F.

18.(a) Consider the alphabetical position of the 1st word and 2nd word in the 1st ratio.

$$D \rightarrow E \rightarrow F \rightarrow G \rightarrow H \rightarrow J \rightarrow L \rightarrow N$$

$$4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 10 \rightarrow 12 \rightarrow 14$$

It means that letter D is replaced by letter whose alphabetical position is twice that of D's alphabetic position and all other follow the same rule. Hence, GHIJ will follow the same rule.

$$G \rightarrow H \rightarrow I \rightarrow J \rightarrow N \rightarrow P \rightarrow R \rightarrow T$$

$$7 \rightarrow 8 \rightarrow 9 \rightarrow 10 \rightarrow 14 \rightarrow 16 \rightarrow 18 \rightarrow 20$$

19.(b) In the given series

1 st term =	X	
2 nd term =	N	9 letter
3 rd term =	G	6 letter
4 th term =	C	3 letter
5 th term =	A	1 letter

$$\begin{array}{ccc} A & D & \rightarrow & N \\ \downarrow & \downarrow & & \downarrow \\ 1 & 4 & & 14 \end{array}$$

$$\begin{array}{ccc} \therefore B & C & \rightarrow & W \\ \downarrow & \downarrow & & \downarrow \\ 2 & 3 & & 23 \end{array}$$

20.(c)

$$\begin{aligned} 1^{\text{st}} \text{ series:} & +2 \quad +4 \quad +6 \quad +8 \\ B \rightarrow D \rightarrow H \rightarrow N \rightarrow & V \\ 2^{\text{nd}} \text{ Series:} & +3 \quad +5 \quad +7 \quad +9 \\ C \rightarrow F \rightarrow K \rightarrow R \rightarrow & A \\ 3^{\text{rd}} \text{ Series:} & +4 \quad +6 \quad +8 \quad +10 \\ D \rightarrow H \rightarrow N \rightarrow V \rightarrow & F \end{aligned}$$

22.(b) The given sequence is a combination of two series :

- (I) Y, U, Q, M, I
 (II) T, Q, N, K, H

$$\begin{array}{cccccc} 1^{\text{st}} \text{ Series:} & +1 & +1 & & & +1 \\ M \rightarrow N \rightarrow O \rightarrow & P \end{array}$$

$$\begin{array}{cccccc} 2^{\text{nd}} \text{ Series:} & +1 & +1 & +1 & & \\ H \rightarrow I \rightarrow J \rightarrow & K \end{array}$$

23.(b)

$$\begin{array}{cccccc} B & \xrightarrow[2]{\quad} & D & \xrightarrow[4]{\quad} & F & \xrightarrow[6]{\quad} & H & \xrightarrow[8]{\quad} & J & \xrightarrow[10]{\quad} \\ & & & & & & & & & \end{array}$$

$$\begin{array}{cccccc} U & \xrightarrow[-2]{\quad} & S & \xrightarrow[-2]{\quad} & Q & \xrightarrow[-2]{\quad} & O & \xrightarrow[-2]{\quad} & M & \end{array}$$

$$\begin{array}{cccccc} C & \xrightarrow[3]{+2} & E & \xrightarrow[2]{+2} & G & \xrightarrow[2]{+2} & I & \xrightarrow[2]{+2} & K & \end{array}$$

$$\begin{array}{cccccc} Z & \xrightarrow[-2]{\quad} & X & \xrightarrow[-2]{\quad} & V & \xrightarrow[-2]{\quad} & T & \xrightarrow[-2]{\quad} & R & \end{array}$$

$$\begin{array}{cccccc} H & \xrightarrow[2]{+2} & J & \xrightarrow[2]{+2} & L & \xrightarrow[2]{+2} & N & \xrightarrow[2]{+2} & P & \end{array}$$

$$\begin{array}{cccccc} 1^{\text{st}} \text{ letter:} & Q & \xrightarrow[2]{+2} & S & \xrightarrow[2]{+2} & U & \xrightarrow[2]{+2} & W & \xrightarrow[2]{+2} & Y & \end{array}$$

$$\text{Middle No.: } 1 \xrightarrow[1 \times 1 + 1]{\quad} 2 \xrightarrow[2 \times 2 + 2]{\quad} 6 \xrightarrow[6 \times 3 + 3]{\quad} 21 \xrightarrow[21 \times 4 + 4]{\quad} 88$$

$$\begin{array}{cccccc} 3^{\text{rd}} \text{ letter:} & H & \xrightarrow[-1]{\quad} & G & \xrightarrow[-1]{\quad} & F & \xrightarrow[-1]{\quad} & E & \xrightarrow[-1]{\quad} & D & \end{array}$$

25.(b)

$$\begin{array}{cccccc} 1^{\text{st}} \text{ letter:} & K & \xrightarrow[-2]{\quad} & I & \xrightarrow[-2]{\quad} & G & \xrightarrow[-2]{\quad} & E & \xrightarrow[-2]{\quad} & C & \end{array}$$

$$\text{Middle No.: } 6 \xrightarrow[+4]{\quad} 10 \xrightarrow[+4]{\quad} 14 \xrightarrow[+4]{\quad} 18 \xrightarrow[+4]{\quad} 22$$

$$\begin{array}{cccccc} 3^{\text{rd}} \text{ letter:} & M & \xrightarrow[+3]{\quad} & P & \xrightarrow[+3]{\quad} & S & \xrightarrow[+3]{\quad} & V & \xrightarrow[+3]{\quad} & Y & \end{array}$$

27.(b) The series may be divided into groups as shown :

CFE / G ? I / K ? M in the first group, me second and third letter are respectively three and two steps ahead of me first letter. A similar pattern would follow in the second and third groups.

$$\begin{array}{cccccc} -3 & -2 & -3 & -2 & & \\ V \rightarrow S \rightarrow \textcircled{Q} \rightarrow N \rightarrow L & & & & & \end{array}$$

$$\begin{array}{cccccc} -2 & -5 & -10 & -17 & -26 & -37 & -50 \\ Z \rightarrow X \rightarrow S \rightarrow I \rightarrow R \rightarrow R \rightarrow G \rightarrow I & & & & & & \end{array}$$

29.(c)

1st series :

$$\begin{array}{cccc} -3 & -3 & -3 & -3 \\ T \rightarrow & Q \rightarrow N \rightarrow K \rightarrow & \textcircled{H} \end{array}$$

2nd Series :

$$\begin{array}{cccc} +2 & +2 & +2 & +2 \\ C \rightarrow E \rightarrow G \rightarrow I \rightarrow K \end{array}$$

This series formed by the number

i.e. 1, 3, 9, 31, 129

$$30.(c) \quad 1 \times 1 + 2, 3 \times 2 + 3, 9 \times 3 + 4, 31 \times 4 + 5.$$

06 Clock :

$$1.(b) \quad \begin{array}{ccc} \text{Angle} & = \frac{11}{2} & \text{Minutes} \end{array} \\ 30 \times \text{hours} = \frac{11}{2} \times 40 - 30 \times 7 = 220 - 210 = 10^\circ$$

$$2.(b) \quad \text{Angle} = \frac{11}{2} \times 7 - 30 \times 3 = \frac{77}{2} - 90 = \frac{103}{2} = 51\frac{1}{2}^\circ$$

$$3.(b) \quad \text{Coincide Time} = \frac{T \times 60}{11} = \frac{2 \times 60}{11} = 10\frac{10}{11} \quad \text{So time is } 2: 10\frac{10}{11}$$

$$4.(d) \quad \begin{array}{ccc} \text{Time} & = \\ = \frac{(T+6) \times 60}{11} & = \frac{(9+6) \times 60}{11} & = \frac{3 \times 60}{11} = 16\frac{4}{11} \quad \text{So time is } 9 : 16 \end{array}$$

5.(c) The hands of a clock at right angle per 22 times in 12 hours. Total No. of hours in 3 days are 72.

So hand of a clock will be at right angle is 72 hours = $\frac{72 \times 22}{12} = 132$ times

6.(c) Hands of a clock are in opposite direction for 11 times in 12 hours. Total no. of hours in 2 days are 48.

So hands of a clock will be in opposite direction in 2 days = $\frac{48 \times 11}{12} = 44$ times

7.(a) odd days up to 31 Dec. 1995 – 300 – 1

$$95 \rightarrow 95 + 23 = 128$$

$$\frac{119}{7} = 0 \\ \text{In 1996} \quad \begin{array}{ccccc} \text{Jan} & \text{Feb} & \text{Mar} & \text{Apr} & \text{May} \end{array} \quad \begin{array}{c} \text{June} \end{array}$$

$$3 + 1 + 3 + 2 + 3 + 2 = \frac{14}{7} = 0 \text{ odd day}$$

So 30th June 1996 was Sunday.

$$8.(c) \quad \text{odd days up to 31 Dec. 2007} = 7 = 7 + 1 = \frac{89}{7}$$

$$\text{In 2008} \quad \begin{array}{ccccc} \text{Jan} & \text{Feb} & \text{Mar} & \text{Apr} & \end{array}$$

$$3 + 1 + 3 + 3 = 10 + 1 = \frac{11}{7} = 4 \text{ odd day}$$

So 17th April 2008 was Thursday.

9.(a)

$$\begin{array}{cccccccccc} 19 \text{ March} - & 92 & 93 & 94 & 95 & 96 & 97 & 98 & 99 \\ & \diagup & \diagup & \diagdown & \diagup & \diagdown & \diagup & \diagdown & \diagup \end{array}$$

$$\frac{8}{7} = 1 \text{ odd day}$$

19 March March + April

$$1 + 5 + 7 = \frac{13}{7} = 6 + 1 = \frac{7}{7} = 0 \text{ odd days}$$

So 7th April 1999 was Monday.

10.(d) As we don't know whether it is a leap year or non leap year so we can find about February so we can't determine number of days.

11.(a) As we don't know about the year but here February is not included so we can easily find out the days.
So total days from 29 June to 18 Sept = 81

12.(e) 14 Nov =

$$\begin{array}{cccc} 1999 & 2000 & 2001 & 2002 \\ \diagup & \diagup & \diagup & \diagup \\ 2 & 1 & 1 & \end{array} = 4 \text{ days}$$

$$\begin{array}{cccc} 14 \text{ Nov} & - & 14 \text{ Dec.} & 14 \text{ Jan} & 14 \text{ Feb} \\ \diagup & & \diagup & \diagup & \diagup \\ 2 & & 3 & 3 & \end{array} = 8 \text{ days}$$

$$\text{Total odd days} = \frac{12}{7} = 5 \text{ odd day}$$

So 14 Feb 2003 was on Monday.

$$13.(e) \quad \text{Mirror Time} = 12:00 - \text{Actual Time} \\ = 12:00 - 9:48 = 2:12$$

$$14.(a) \quad \text{Angle} = \frac{11}{2} \text{ Minutes} - 30 \times \text{hours}$$

$$= \frac{11}{2} \times 35 - 30 \times 8 = \frac{385 - 240}{2} = \frac{145}{2} = 72\frac{1}{2}$$

$$15.(d) \frac{49}{7} = 0 \text{ odd day}$$

So after 49 days it will be Monday.

16.(d) If its a leap year then it will be Saturday and if it is a non leap year then it will be Friday.

$$\begin{array}{cccccccc} 97 & 98 & 99 & 00 & 01 & 02 & 03 \\ \diagup & \diagup & \diagup & \diagup & \diagup & \diagup & \diagup \\ 1 & 1 & 1 & 2 & 1 & 1 & \end{array} = 7$$

17.(b)

So 2003 has the same calendar as that of 1997.

$$18.(b) \quad \text{Mirror time} = 12:00 - \text{Actual time}$$

$$5:18 = 12:00 - \text{Actual time},$$

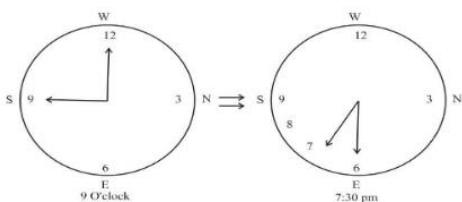
$$\text{So Actual time} = 6:42$$

$$\frac{95}{2} = \frac{11}{2} \times 25 - 30 \times h = 30h = \frac{180}{2}, h = 3$$

19.(c) So time is 3 : 25

20.(e) *Angle*

$$= \frac{11}{2} \times 38 - 30 \times 2 = \frac{418 - 120}{2} = \frac{298}{2} = 149^{\circ}$$



21.(d)
Minute hand will point towards east.

22.(c) 15 Aug 1947

No. of odd days = No. of complete year + No. of Leap year + Odd days of Months.

$$= (1946 - 1900) + 11 + 3 + 0 + 3 + 2 + 3 + 2 + 3 + 1 \\ = 74$$

Now $74 \div 7 = 4$ (odd days)

on 31 Dec 1946 it was Monday

So, Monday + 4 = Friday.

23.(a) No. of odd days 13 Jan. 2012 – 17 June 2012

Odd	Jan	Feb	Mar	Apr	May	June
days	18	29	31	30	31	17
=						

$$= 156$$

Now $156 \div 7 = 2$ (odd days)

So Friday + 2 = Sunday.

24.(b) June have 5 Mondays

Ie 30th June – Monday 1st June – Sunday

25.(c) Dec & Sept Have same Calander.

26.(b) $1900/4 = 475$ (leap year).

27.(a) on 31 Dec. 2000 – Sunday

No. of odd days = No. of complete year + No. of Leap year + Odd days of Months.

$$= 12 + 3 + 13$$

$$= 28$$

So $28 \div 7 = 0$ (odd days)

on 13 Jan 2013 it will be Sunday.

28.(c) on 31 Dec. 2000 – Sunday

Aniket born on 24 Oct 2010

18 year on 24 Oct 2028

No. of odd days for 24 Oct 2028 is

no. of odd days = No. of complete year + No. of Leap year + Odd days of Months.

$$= 27 + 6 + (3+1+3+2+3+2+3+3+2+3) \text{ till 24 Oct.}$$

$$= 27 + 6 + 25$$

$$= 58$$

No. of odd days = $58 \div 7 = 2$ (odd days)

On 24 Oct. 2028 day is Sunday + 2 = Tuesday.

29.(d)

Day	month	year
03	July	1981

= +

18	5	13
21	12	1994

on 21 – Dec. 1994 it was Wednesday.

30.(d) Feb of leap year.

07 Ranking

1.(a) 8 6 6 9 4 6 8 7 4 6 9 7 8 6 7 8 7 4 3 2 6 7 8 7

2.(d) 1 8 4 5 7 8 3 1 6 8 2 4 3 2 8 4 6 2 7 8 6 1 4 2 8 7 3 4 1 2 6
8 5 2 8 4

3.(b) 8 5 2 8 7 5 3 7 7 8 4 3 4 8 9 5 3 8 7 8 2 5 0 7 8 5 3

4.(b) 2 7 1 6 8 7 3 5 3 7 3 1 8 7 1 7 3 4 5 1 6 7 5

5.(b) 3 5 7 3 2 4 9 1 2 6 7 9 1 6 4 3 2 8 9 1 4 3 8 3 2 5 6 9 1 3 9
5
8 2 0 4 8 9 1 6 3

6.(a) 4, 8, 3, 0, 7, 9, 3, 7, 13, 11, 5, 0, 1, 2, 6

The sixth number from the left is 9. The 3rd number to the right of 9 is 13.

7.(e) The given sequence may be analysed as under :

4 / 45 / 453 / 4531 / 45312 / 45 / 453 / 453

Following the above sequence, the next number is '1' which stands for 'Win'.

8.(c) Clearly, the student will have to relax down at the places marked by boxes :

1 2 3 4 2 3 1 4 4 3 2 2 1 2 4 3 1 4 4 1 2

9.(c) Let S and B denote Scorpio and Bike respectively. Then, the sequence of parking is

S B S B B S B B B S B B B B S B B / B B S B B B B B B S B B
B B B B B S

The above sequence has been divided into two equal halves by a line.

Clearly, number of Bikes in second half of the line = 15.

10.(b) Each time we order 1, 2 or 3, one fruit is added to the basket but whenever we order 4, two fruits are removed from it.
 \therefore Number of fruits in the basket at the end of the given order sequence

= Number of 1s + Number of 2s + Number of 3s – 2 × (Number of 4s)

$$= 6 + 6 + 7 - 2 \times 4 = 19 - 8 = 11$$

11.(b) Each time we order 2, one Kiwi is added to the basket but each time 4 is ordered, one

Kiwi is removed from it.

\therefore Required number = Number of 2s – Number of 4s = 6 – 4 = 2.

12.(c) Each time we order 1, one Orange is added to the basket but each time 4 is ordered, one
Orange is removed from it.

\therefore Required number = Number of 1s – Number of 4s = 6 – 4 = 2

13.(d) The new sequence becomes 5 4 7 6 3 9 4 2 3 1
Counting from right to left, the sixth digit is 9.

14.(c) The new number formed after rearrangement is 5 4 7 2 9 3 8 0

Clearly, the third digit to the left of 3 is 7.

15.(e) The new number formed after rearrangement is 2 5 4 6 9 8 0 3

The fifth digit from the right end is 6. The second digit to the right of 6 is 8.

16.(a) The new number formed after rearrangement is 6 5 4 3 0 8 1 2 7 9

The eighth digit from the left end is 2. The third digit to the left of 2 is 0.

17.(b) Required difference = $(8 + 6 + 2) - (7 + 5 + 1) = 16 - 13 = 3$

18.(a) The new number formed is 63547.

\therefore Required sum = $(6 + 3 + 5 + 4 + 7) = 25$.

19.(b) The numbers are 491, 492, 493, 494, 495, 496, 497, 498, 499.

Original Number	2 1 3 6 5 4 9 8 7
Number formed by arranging Digits in ascending order	1 2 3 4 5 6 7 8 9

Clearly, there are three such digits

21.(a)

Original Number	5 8 7 2 9 6 3 4 1
Number formed by arranging Digits in descending order	9 8 7 6 5 4 3 2 1

There are four such digits.

22.(b) The given number is : 7 5 1 4 6 3 2.

Arranging the digits in descending order, we get : 7 6 5 4 3 2 1. We have the following four pairs of digits. Satisfying the given conditions :

Digits in given number	7 5 1 4
Digits in descending order	7 6 5 4

23.(c) The given number is : 84153726.

Arranging the digits in ascending order, we get : 12345678 We have the following 4 pairs of digits, satisfying the given conditions:

{1,6},{1,3},{5,7},{3,7}.

24.(b) The 2nd, 6th and 9th digits of the number 147682593 are 4, 2 and 3 respectively.

The perfect square of a two-digit number, formed using these digits, is 324.

And, $324 = 18^2$. Required number is 18 and units digit is 8.

25.(a) The 2nd, 4th and 7th digits of the number 793142658 are 9 1 and 6 respectively. The perfect square of a two-digit odd number, formed using these digits, is 961. And, $169 = 13^2$ So, the required odd number is 13. Clearly, its second digit is 3.

Original number 863	984	275	358	479
New Number 348	469	552	833	954

The new numbers arranged in descending order are : 954, 833, 552, 469, 348.

Clearly, the second largest number is 833, corresponding to which the original number is 358.

Question 27 to 30.

Original number	614	827	593	956	249
New Number	416	728	395	659	942

27.(c) The new numbers, arranged descending order are : 942, 728, 659, 416, 395.

The third number from the top is 659 and its middle digit is 5.

28.(d) Original numbers in descending order : 956, 827, 614, 593, 249

New numbers in descending order : 942, 728, 659, 416, 395

Original numbers corresponding to

New numbers in descending order : 249, 827, 956, 614, 593

Clearly, 827 retains the same position in both cases.

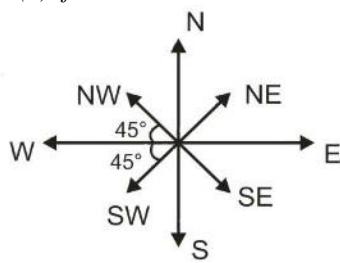
29.(c) The second highest new number is 659. Its third digit is 9.

30.(c) The digit 2 comes at the ten's place in numbers from 120 to 129; 220 to 229; 320 to 329; 420 to 429; 520 to 529; 620 to 629; 720 to 729; 820 to 829 and 920 to 929.

Required number = $10 \times 9 = 90$.

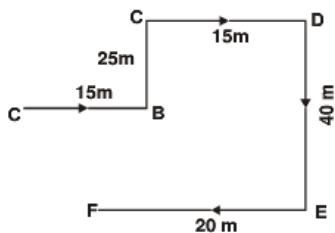
08 Direction Sense Test

1.(c) If East becomes N.W. and North becomes S.W.



So N.E. become South.

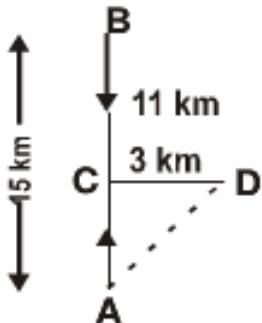
2.(d) Rohit turns towards right from north direction. So, he walks 15 m towards east upto B, turns left and moves 25 m upto C, turns right and goes 15 m upto D. At D, he turns to right towards the south and walks 40 m upto E. Next, he again turns to right and walks 20 m upto F, which is his final position. F is to



the South-east of A. So, he is the the south-east from his starting point. Hence, the answer is (d)

3.(d) Clearly, Raj moves from A 15 km north wards upto B, then moves 11 km southwards upto C, turns towards East and walks 3 km upto D.

Then, $AC = (AB - BC) = (15 - 11) = 4 \text{ km}$; $CD = 3 \text{ km}$
So, Raj's distance from starting point A = $\sqrt{AC^2 + CD^2} = \sqrt{4^2 + 3^2} = 5 \text{ km}$.

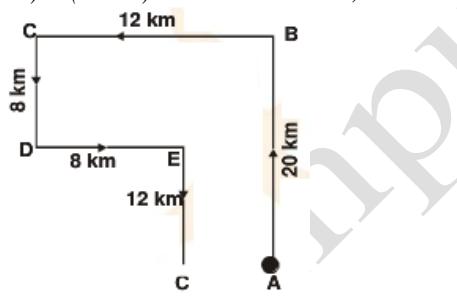


Also, D is to the North-east of A. Hence, the answer is (D)

4.(c) Clearly, Mr. Roy drove 20 km from A to B northwards and then 12 km from B to C towards west. He then moves 8 km southwards from C to D and 8 km eastwards upto E.

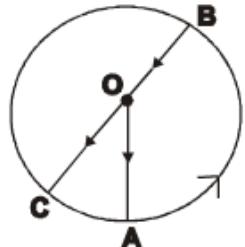
Finally, he turned right and moved 12 km upto F.

\therefore A and F lie in the same straight line and F lies to the west of A. So, Mr. Roy distance from the straight point A = AF = $(BC - DE) = (12 - 8) \text{ km} = 4 \text{ km}$. Hence, the answer is (C)



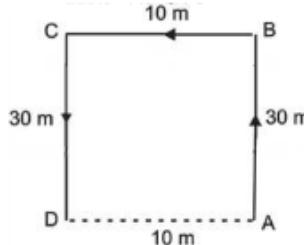
5.(c) Since standing on his head _Shobhit's face is towards South, therefore his right hand will be in the direction of East.

6.(c) The movements are indicated in fig.



(O to A, A to B and B to C). Clearly, C lies to the South-west of O.

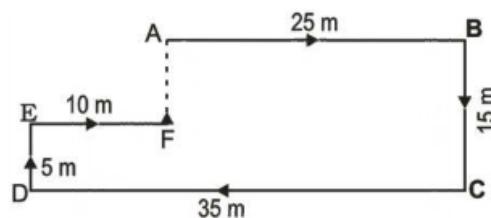
7.(c) The movement of Raina are as shown in fig. (A to B, B to C and C to D)



Clearly, ABCD is a rectangle and so $AD = BC = 10 \text{ m}$ Thus, D is 10 m to the west of A.

8.(c) The movements of the man from A to F are as shown in fig. 13. Clearly,

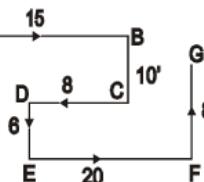
$$DC = AB + EF$$



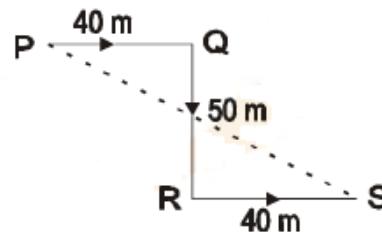
\therefore F is in line with A

Also, AF = $(BC - DE) = 10 \text{ m}$

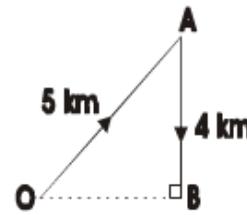
9.(d) The movements of the rat from A to G are as shown in fig. Clearly, it is finally walking in the direction FG i.e. North



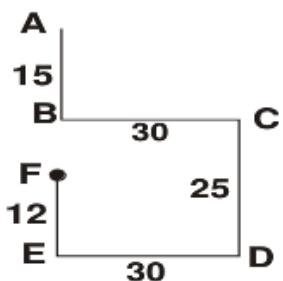
10.(c) The movements of Vasant are as shown in fig. (P to Q, Q to R and R to S). Clearly, his final position is S which is to the South-east of the starting point P.



11.(b) The villager moves from his village at O to his uncle's village at A and therefore to his father-in-law's village at B.

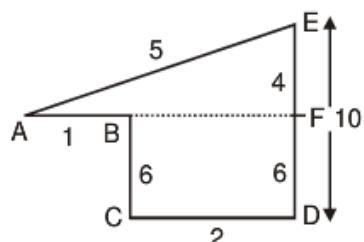


12.(c) The movements of Dhruv from A to F are as shown in fig. Clearly, Dhruv's distance from starting point



13.(c) The movements of the man are as shown in fig. (A to B, B to C, C to D, D to E)

Clearly, DF = BC = 6 km



$$EF = (DE - DF) = (10 - 6) \text{ km} = 4 \text{ km}$$

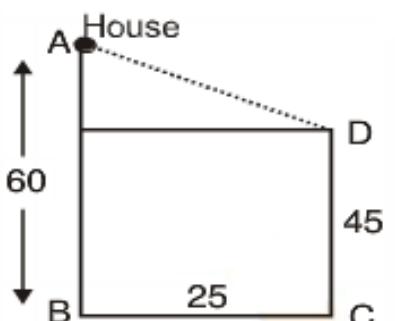
$$BF = CD = 2 \text{ km}$$

$$AF = AB + BF = AB + CD = (1 + 2) \text{ km} = 3 \text{ km}$$

\therefore Man's distance from starting point A

$$= AE = \sqrt{AF^2 + EF^2} = \sqrt{3^2 + 4^2} = \sqrt{25} = 5 \text{ km}$$

14.(a) The movements of Meenu are as shown in fig. Clearly, she is finally moving in the direction DA



i.e. North west.

15.(d) All the six are standing in the following order.

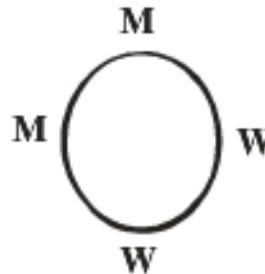
• • • • •
A E C F B D

16.(d) The position of six families is as follows : D B F C E A
Hence F's next door neighbours are B and C.

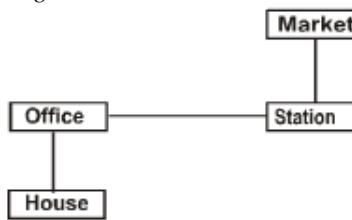
17.(d) The town of Rajan (R) is west of Khajuri (K). Slkanpur (S) is east of Rajan but west of Khajuri, Tekari (T) is east of Antri (A) but west of Slkanpur and Rajan. Combining all the arrangements, we get the sequence as A, T, R, S, K.. So, farthest west is Antri.

18.(d) No lady is facing east means a man faces east. Persons opposite are not of same sex. So, a woman will be facing west.

Again, a man faces south, So, opposite to him will be a woman facing north.



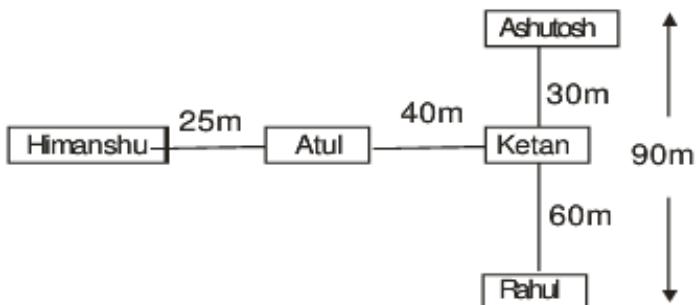
19.(c) The positions of various places are as shown in the diagram.



Clearly, the market is to the north-east of office.

Questions 20-21

Clearly, the arrangement of boys is as shown



20.(e) Clearly, Atul is to the left of Ketan and Ashutosh is to the north-east of Atul.

21.(c) Required distance = NA + AK + KD + DP = (25 + 40 + 60 + 90) = 215 m

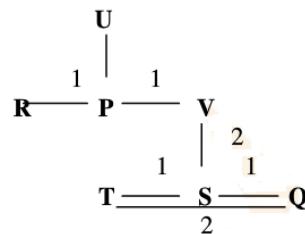
22.(d)

23. (c)

24. (a)

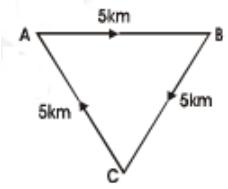
25. (d)

26.(b)

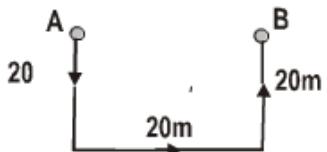


27.(a) Following the instructions as given in the questions, it is seen that finishing point and

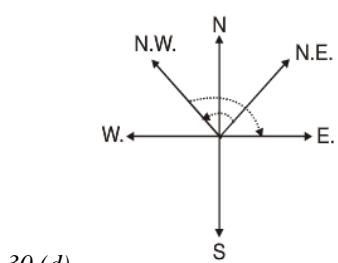
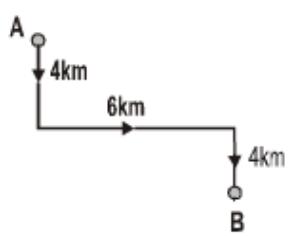
end point are the same.



28.(e) Mr. Verma finally reaches a point which is 20 m from the starting point and is in East direction



29.(b) B is the finishing point and is 10 km from the point A. The Aerial distance of A from B is 10 km calculated as below.



30.(d)

09 Eligibility Test

We shall mark the conditions fulfilled by “✓” those not fulfilled by “✗” and those about which information is not available by ?

Questions 1-10

Candidate	Cult. Coll.	Age (yrs)	Unpaid Loan Rec.	Total Lands in each land with bank (R.S.)	F.D.	Condition fulfilled
1. (d) Ram	7 >8	49+	Nil	Yes -	- ✓ ✓ ✓ ✓ ✓ - ✓	
2. (e) Mohit	4 9	47+	Nil	Yes 2 -	- ✓ ✓ ✓ ✓ ✓ - ✓	
3. (c) Yatendra**	6 >5	?	Nil	Yes 2 -	- ✓ - ✗ ✓ ✓ - ✓	
4. (e) Bhupendra	3 8	49+	Nil	Yes 2 -	- ✓ ✓ ✓ ✓ ✓ - ✓	
5. (a) Rajan	6 9	50+	Nil	Yes -	- ✓ - ✓ ✗ ✓ - ✓	
6. (a) Bablu	4 8	49+	Nil	Yes 1 6 lacs	✗ ✗ ✓ ✓ ✓ ✓ - ✓	
7. (c) Jatin	9 >8	49+	?	Yes 2 -	- ✓ ✓ ✓ - ✓	
8. (b) Rajesh	7 8	48+	4 lacs	Yes - 5 lacs	- ✓ ✓ ✓ ✓ ✓ ✓	
9. (a) Mohan *	? 8	48+	5 lacs	Yes - 2 lacs	? - ✓ ✓ ✗ ✗ ✗ ✓	
10. (d) Aasif	7 9	48+	Nil	Yes -	- ✓ ✓ ✓ ✓ - ✓	

* In case of Mohan, from the given information, we know that Mohan has an outstanding loan of Rs. 5 lakhs with the bank and an F.D. of less than Rs. 4 lakhs. So, he cannot be granted advance even if he has adequate cultivated land.

** In case of Yatendra, we need to know whether he can pay collateral of more than Rs. 8 lakhs or not and also his age.

Questions 11-20

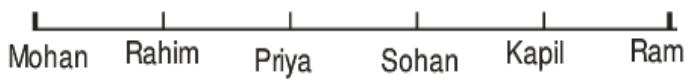
	Candidate	Marks in C.E./M.C.A.	Marks in Sel. Test	Marks in interview	Age (yrs)	Marks in Elec. Engg.	Exp. (Yrs) as S.A.	Condition fulfilled
								(i) (A) (ii) (B) (iii) (iv)
11.(e)	Neha	78%	> 60%	> 60%	?	-	- ✓ - ✓ - ✓ ?	
12.(a)	Rohini	68%	62%	56%	24+	-	- ✓ - ✓ - ✓ ✓ ✓	
13.(b)	Sachin	-	58%	52%	31+	76%	9+ ✓ ✓ - ✓ ✓ ✓	
14.(d)	Rishi	-	56%	56%	29+	71%	- ✓ ✓ - ✓ ✓ ✓	
15.(b)	Aman	✗	66%	52%	29+	✗	- ✗ ✗ ✓ - ✓ ✓	
16. (e)	Aditi	68%	48%	58%	?	-	? ✓ - ✗ ? - ✓	
17.(a)	Rahul	76%	72%	65%	26+	-	1+ ✓ - ✓ - ✓ ✓ ✓	
18.(c)	Rajeev	67%	45%	52%	29+	-	2+ ✓ - - ✓ ✓ ✓	
19.(d)	Sujoy	-	64%	58%	29+	82%	- ✓ ✓ - ✓ ✓ ✓	
20.(b)	Saurabh	✗	70%	76%	27+	✗	- ✗ ✗ ✓ - ✓ ✓	

Questions 11-30

	Candidate	Marks at grad.	Age (yrs)	Experience in Pers. Dept.	Marks in PG diploma in Mgmt.	Marks in interview	Exp. As A.P. Mgr.	Condition fulfilled
							(A) (i) (B) (C) (ii)	
21. (a)	Jatin	63%	29+	4 yrs.	60%	50%	- ✓ - ✓ ✓ -	
22. (c)	Mohita	57%	30+	?	68%	60%	- - ✓ ✓ - -	
23. (e)	Nitika	67%	29+	-	60%	65%	3 yrs. ✓ - ✓ - ✓	
24. (a)	Dimple	65%	31+	6 yrs.	60%	55%	- ✓ - ✓ ✓ -	
25. (c)	Nishant	63%	?	-	60%	50%	2 yrs. ✓ - - ✓	
26. (c)	Nidhi*	?	26+	5 yrs.	65%	50%	- - - ✓ ✓ -	
27. (a)	Kunal	61%	33+	4 yrs.	60%	55%	- ✓ - ✓ ✓ -	
28. (b)	Rajendra	50%	31+	4 yrs	62%	56%	- ✗ ✗ ✓ ✓ -	
29. (d)	Lakhan	58%	28+	5 yrs	66%	52%	- - ✓ ✓ ✓ -	
30. (b)	Rohit	55%	30+	5 yrs	62%	50%	- ✗ - ✓ ✓ -	

10 Sitting Arrangement

Directions (Q. 1 - 3) : On the basis of the information as given in the questions, we have the arrangement of standing as per figure :



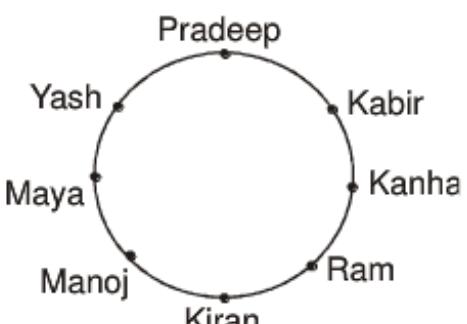
1. (a) Priya stands between Rahim and Sohan

2. (b) From the figure, it is clear that Mohan and Ram occupy the extreme ends of the row,

3. (c) Sohan stands between Priya and Kapil.

Ans. (4-9)

4. (a)



5. (e)

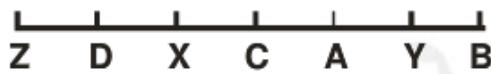
6. (d)

7. (d)

8. (c)

9. (a)

Ans. (10-12) :

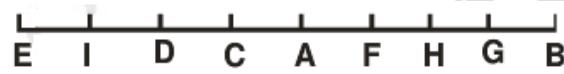


10. (c) Letters Z is to the second left of letter X

11. (e) Letter C is in the middle of the letter arrangement.

12. (c) Letters A and B are just adjacent to Y.

Ans. (13-15) :

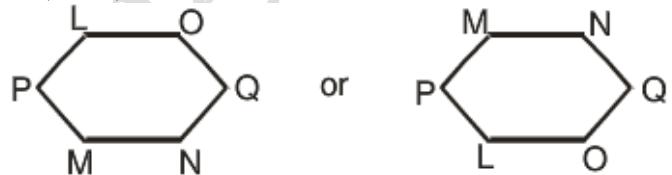


13. (c) A is sitting in the middle of the row.

14. (d) E is at the other end of the row

15. (b) There is one person between C and F.

Ans. (16-20)



16. (a) Clearly, O and Q, M and P, N and Q are all neighbours while L and Q are not.

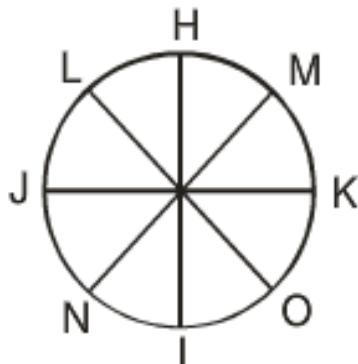
17. (b) P is two sides away from O in one direction and N is two sides away from O in the other direction

18. (c) M, N, Q are sitting in consecutive positions

19. (c) O and P are the neighbours of L.

20. (d) Q is seated opposite to P.

Ans. (21-23) :



21. (b) From the figure, it is clear that M is sitting to the left of H.

22. (d) L is facing O.

23. (a) N and O are immediate neighbours of I.

Ans. (24-27) :

24.(c)



25.(b)

26.(b)

27.(e)

Ans. (28-30) :



28.(a) P is sitting between Q and R.

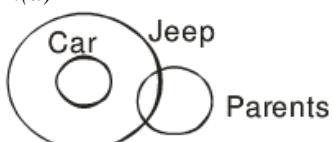
29.(a) P is sitting at the center of the row.

30.(d) Q is sitting second from the left.

11 Syllogism

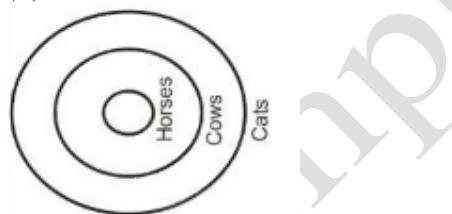
1.(a) Converting of 'some pens are rubbers' is some rubbers are pens, so have only conclusion I follows.

2.(d)



here neither I nor II follows

3.(a)



Here only conclusion I follows.

4.(d) Here neither I nor II follows.

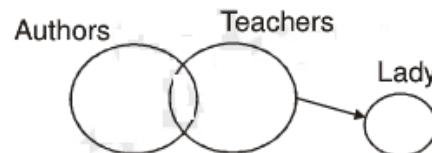
5.(d) Here neither I nor II follows.

6.(a) Conversion of 'all mobiles are chocolates' is 'some chocolates are mobiles'.

7.(d) Here neither I nor II follows.

8.(c) Conclusion I & II are complementary pair.

9.(a)

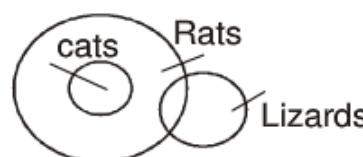


10.(a) Here only conclusion I follows

11.(a) All readers are teachers Conversion some teachers are readers.

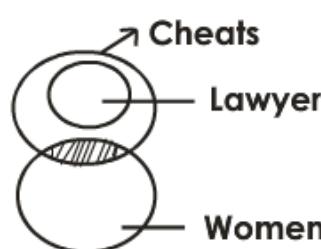
So, here only conclusion I follows

12.(d)



Here neither I nor II follows.

13.(a)



Here only conclusion I follows

14.(a) Here all hill station have a sunset point and Y is a hill station so definitely Y has a sunset point, here only conclusion I follows.

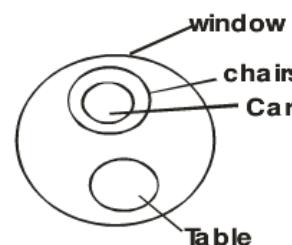
15.(a) Here only conclusion I follows.

16.(c) All cars are chairs. All chairs are windows.

Since both the premises are universal the conclusion must be universal and shouldn't contain the middle term. So, it follows that 'All cars are windows'. Thus, I follows. Also, III is the converse of this conclusion and so it holds. All tables are windows. All chairs are windows. Since the middle term 'windows' is not distributed even once in the premises, no definite conclusion follows.

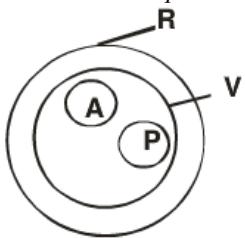
All cars are windows. All chairs are windows.

Again, the middle term 'windows' is not distributed even once in the premises. So, no definite conclusion follows.



17.(e) III is the converse of the third premise and so it holds. All apples are vegetables. All vegetables are rains. The conclusion must be universal affirmative and should not contain the middle term. So, it follows that 'All apples are rains'. Thus I follows.

All pens are vegetables. All vegetables are rains. Clearly, if follows that 'All pens are rains' Thus II follows.



18.(c) All girls are trees. Some trees are roads.

Since the middle term is not distributed even once in the premises, so no definite conclusion follows.

Some trees are roads. All roads are mountains.

Since one premise is particular, the conclusion must be particular and should not contain the middle term.

So it follows that 'Some trees are mountains'. III is the converse of this conclusion follows.

19.(b) Some hills are rivers. Some rivers are rings.

Since both the premise is particular, the conclusion must be particular, no definite conclusion follows.

Some rivers are rings. All rings are roads.

Since one premise is particular, the conclusion must be particular and shouldn't contain the middle term. So, it follows that 'Some rivers are roads'.

I is the converse of this conclusion and so it holds.

Some hills are rivers. Some rivers are roads.

Again, since both the premises are particular, no definite conclusion follows.

20.(a) Since each combination of premises has two particular premises, so no definite conclusion follows

21.(e) All trees are flowers. No flowers is leaf.

Since both the premises are universal and one premise is negative, the conclusion must be universal negative (E type) and should not contain the middle term.

So, it follows that 'No tree is leaf'. II is the converse of this conclusion and so it follows.

All branches are leaves. No flower is leaf.

Since both the premises are universal and one premise is negative, the conclusion must be universal negative (E type) and should not contain the middle term.

So, it follows that 'No branch are flower'.

All trees are flowers. No branch is tree

As discussed above, it follows that 'No tree is branch'. So, III follows.

Hence, both II and III follow.

22.(a) All tigers are lions. No dog is lion.

Since both the premises are universal and one premise is negative, the conclusion must be universal negative (E type) and should not contain the middle term. So, it follows that 'No tiger is dog'.

Some cats are dogs. No dog is lion.

Since one premises is particular and other negative, the conclusion must be particular negative (O type) and should not contain the middle term. So, it follows that 'Some cats are not lions'

Some cats are dogs. No tiger is dog.

Since one premises is particular and other negative, the conclusion must be particular negative (O type) and should not contain the middle term. So, it follows that 'Some cats are not tigers'.

23.(b) Some tables are chairs. No chair is soap.

Since one premises is particular and other negative, the conclusion must be particular negative (O type) and should not contain the middle term. So, it follows that 'Some tables are not soap'.

No chair is soap. All soaps are cats.

Since the middle term is distributed twice, the conclusion must be particular. Since one premise is negative, the conclusion must be negative. So, it follows that 'Some chairs are not cats'. Since I and II involve the same terms and form a complementary pair, so either I or II follows.

24.(e) Some pens are books. All school are books

Since the middle term 'books' is not distributed even once in the premises, so no definite conclusion follows.

Some colleges are schools. All schools are books.

Since one premise is particular, the conclusion must be particular and should not contain the middle term. So, it follows that 'Some colleges are books'. Thus, III follows

Some pens are books. Some colleges are books

Since both the premises are particular, no definite conclusion can be drawn.

Hence, only III follows

25.(c) All tigers are trees. No tree is bird

Since both the premises are universal and one premise is negative, the conclusion must be universal negative (E-type) and should not contain the middle term.

So, it follows that 'No tiger is bird'.

III is the converse of this conclusion and so it holds.

No tree is bird. Some birds are rains.

Since one premise is particular and the other negative, the conclusion must be particular negative (O-type) and should not contain the middle term. So it follows that 'Some trees are not rains'

Since I and II also involve the same terms and form a complementary pair, so either I or II follows.

26.(a) All flowers are hills. Some hills are trees.

Since the middle term 'hills' is not distributed even once in the premises, no definite conclusion follows.

Some hills are trees. Some angles are trees.

Since both the premises are particular, no definite conclusion can be drawn.

27.(e) All trains are buses. No houses is bus

Since both the premises are universal and one premise is negative, the conclusion must be universal negative (E type) and should not contain the middle term. So, it follows that 'No train is houses'. Thus, III follows.

All boats are houses. No houses is bus

As discussed above, it follows that 'No boat is bus' II is the converse of this conclusion and so it holds.

All trains are buses. No boat is bus.

Again, it follows that 'No train is boat'. I is the converse of this conclusion and so it, holds.

28.(b) Some rabbits are lions. No horse is lion

Since one premise is particular and the other negative, the conclusion must be particular negative (O-type) and should not contain the middle term.

So, it follows that 'Some horses are not rabbits'.

All horses are chairs. No horses is lion

Since the middle term 'horses' is distributed twice, the conclusion must be particular. Since one premise is negative, the conclusion must be negative. So, it follows that 'Some chairs are not lions.' Since I and III involve the same terms and form a complementary pair, so either I or III follows

29.(c) Since each combination of premises shall contain two particular premises, no definite conclusion can be drawn. However, II and III are statements involving the extreme terms of the last two premises and form a complementary pair. Thus, either II or III follows.

30.(c) II is the converse of first premise and so it holds.

Some boxes are pens. Some pens are beads.

Since both the premises are particular, no definite conclusion can be drawn.

Some pens are beads. All beads are rings.

Since one premise is particular, the conclusion must be particular and should not contain the middle term. So, it follows that 'Some pens are rings'. I is the converse of this conclusion and so it holds.

Some boxes are pens. Some pens are rings.

Since both the premises are particular, no definite conclusion can be drawn.

12 Venn Diagram

1.(c) A song may be classical or pop or of any other type

2.(d) Both Wheat and Sugarcane are the crops

3.(e) Owl is a Bird and Tiger is not related to both of them

4.(c) All the three items are unrelated to one another.

5.(a) Srilanka is in Asia and Colombo is in Srilanka

6.(b) Man share relationship with Lawyer and Doctor.

7.(c) All the three items are unrelated to one another

8.(e) Pencil is Stationery and Powder is not related to both of them

9.(d) Both car and Auto are Vehicles.

10.(a) Year contains Months and Month contains Days.

11.(d) Number 13 represents those rich boys helping family business but are not educated or employed elsewhere because it occupies the space common to circle and rectangle only.

12.(e) No number occupies the space which is common to circle, square and triangle only.

13.(d) Number 10 is present in the space common to circle, square and rectangle, hence represents educated rich boys who help in family business.

14.(e) Number 5 lies on that portion of circle, which is not common to any other figure.

15.(b) Number 3 represents the portion, which is common to triangle and rectangle only. Hence it represents employed boys engaged in family business.

16.(d) Number 20 is common to all the four figures and hence, it can be concluded that 20 families have all the four things.

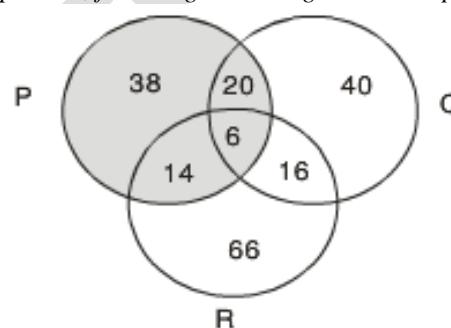
17.(c) Numbers of families having motor cycles are represented by square and total of all the numbers present in square is 188.

18.(e) 100 families have both freeze and TV as it is the sum of numbers present on the portion common to both the circles.

19.(c) Sum of 110, 50, 40 and 25 will represent such families as all these numbers lie on the portion not common to other figure.

20.(b)

Directions (21-26) : On the basis of the information given in question, following Venn-diagram can be prepared.



21.(b) 6 voters were in favor of all the three candidates P, Q and R.

22.(a) The number of voters in favor of P irrespective of Q or R = $38 + 20 + 6 + 14 = 78$

23.(e) Number of voters in favor of Q irrespective of P and R = $40 + 20 + 16 + 6 = 82$

24.(b) Number of voters in favor of R irrespective of P and Q = $66 + 14 + 6 + 16 = 102$.

25.(b) The number of voters in favor of P and Q = 20

26.(d) The number of voters in favor of only one of the candidates = $38 + 40 + 66 = 144$

27.(c) D is common to circle and triangle.
Hence, it represents professors who are also Poets.

28.(c) Z is common to triangle and rectangle.
Hence, Z represents Poets who are also Story writer

29.(b) X represents professors who are also Story writer as it is common in circle and rectangle.

30.(d) B represents story writers only.

13 Puzzle

Solution for (1-5):-

$$S^+ \longleftrightarrow P^-$$

↓

$$Q^+ \longleftrightarrow R^-$$

↓

$$U^+ \Leftrightarrow T$$

Member	Profession
P	Doctor
Q	Business man
R	Teacher
S	Manager
T	Accountant
U	Engineer

1.(d) 2.(c) 3.(c) 4.(d) 5.(a)

(6-9):-

BMW

HUMMER

FERRARI

LAMBORGHINI

ROLLSROYEE

MARCHIUEGO

JAGUAR

6.(d) 7.(b) 8.(e) 9.(a)

Solution for (10-14) :-

	Compulsory	Optional
A+	Civics	English
B+	Civics	History
C+	Civics	Math's
X-	English	Civics
Y+	Geography	Math's
Z+	Math's	Geography

10.(a) 11.(d) 12.(e) 13.(c) 14.(e)

Solution for the question (15-19) :-

A	Punjabi	21 st	poet
B	Telugu	—	drama
C	Punjabi	20 th	poet, novel, drama
D	Telugu	20 th	poet, novel
E	Bengali	20 th	novel, drama
F	Gujarati	18 th	poet

15.(b) 16.(c) 17.(a) 18.(d) 19.(d)

Solution for the question (20-24) :-

Given that —> } One play cricket they are man

One play volleyball

One play badminton

P & S are unmarried women { not play any game}

married couple T+ — R-

Q is brother of R = Q+ = R-

R is female because T & Q are male & P & S are already female which is not married.

Persons	Game
Q+	Cricket
T+	Volleyball
P-	---
S-	---
R-	Badminton

(25-30) :-

There are 3 female.

Earning

V+	CA
U	Doctor
S	Engineer
R	Teacher
P+	Writer
T-	Lawyer (Unmarried)
Q-	Novelist

V+ ↔ Q- {Married}

25.(b) 26.(b) 27.(a) 28.(a) 29.(d) 30.(e)

14 Inference

1.(d) See the sentence —If steel is indeed inwill be doing well. Since price of steel and its demand are rising therefore, it is likely that downstream manufacturing units will perform well in near future. Hence, inference is false. But we are not sure about it, hence probably false.

2.(b) Since the growth in core sector has been termed as —terrific growth, the possibility is that the last few years the core sector has projected modest growth. Hence, the inference is likely to be true, i.e. probably true. [Note that 'downtrend' does not necessarily mean negative growth]

3.(b) The word 'terrific' used in the passage makes the inference probably true.

4.(c) Rising steel prices at present does not necessarily means that the trend will continue during next few months.

5.(a)

6.(d) The passage says that the rules are backed by a machinery —judicial system and executor institutions. So it appears such a machinery is necessary.

7.(b) Rules are necessary if there is interaction. So, it appears, from the tenor of the passage, they are not necessary if there is not interaction.

8.(a) Why is there a need for rules of behavior for human beings ? The assumption is that human beings are susceptible to violate rules. Hence, the inference is definitely true.

9.(a) Why is there a need for rules ? The objective is to ensure smooth and proper functioning of social life. What will happen in the absence of rule ? A state of disorder due to lack of control. Hence, definitely true.

10.(c)

11.(a) Passage clearly says surplus liquidity in the system is the result of historic low interest rates.

12.(c) On the one hand, we are told that —the Indian equity markets are currently attractively poised.....|. on the other hand, the passage ends on a negative note.

13.(d) No explicit relationship has been mentioned. However, low interest rate regime has been treated as a —positive factor

14. (a) See the sentence, —However, despite.....liquidity in the system

15.(b) Passage says about negative growth in Indian equity markets. This factor strengthens the possibility of few takers in the equity market.

16.(e) According to the passage, base effect was not the main cause behind the % growth in exports during 2005-06.

17.(c) The passage does not say anything regarding comparison of the efforts put in by Indian exporters and their counterparts in developed countries.

18.(a) We are told about —recovery in global trade|.

19.(d) Though we do not have figure for the entire year, the 16% growth in the first eight months does not seem to lead us anywhere near this.

20.(d) Robust growth in exports, and happy tidings on the trade front seem to make the inference probably false.

21.(e) See the sentence —One of thelong time|

22.(a) See the sentence —This financial.....by FIIs|

23.(d) Shift in investor portfolios and emerging positive scenario make the inference probably false.

24.(b) See the last part of the passage.

25.(c)

26.(e) Definitely false. The first sentence mentions three avowed goals of primary education: learner achievement apart from access and retention. Note that apart from means in addition no.

27.(a) Definitely true. primary education is, of course, a duty of the government. But the second sentence mentions —investment

in primary education|. This means that primary education is a type of investment too.

28.(b) Probably true. The failure implies that the planners probably did not pay due attention to this aspect.

29.(d) Probably false. The passage neither claims nor contradicts that NCERT is the only such body. But our commonsense tells us that this is more likely to be false.

30.(c) Data inadequate. There has not been any mention of any improvement after 1992.

15 Cause & Effect

1.(a) Reduction in taxes affects the prices of the product. Hence 'B' is the cause and 'A' is its effect.

2.(b) Paying capacity of a customer plays an important role in shopping. Hence 'A' is the cause and 'B' is its effect.

3.(b) Destruction of an oil refinery can create problem in ensuring smooth availability of oils. Hence 'A' is the cause and 'B' is its effect.

4.(a) Withdrawal of grant will increase the financial burden of the government management college, whereas the increase in the number of seats will increase the revenue of the government management college. Hence 'B' is the cause and 'A' is its effect.

5.(d)

6.(e) It can be safely assumed that Party A was earlier in the opposition and has benefited from anti-incumbency. Both the events are consequences of a common cause – bad governance by the ruling party.

7.(b) Since the Professors have gone on strike, the help of outsiders has been sought.

8.(b) seems to have happened as A is a better college. Event B seems to be the result of the falling standard of teaching in college.

9.(b) might have happened because harassment of women is on the rise. While (B) seems to be the result of a change in gender role perception.

10.(b) The loots have led to a demand of improvement in security situation.

11.(e) The two statements have no correlation with each other.

12.(a) Loss of revenue must be the main cause behind Government's decision to stop subsidies.

13.(b) Obviously the media attention is (principally) caused by her alleged affair with MOS for External Affairs. Had she had relations with a common man, she wouldn't have got so much attention.

14.(b) The doubling of turnover is caused by a favorable policy

15.(a) Tectonic activities underneath are the immediate and principal cause for the area being prone to earthquake.

16.(c) Crushing of Iraq is an effect. One of the several causes could be the Global support US got in the war. But this does not give a sufficient condition for victory : it is not the principal cause. [The principal cause could be the US' technological supremacy and advanced weaponry.]

17.(c) India's victory is an effect but merely one persons' good performance does not give sufficient condition for victory. So B does not constitute the principal cause. That all persons played very well may be taken as a sufficient condition and hence as the principal cause but not the performance of merely one players.

18.(e) The two events have no causative link with each other.

19.(c) The award is an effect. The cause of this effect is his success in various races. The cause of his success is his talent and his dedication. Therefore, his dedication is a cause of the award but it is not the immediate cause.

20.(a) Normally, we take hard work to be a sufficient cause for success.

21.(e) There is no link between the two statements. Unless we assure that books of XYZ Publication are necessary for success ; the two statements are uncorrelated. And there is nothing for us to make these assumptions.

22.(a) Since he was planning to form a new party, he got expelled.

23.(b) Lathi-charge was a result of the pelting of stones.

24.(b) Curfew has been imposed because of the rumors

25.(c) The chain of events goes like this : curfew – closure of shops and factories drop in monthly production – drop in annual production. Obviously, curfew is a cause for the drop in annual production but it is not an immediate cause

26.(c) If cleanliness were more valued in North Bihar, still people would have cleaned themselves by an afternoon bath. Early, morning bath must be more of a tradition. Yet B must be a cause of A, else people would not have bothered to take early morning baths. But B is not the principal cause : principal cause is societal tradition.

27.(a) The doctor must have given his advice because of Rani's complaint.

28.(a) B is the cause of A. If you are conversant with current affairs, you know the answers.

29.(b) Since he was expelled, he formed a new party.

30.(a) Activities have gone down because of the curfew.

16 Coded Inequalities

$$\begin{aligned} I.(d) E @ F \rightarrow E \geq F, F \circledcirc G \rightarrow F < G, G \circledcirc H \rightarrow G < H \\ \therefore E \geq F < G < H \end{aligned}$$

- I. $E @ H \rightarrow E \geq H$ (False)
II. $G = H$ (False)

2.(e)

$$\begin{aligned} I. @ I \rightarrow J < I, K \circledcirc L \rightarrow K < L, I = K \\ \therefore J < I = K < L \\ I. L @ J \rightarrow L > J \text{ (True)} \\ II. I \circledcirc L \rightarrow I < N \text{ (True)} \end{aligned}$$

3.(d)

$$\begin{aligned} O @ M \rightarrow O > M, N \circledcirc R \rightarrow N \leq R, M = N \\ \therefore O > M = N \leq R \\ I. O @ R \rightarrow O > R \text{ (False)} \\ II. M = R \text{ (False)} \end{aligned}$$

$$4.(c) A @ B \rightarrow A \geq B, R \circledcirc S \rightarrow R \leq S, S = B$$

- $\therefore A \geq B = S \geq R$
I. $S \circledcirc A \rightarrow S < A$ (depends)
II. $S = A$ (depends)

$$5.(b) X \circledcirc Y \rightarrow X \leq Y, K = X, Y \circledcirc L \rightarrow Y \leq L, H @ Y \rightarrow H \geq Y$$

$$\therefore K = X \leq Y \leq L$$

$$H \geq Y$$

- I. $Y = L$ (false)
II. $X \circledcirc H \rightarrow X \leq H$ (True)

$$6.(a) P \# Q \rightarrow P > Q, Q \% H \rightarrow Q \geq H \text{ and } H @ F \rightarrow H < F$$

- $\therefore P > Q \geq H < F$
I. $H @ P \rightarrow H < P$ (True)
II. $F \circledcirc P \rightarrow F = P$ (False)

$$7.(e) A \$ B \rightarrow A \leq B, B @ M \rightarrow B < M \text{ and } J \% M \rightarrow J \geq M$$

- $\therefore A \leq B < M \leq J$
I. $A @ M \rightarrow A < M$ (True)
II. $B @ J \rightarrow B < J$ (True)

$$8.(b) F \circledcirc D \rightarrow F = D, D \# V \rightarrow D > V \text{ and } V @ P \rightarrow V < P$$

- $\therefore F = D > V < P$
I. $F \circledcirc D \rightarrow F = P$ (False)
II. $V @ F \rightarrow V < F$ (True)

$$9.(d) P \$ R \rightarrow P \leq R, R @ Q \rightarrow R < Q \text{ and } Q \% H \rightarrow Q \geq H$$

- $\therefore P \leq R < Q \geq H$
I. $P \$ Q \rightarrow P \leq Q$ (False)
II. $P \circledcirc H \rightarrow P = H$ (False)

$$10.(a) A \circledcirc B \rightarrow A = B, B \# W \rightarrow B > W \text{ and } W \% R \rightarrow W \geq R$$

- $\therefore A = B > W \geq R$
I. $A \# R \rightarrow A > R$ (True)
II. $B \% R \rightarrow B \geq R$ (False)

$$11.(c) A @ L \rightarrow A < L, S \oplus P \rightarrow S > P, A = N, S @ N \rightarrow S \leq N$$

- $\therefore P < S \leq N = A < L$
I. $A \oplus S \rightarrow A > S$
II. $A = S$ Here either I or II is true

12.(a) $B @ N \rightarrow B < N, T = Q, R \odot N \rightarrow R \geq N, T @ R \rightarrow T \leq R$

$$\therefore B < N \leq R \geq T = Q$$

I. $B @ R \rightarrow B < R$ (true)

II. $N = Q$ (false)

13.(c) $X @ Y \rightarrow X < Y, D @ E \rightarrow D \leq E, C = D, C \odot Y \rightarrow C \geq Y$

$$\therefore X < Y \leq C = D \leq E$$

I. $E \oplus Y \rightarrow E > Y$

II. $Y = E$ Here either I or II is true

14.(b) $M \oplus V \rightarrow M > V, Y = P, Z @ Y \rightarrow Z < Y, P \odot M \rightarrow P \geq M$

$$\therefore Z < Y = P \geq M > V$$

I. $Z = M$ (false)

II. $P \oplus Z \rightarrow P > Z$ (true)

15.(b) $R \odot A \rightarrow R \geq A, U \oplus L \rightarrow U > L, A = H, H \odot U \rightarrow H \geq U$

$$R \geq A = H \geq U > L$$

I. $H = L$ (false)

II. $L @ H \rightarrow L < H$ (true)

16.(a) $A @ B \rightarrow A \geq B, M \# N \rightarrow M \leq N, N ** B \rightarrow N < B$

$$\therefore A \geq B > N \geq M$$

I. $A \$ M \rightarrow A > M$ (true)

II. $N \# A \rightarrow N \leq A$ (false)

17.(d) $P ** Q \rightarrow P < Q, F @ Y \rightarrow F \geq Y, P \$ F \rightarrow P > F$

$$\therefore Y \leq F < P < Q$$

I. $Q @ Y \rightarrow Q \geq Y$ (false)

II. $Y \# P \rightarrow Y \leq P$ (false)

18.(b) $A ** Q \rightarrow A < Q, S \$ T \rightarrow S > T, A @ T \rightarrow A \geq T$

$$\therefore S > T \leq A < Q$$

I. $S * A \rightarrow S = A$ (false)

II. $T ** Q \rightarrow T < Q$ (true)

19.(e) $P * Q \rightarrow P = Q, X \$ W \rightarrow X > W, P ** W \rightarrow P < W$

$$\therefore X > W > P = Q$$

I. $W \$ Q \rightarrow W > Q$ (true)

II. $P ** X \rightarrow P < X$ (true)

20.(c) $G \$ H \rightarrow G > H, J \# K \rightarrow J \leq K, H * K \rightarrow H = K$

$$\therefore G > H = K \geq J$$

I. $H \$ J \rightarrow H > J$ [depends]

II. $J * H \rightarrow J = H$ [depends]

Here either I or II is true

21.(c)

$K @ V \rightarrow K \leq V, M = Z, K \odot Z \rightarrow K \geq Z, F \oplus V \rightarrow F > V$

$$\therefore M = Z \leq K \leq V < F$$

I. $M = K$ [depends]

II. $K \oplus M \rightarrow K > M$ [depends]

Here either I or II is true

22.(e) $A @ R \rightarrow A < R, E \oplus D \rightarrow E > D, F \odot R \rightarrow F \geq R, D = F$

$$\therefore A < R \leq F = D < E$$

I. $A @ E \rightarrow A < E$ (true)

II. $E \oplus F \rightarrow E > F$ (true)

23.(a) $M = X, L @ O \rightarrow L < O, N \oplus M \rightarrow N > M, L @ X \rightarrow L \leq X$

$$\therefore N > M = X \geq L > O$$

I. $N \oplus L \rightarrow N > L$ (true)

II. $X @ O \rightarrow X < O$ (false)

24.(c) $A \oplus O \rightarrow A > O, R \odot A \rightarrow R \geq A, P = R, J @ P \rightarrow J < P$

$$\therefore J < P = R \geq A > O$$

I. $P = A$ [depends]

II. $P \oplus A \rightarrow P > A$ [depends]

Here either I or II is true

25.(e) $P @ Q \rightarrow P \leq Q, K @ P \rightarrow K < P, B = K, R \oplus B \rightarrow R > B$

$$\therefore R > B = K < P \leq Q$$

I. $Q \oplus K \rightarrow Q > K$ (true)

II. $K @ R \rightarrow K < R$ (true)

26.(b) $A @ B \rightarrow A < B, L \oplus A \rightarrow L > A, K = L, B = D$

$$\therefore K = L > A < B = D$$

I. $L = B$ (false)

II. $D \oplus A \rightarrow D > A$ (True)

27.(e) $M \odot A \rightarrow M \geq A, T @ E \rightarrow T < E, A = T, G \oplus M \rightarrow G > M$

$$\therefore G > M \geq A = T < E$$

I. $A @ E \rightarrow A < E$ (true)

II. $G \oplus A \rightarrow G > A$ (true)

28.(c) $L = I, A \oplus L \rightarrow A > L, S @ I \rightarrow S \leq I, S = K$

$$\therefore A > L = I \geq S = K$$

I. $L = K$ [depends]

II. $K @ L \rightarrow K < L$ [depends]

Here either I or II is true

29.(a) $A @ B \rightarrow A \leq B, D @ A \rightarrow D < A, E = C, B \oplus E \rightarrow B > E$

$$\therefore D < A \leq B > E = C$$

I. $B \oplus C \rightarrow B > C$ (true)

II. $A = B$ (false)

30.(a) $Y \oplus N \rightarrow Y > N, R \odot O \rightarrow R \geq O, N @ D \rightarrow N < D, O = Y$

$$\therefore R \geq O = Y > N < D$$

I. $N @ R \rightarrow N < R$ (true)

II. $U = D$ (false)

17 Input Output

For (1 to 5) :

Arrange number's in descending order where as word's are arrange in alphabetical ascending order.

1.(b) Step II: 52 brown 21 34 49 cloud sky red

Step III : 52 brown 49 21 34 cloud sky red

Step IV : 52 brown 49 cloud 21 34 sky red

Step V: 52 brown 49 cloud 34 21 sky red

Step VI : 52 brown 49 cloud 34 red 21 sky

Step VI is the last step

2.(a) Step III : 57 dine 42 19 tower silver mat 24

Step IV : 57 dine 42 mat 19 tower silver 24

Step V: 57 dine 42 mat 24 19 tower silver

Step VI : 57 dine 42 mat 24 silver 19 tower

3.(c) Input: 84 22 90 case over for 42 win

Step I: 90 84 22 case over for 42 win

Step II: 90 case 84 22 over for 42 win

Step III : 90 case 84 for 22 over 42 win

Step IV : 90 case 84 for 42 22 over win

Step V: 90 case 84 for 42 over 22 win

4.(d) Input can't be determined

5.(e) Input: field eyes 90 30 house rent 40 29

Step I: 90 field eyes 30 house rent 40 29

Step II: 90 eyes field 30 house rent 40 29

Step III : 90 eyes 40 field 30 house rent 29

Step IV : 90 eyes 40 field 30 house 29 rent

For (6 to 10) :

Arrange number's in ascending order whereas word's are arrange in alphabetical descending order

6.(c) Step II: 17 task bea cold dish 82 62 35

StepIII : 17 task 35 bea cold dish 82 62

Step IV : 17 task 35 dish bea cold 82 62

Step V: 17 task 35 dish 62 bea cold 82

Step VI : 17 task 35 dish 62 cold bea 82

Step VII : 17 task 35 dish 62 cold 82 bea

7.(d) Input: 71 58 38 gone for picnic 20 job

Step I: 20 71 58 38 gone for picnic job

Step II: 20 picnic 71 58 38 gone for job

Step III : 20 picnic 38 71 58 gone for job

Step IV : 20 picnic 38 job 71 58 gone for

Step V: 20 picnic 38 job 58 71 gone for

Step VI : 20 picnic 38 job 58 gone 71 for

Step VI is the last step.

8.(a) Input: nice flower 34 12 costly height 41 56

Step I: 12 nice flower 34 be costly height 41 56

Step II: 12 nice 34 flower costly height 41 56

Step III: 12 nice 34 height flower costly 41 56

9.(d) Step II: 10 victory 18 30 53 stay look too

Step III : 10 victory 18 too 30 53 stay look

Step IV : 10 victory 18 too 30 stay 52 look

Step IV is the last step

10.(b) Input: milk pot 17 28 our go 37 52

Step I: 17 milk pot 28 our go 37 52

Step II: 17 pot milk 28 our go 37 52

Step III : 17 pot 28 milk our go 37 52

Step IV : 17 pot 28 our milk go 37 52

Step V: 17 pot 28 our 37 milk go 52

Step VI: 17 pot 28 our 37 milk 52 go

Hence step V will be the second last step.

For (11 to 15) : Arrange word's in alphabetical ascending order whereas numbers are also in ascending order.

11.(b) Step III : is 5 matter 30 temp 16 packed 60

Step IV : is 5 matter 16 30 temp packed 60

Step V: is 5 matter 16 packed 30 temp 60

12.(b) Input: Mini 26 solve 37 the 81 prob 64

Step I: Mini 26 prob solve 37 the 81 64

Step II: Mini 26 prob 37 solve the 81 64

Step III: Mini 26 prob 37 solve 64 the 81

13.(d) Input: The 30 issue 48 be 8 series 20.

Step I: be the 30 issue 48 8 series 20.

Step II: be 8 the 30 issue 48 series 20.

Step III: be 8 issue the 30 48 series 20.

Step IV : be 8 issue 20 the 30 48 series.

Step V: be 8 issue 20 series the 30 48.

Step VI: be 8 issue 20 series 30 the 48.

14.(c) Input: You 40 visit 82 their 10 relatives 20.

Step I: relatives you 40 visit 82 their 10 20.

Step II: relatives 10 you 40 visit 82 their 20.

Step III: relatives 10 their you 40 visit 82 20.

Step IV : relatives 10 their 20 you 40 visit 82.

Step V: relatives 10 their 20 visit you 40 82.

From 10 am to 2 m it will complete 4 step and for the remaining 2 step it will take 45 min + 45 min = 1 ½ hrs

Hence, Total time = 4 + 1 ½ = 5 ½ hrs.

15.(d) Previous steps can't be determined

For (16 to 20) : Arrange number's in alphabetical descending order and words are also in descending order.

16.(b) II step : 52 wind 43 50 door lock kee 38.

III step: 52 wind 50 43 door lock kee 38.

IV Step : 52 wind 50 lock 43 door kee 38.

V Step: 52 wind 50 lock 43 kee door 38.

VI Step: 52 wind 50 lock 43 kee 38 door.

17.(d) Previous steps can't be determined

18.(c) Input : Jocker fee 37 42 grow champ 21 46

Step I : 46 Jocker fee 37 42 grow champ 21

Step II : 46 Jocker 42 fee 37 grow champ 21

Step III : 46 Jocker 42 grow fee 37 champ 21

19.(e) Step II: 62 sour 17 57 grapes healthy 34 rise.

Step III : 62 sour 57 17 grapes healthy 34 rise.

Step IV : 62 sour 57 rise 17 grapes healthy 34.

Step V: 62 sour 57 rise 34 17 grapes healthy.

Step VI: 62 sour 57 rise 34 healthy 17 grapes.

20.(c) Step I : 85 Journey train 36 54 daily 28 mansion

Step II : 85 train journey 36 54 daily 28 mansion

Step III : 85 train 54 journey 36 daily 28 mansion

Step IV : 85 train 54 mansion journey 36 daily 28

Step V: 85 train 54 mansion 36 journey daily 28

For (21 to 25) : Arrange number's in ascending order whereas words are in alphabetical descending order.

21.(b) Step II : 22 work 48 32 pee blue 27 game
 Step III : 22 work 27 48 32 pee blue game
 Step IV : 22 work 27 pee 48 32 blue game
 Step V : 22 work 27 pee 32 48 blue game

22.(a) Step II : 11 where 81 31 gem wap 41 ask
 Step III : 11 where 31 81 gem wap 41 ask
 Step IV : 11 where 31 wap 81 gem 41 ask
 Step V: 11 where 31 wap 41 81 gem ask
 Step VI: 11 where 31 wap 41 gem 81 ask

23.(d) Input : Phone cat 31 lamp 17 70 43 dairy
 Step I: 17 Phone cat 31 lamp 70 43 dairy
 Step II: 17 phone 31 cat lamp 70 43 dairy
 Step III : 17 phone 31 lamp cat 70 43 dairy

24.(d) Previous steps can't be determined.

25.(a) Step I: 18 43 fun rule exam 31 80 home
 Step II: 18 rule 43 fun exam 31 80 home
 Step III: 18 rule 31 43 fun exam 80 home

For (26 to 30) : Number's are arrange in special manner first greatest one and than smallest and so on. Similarly, word's are arrange in opposite manner first smaller alphabet word

26.(b) Step III : 92 go 27 man pet 42 lamp 38
 Step IV : 92 go 27 pet man 42 lamp 38
 Step V: 92 go 27 pet 42 man lamp 38
 Step VI: 92 go 27 pet 42 lamp man 38
 Step VII : 92 go 27 pet 42 lamp 38 man

27.(b) Step II: 53 at deep follow 42 17 road 33
 Step III : 53 at 17 deep follow 42 road 33
 Step IV : 53 at 17 road deep follow 42 33
 Step V: 53 at 17 road 42 deep follow 33

28.(d) Previous steps can't be determined.

29.(c) Step II : 70 from 49 super itself 57 10 went
 Step III : 70 from 10 49 super itself 57 went
 Step IV : 70 from 10 went 49 super itself 57
 Step V: 70 from 10 went 57 49 super itself
 Step VI: 70 from 10 went 57 itself 49 super

30.(c) Input : Thirty days from now 33 50 88 25
 Step I : 88 thirty days from now 33 50 25
 Step II : 88 days thirty from now 33 50 25
 Step III : 88 days 25 thirty from now 33 50

18 Statement And Assumptions

1.(a) It is logical to say that at the age of 4, the child reaches appropriate level of development and ready to learn. Hence, assumption I is very much implicit in the statement. Assumption II is not implicit as it is not relevant.

2.(d) None is implicit. Assumption I is a more twisted form of the given statement. Smoking is injurious. It means that non-smoking is not injurious. And that's it. It doesn't mean that non-smoking promotes health. II obviously is just the opposite of what is true. Public warnings are given only when they are assumed to be necessary.

3.(d) None of the assumptions is implicit as nothing can be said definitely.

4.(e) Since the statement speaks of the essentiality and requirement of rain for farmers, hence both the assumptions are implicit in the statement

5.(b) Since X advises Y to join institute A to study Maths, hence it is assumed that institute A provides good coaching for Maths. Secondly, it is also assumed that Y listens to X's advice.

6.(a) When mother gives warning to the child she must be assuming that her warning would be successful. II is not relevant to the statement made by the mother

7.(b) The statement says that a car is available on rent. It does not say that any vehicle is available. So the statement cannot be said to have assumed that any vehicle is available for rent. But II is obviously implicit; whenever an advertisement is made it is assumed that people will respond to it.

8.(a) Assumption I, that Indian unemployed youths need monetary support, is the solid base for providing allowance to all unemployed youths. However, assumption II, that Government has sufficient funds, does not give valid reasoning. Hence, only assumption I is implicit.

9.(d) None of the assumptions is implicit as each assumption lacks proper reasoning

10.(e) It is directed in the statement that consultation is necessary before making any decision on the export. It is, therefore, assumed that person directed may take a wrong decision. Secondly, it is assumed in the light of the statement that it is important to take a right decision.

11.(a) Leaning out of a running bus must be dangerous, otherwise the warning would not have been there. Hence I is implicit. But II is not implicit. If the authorities would have assumed that children do not pay any attention to such warning, they would not have put it up there.

12. (e) Specific instruction has been given in writing to prevent chance of claim of reimbursement for traveling expenses. Moreover, it is also assumed that instruction has been given because expenses are paid by other organization. Hence, both the assumptions are implicit in the statement.

13.(b) It is mentioned in the invitation that you are requested to take your seats before 4 pm. It means that functions will start as scheduled. Hence, assumption II is implicit.

14.(e) It is clear that penalty will be imposed for improper use, hence it is clear that some people misuse the chain. Hence assumptions I and II, both are implicit.

15.(a) What the statement says has no direct correlation with assumption II. Assumption I directly follows from the statement. Percentage amount makes the assumption II doubtful as it can be more or less than 50%

16.(b) It is not necessary that every company has a legal advisor. So, assumption I is not implicit. Since it is advised in the statement that for any difficulty about the case consult company's legal advisor. It is, therefore, assumed that company's legal advisor is thoroughly briefed about the case. Hence, assumption II is implicit.

17.(e) Both the assumption are clearly implicit in the statement.

18.(b) Since Roma is telling Riya about Ram in a matter-of-fact tone, this much may be assumed that both of them know Ram. But is not certain whether this acquaintance is to the extent of friendship. Hence I is not implicit while II is. III, of course, is the whole logic on the basis of which Roma reaches his conclusion (that Ram has gone mad).

19.(a) I is implicit because $X(x)$ cannot give birthday gifts without being invited to birthdays. II is implicit because x wouldn't have raised the point of—consumer goods as birthday gifts. III is not implicit because x never mentions consumer goods as —useless gifts.

20.(b) The newspaper must have had authentic and reliable sources to publish such news but it is nowhere mentioned that it has quoted such sources. Hence I is not implicit but II is. III is obvious.

21.(d) The teacher does not mean that the students are not intelligent. He only says that questions are difficult and need additional strategy. Hence I is not implicit but III is. II is not implicit; in fact, the teacher says that the problem can be solved if you have drawn suitable diagrams.

22.(d) I and III are obvious. But —intoxicating effect of Rum has never been mentioned.

23.(a) I is obvious by the way the two sentences have been put together. II is obvious. If x thought that people's view about tea (that it was bad for health) was not correct, why would he decide to cut down on it? But Y may or may not act on X's line of action : III may or may not follow. It is not sure whether Y drink tea at all.

24.(d) I is obvious from the very fact that there are some persons who want to buy used imported items. II is obvious because had there been no such people willing to sell such items, the advertisers wouldn't have place the ads. For the same reason, III is also implicit.

25.(d) I is obvious, in fact, it is taken as a universal truth. II is obvious because the mother forbids chocolates as they are not —good for teeth. III is obvious by the tone of the author's language.

26.(d) I is obvious in the advertisement. II is obvious [Whenever an advertisement highlights any aspect of a product it is

assumed that people expect that aspect : Remember this rule]. The ad does assume that price is of secondary importance to people because otherwise they would have highlighted the cheapness of the product and not its quality. So III is implicit

27.(a) The mother is concerned because the noise may disturb her son's study. Hence II is implicit. But there is nothing which can suggest that noise is not conducive to children in general. All that we can infer from the statement is that noise is not conducive to their study; that's all. Also, we may not be able to conclude from the statement that the mother cares for her child's health: in the statement the mother has shown concern not for her child's health, but for her study.

28.(a) I is obvious. But there is nothing to suggest that cricket is a different game or that chances of victory are different from actual victories. So II and III are not implied.

29.(d) The thief uses the gun to arouse fear. This fear brings a sense of command or compulsion. Hence II is implicit. But I is not. The thief uses the phrase —behave like a good girl in a tone of sarcasm only : we should not take it in a literal sense. Similarly, III is also not implicit.

30.(b) I is not an assumption; it is merely a restatement. II is implicit; if the advocate cites autopsy to prove that the cause of death was torture, he must be assuming that autopsy can help in determining the cause of death. III is not implicit : it is not told that the advocate performed the autopsy himself.

19 Course Of Action

1.(e) It is clear from the statement.

2.(a) The problem faced by the airlines and cargo agents is the non-availability of cargo space. Therefore, right course of action is to tackle the problem.

3.(b) II is the right course of action because we have to tackle the problem not to restrict them.

4.(a) Implementation of such action plans, as framed by the conference, is a right course of action as it will give an immediate and effective impact on the standard of education for the children.

5.(a)

6.(b) Reasons for this irregularity should be found out as it will help to check such phenomena of absence of students from the class.

7.(b)

8.(a) Only by increasing our agricultural production, we can have a better position in international agricultural based trade. Reduction in non-agricultural commodities will further worsen our position. So only, I is the right course of action.

9.(e)

10.(b) As per statement, India is already endowed with tourist spots. Therefore, these existing potential should be improved and cashed.

11.(e) Statement speaks of inadequacies of the education system and emphasizes the need for adaptability and revision. Hence, both the actions are right courses of action to update the curriculum.

12.(e) Statement points out the un-efficient working of libraries with regard to providing right information. Computerization will help in organizing the information systematically. Secondly, library staff should be trained to make efficient use of computers. Hence, both the actions are right course of action.

13.(b) Statement point out the unacquaintance of the teachers with population education, hence orientation programme should be organized for teachers. Hence, action (II) is the right course of action.

14.(e) Statement emphasizes the benefits and effectiveness of quality control. Hence, it is advisable that quality control should be encouraged in the organization and at the same time employees should be persuaded to join it. Hence, both the actions are right courses of action.

15.(b) Valuable suggestions from the retired professors will be helpful for restructuring of organization. Hence, management should involve such experienced people. Seeking permission from the staff is not the right course of action.

16.(e) Affected people should be shifted to the safe place. Secondly, affected State should ask for more financial help from Central Government to accelerate the relief task.

17.(d) Financial support to the tourism sector is not a fixed solution. Secondly, constant risk for the foreign tourists will never encourage tourism in the country. Hence, neither of the actions is the right solution in this direction.

18.(e) Both are the right courses of action as each of the courses of action improves the chance of employment opportunity.

19.(e) Both are the right courses of action for effective implementation of computer education at primary level in urban and rural schools.

20.(b) Obviously, if government has decided to stop financial aid to voluntary organizations, these organizations should find other sources of financial aid, Hence (II) is the right course of action.

21.(e) This question is slightly tricky. I does not follow because the problem mentions senior citizens and not women and children. II and III are proper courses of action, yet they do not follow because such provisions are already there. Murdering elderly people is a punishable offense under while convicts as a rule are prosecuted by the state. II and III are not new suggestions. They are already in practice.

22.(d) All the recommendations would be positive steps towards solving the problem, i.e., hardships and inconvenience to passengers. Hence, all follow.

23.(e) We cannot treat such rumors that involve the Prime Minister's life as baseless. Hence III does not follow and instead, I and II follow.

24.(e) I is of course rubbish: it talks of escaping from a problem. II is not proper civil offence means that we are making it lighter because it is a criminal offence presently. III is also not proper. To stop child labor we must stop and punish those who employ children. To punish the innocent children themselves would be inhuman.

25.(c) I and II are proper courses of action. Good things must be (i) promoted and (ii) rewarded. III is not proper: we cannot criticize a movie only because it is not similar to a particular movie. [On these grounds even a Pather Panchali would be banned !!!]

26.(d) Both I and II are questionable. I is not acceptable; it is an stringent action and some effort to looking to the situation under the popularly elected government must precede it. II appears without any explanation; why should one take privatization to be the remedy of all evils ? III is proper; the governments concerned must be asked to re-evaluate their system and correct the faults.

27.(a) That IAS officers should be given more security is obvious. Police officials should be suspended only if their involvement is proved. Currently, it is only proved. The Chief Minister may or may not resign and it is an individual decision; however, it must be understood that a Chief Minister is very remotely responsible for such incidents and hence his resignation is not a must.

28.(a) I is obvious: all those violating the pollution norms should be severely dealt with. II is an extreme action : before closing down a unit the government should check if its pollution level can be minimized. III is ridiculous: if pollution is equivalent to cigarettes, it is not a fault of cigarettes.

29.(d) None follows. Why higher income tax rate ? If they are earning more, they will automatically pay more taxes because taxes are proportional to income. Similarly, wages of public sector employees can't be increased: there are many differences between a private sector employee and a public sector employee. The latter enjoys many hidden perks such as free medical facilities, free house, gratuity, etc. His working conditions may not be as tough as those of a private sector employees. Also, he has a greater security of job. Before raising his salary these factors should also be borne in mind. III also does not follow because it is an irrational action and no causes have been given.

30.(a) Obviously, people should be made aware of these possibilities so that they are not under the impression that soft drinks are always safe; they must know the reality. II does not follow: you cannot subject anyone to imprisonment for a incident which may, after all, be an accident. It is for the law to decide. III is an extreme action; a better action would be to take

protective measures and to ensure that no such incidents occur in the future.

20 Arguments

1. (b) Argument I is not strong because word ‘only’ makes the argument weak as it is not the real and practical solution to improve the level of literacy. Argument II is strong as it describes the practical problem which may arise out of the decision of making education free in India, hence (b) is our answer.

2. (e) Both the arguments refer to the practical consequences of the action mentioned in the statement and hence are strong. Therefore, (e) is the correct answer.

3. (d) Both the arguments are not related to the statement.

4. (a) Private sector is supposed to be more disciplined and efficient than Govt. sector, hence argument I is strong.

5. (b) Argument I is irrelevant. Argument II is strong because poor and deserving students will be affected by such increase in the fee.

6. (a) Only argument I is strong because India has the plenty resources but does not have technical skill for exploration. So, India should go for foreign help. Secondly, India's sovereign status does not get affected at all by doing so.

7. (a) Argument I is strong as entry of corporate sector will certainly improve the services of existing Govt. sector because of the healthy competition. Argument II is weak because we are here concerned with inviting corporates in Railways sector only.

8. (e) Both the arguments are strong. Elected MP's have to face the electorates after each completion of their term as their existence is decided by people. Secondly, at the time of elections, so many commitments are made which are hardly fulfilled

9. (a) Argument I is strong because the smokers will be cautioned of its ill-effects by such wordings. Argument II is a weak argument as such wording does not in any way, reduce the enjoyment of smoking

10.(a) Logically, only argument I is strong.

11.(b) Second argument is strong because synonyms do not have exact meaning of given word. It is nearest in the meaning to the word.

12.(d) Both the arguments are weak.

13.(b) Clearly, reservations on the basis of religion will widen inter communal biases. So, argument I is not clear. Also, it will be against our secular policy. According to which no communal group is given preference over the others. So, only argument II is strong.

14.(e) Clearly, it is the advertisement which makes the customer aware of the qualities of the commodity and customer leads to buy it. So, argument I is valid. But on the contrary advertising of any commodity on various media has become a costly matter and the expenses on it add to the price of commodity. So, argument II is also strong.

15.(d) The PDS is indeed necessary to provide basic amenities to the proper sections of society. So, argument is not clear. Also, if the objectives and purposes of any system are not fulfilled because of corruption then getting rid of the system is not a proper solution, efforts should be made to end corruption and we should extend its benefit to the needful people. So, argument II is also not valid.

16.(b) UNO is meant to maintain peace and harmony all over the world and it will always serve to prevent conflicts and wars among member countries. So, its role never ends. So, argument I is not strong. Lack of such type of organization may in future lead to increased mutual conflicts and international wars. So, argument II is strong.

17.(b) Clearly, strike is not a means of indiscipline but only a practice and tool in which the peoples of any particular country exercise their fundamental rights. So, argument I is not clear and argument II is valid.

18.(b) Clearly, the 5 star hotels of any country, are a mark of country's standard and place for staying the affluent people of that country as well as foreign tourists. So, argument II is strong. But, on the contrary, argument I is not strong because ban on hotel is not a proper way to end the success of international criminals.

19.(a) Removing the internal assessment would surely reduce favouritism on personal grounds because the teachers of that college would not be involved in examination system so that they cannot extend personal benefit to anyone whom they like. So, argument I is strong. But it will not affect the control of teaching faculty on students because still the teachers would be teaching them. So, argument II is not clear.

20.(b) Second is strong. First is weak because it is not correct. (It is the only way ?) Second is perhaps correct, on logical thinking

21(e) Both are correct and strong arguments.

22.(e) Both are strong. Using computer does have the positive feature as mentioned in I but the negative feature as mentioned in II.

23.(d) None is strong. We do not ‘waste’ money if we invest in computers. The second is based upon example.

24.(a) Argument one is strong. Argument two has no substance, rejectable in preliminary screening.

25.(a) First is strong in the sense that it is an established fact that a lot of resource are wasted in shifting agriculture. Second is not a strong argument as it is, to begin with, debatable if other

methods are really more expensive in the long run than why the resource – cropping shifting agriculture.

26.(b) Second is strong. First is rejected in preliminary screening.

27.(d) None is strong. It is not true that we are a rich nation. Similarly, the reasons mentioned in the second are not sufficient to put a stop on money spending (lack of proper relation).

28.(a) Only, first is strong. Second is weak. Even if dowry system is deep-rooted, it is still illegal and hence punishable.

29.(e) Both are strong. Both talk of certain features of joint families and small families respectively and both the features are desirable in themselves.

30.(d) None is strong. First is debatable. AC may or may not be a luxury item. The second argument does not talk about AC.

21 Non Verbal Reasoning

Type 1 Series

1.(c) Triangle rotates anticlockwise at 135° and 90° alternatively. Whereas outer design enters into the triangle and a new design which is in question figure (the square), at each step exits from the triangle, which rotates anticlockwise at $\frac{1}{2} 1 \frac{1}{2} 2 \frac{1}{2}$ position of the side of the square.

2.(b) In the question figure from 1 to 3 respectively, inner two figures enlarge without changing its sequence and the outer figure shrinks to the innermost figure.

3.(d) Symbols in the series rotate anticlockwise at 90° , 45° , 90° respectively from figure 1 to 2. The right most symbol moves to 3rd place and displaces 2 symbols to the right whereas the left most symbol is replaced with a new symbol.

4.(b) In figure from 1 to 2, two symbols move from left side to the right side and both the designs from the right side move to the left side. Again, in figure from 2 to 3 one symbol from left move to right and the three symbols move towards left. This process follows for the next figures.

5.(d) Lower side designs change their positions and shift to the upper side diagonally. At each next step two new designs appear on lower side.

6.(c) All the designs rotate anticlockwise and at each step one new symbol appears on the upper and lower section of the block alternately.

7.(d) Upper designs in the blocks move to the lower side and the lower left shape moves to the upper right corner and the lower right symbol while shifting to the upper left corner is replaced with a new symbol.

8.(d) In the figure from 1 to 2, two designs from right swap their positions. Again in figure from 2 to 3, two designs from the left swap their positions. The process goes on.

9.(e) For each next figure that contains 4 designs inside it, 2 designs among those 4 designs interchange their positions from left to right starting with arrow.

10.(a) Double line rotates at 90° (i.e. along the perpendicular) anticlockwise. Design “||” moves in the bottom right, center, upper left positions and design “?” rotates in center, upper right, lower left and follow the same.

Type 2 Analogy

11.(c) Both circular shapes become mirror images of each other while interchanging the positions of arrows and circles present at the corners of the lines.

12.(d) From fig. (I) to fig.(II) the shape is inverted and at the same time short line becomes long and long line becomes short and the shape below moves towards the top, joining the lines. The same process is repeated with fig.(III) fig.(IV).

13.(b) The shape at top right corner moves to the bottom left corner and inverts itself. The shape at bottom left corner moves to center in left and inverted itself. And the shape in the center of the figure moves to top left corner and inverted center itself.

14.(e) The shape at right moves to left and the shape at left moves to right and transform into a new shape. Rest of the shapes remain same.

15.(c) All the shapes move in clockwise direction and occupy each other's place and after coming on their respective places they rotate at 90° in anticlockwise direction.

16.(b) Both shapes from top exchange their places and both shapes at bottom interchange their places.

17.(d) Shape at bottom right corner moves to the center and the shape at the shape the center moves to the bottom left corner and inverts itself. And at top-middle and bottom right corners, new shapes are formed.

18.(e) The shape which is in the middle from left and the shape which is in middle from top exchange their places. The shape which is at top left corner moves to the top right corner and the top left corner is occupied by a new shape.

19.(c) The shape at the top right corner is shifted to the bottom left corner and the shape at bottom left corner moves to top right corner and becomes black in color. Both shapes in the middle exchange their places and rotates 180° .

20.(c) The symbol of arrow is inverted. Therefore in the fourth figure also the symbol of arrow will be inverted.

Type 3 Classification

21.(c) In question figure c only, three circular turns are in same direction. However none of the figure shows this pattern.

22.(a) Two lines originate from one of the angle of hexagon and they meet into two different angles of Hexagon which are separated by one untouched angle i.e. there is maximum

possible angle of deviation between them. But in figure (a) this pattern is not followed.

23.(e) In question figure (e), a line divides the whole shape in two equal parts. However, this pattern is not followed by others.

24.(e) In all other figures the difference in blank blocks between an arrow and dark block is in ratio of 5 :2 but in figure (e) this difference is 4 : 3.

25.(d) In all other figures there is a circle which is third to the left of an arrow. But in figure d it is in right.

26.(c) Except option c, in all other figures the difference in the side of two compound Polygons is two.

27.(d) Only in this figure the ‘dot’ is in the rectangular part of the figure. Where as in other figures it is located in different regions of the figure.

28.(e) In all the figures the sum of ‘dots’ inside and outside is an even number. But in the figure e, it is an odd number.

29.(c) The question figure (c) is not a shape having five sides.

30. (d) In all the other figures number of “black dark blocks” are in odd number. But in the option d, they are in even number

Logical Reasoning Handout Homework- Solution

Blood Relation

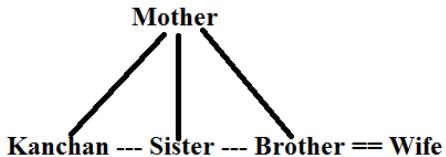
We use notations to denote the relations between the persons

+ve = Male

-ve = Female

== (Double Line) = We use double line in between Husband-Wife

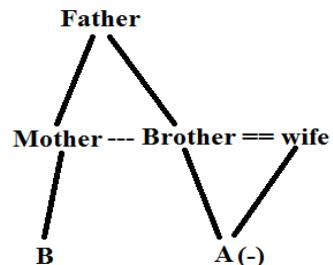
-- (Single Line) = We use single line in between siblings.



1)

Kanchan's sister's only brother's wife's mother -in-law is mother of Kanchan and her siblings.

So, Answer is mother.

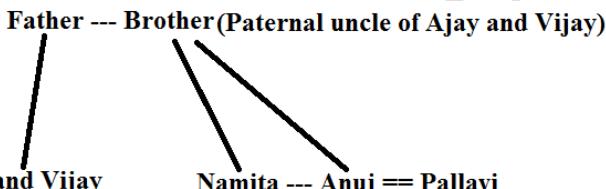


2)

A as the person who is the daughter of B's mother's only brother's father's daughter-in-law. Daughter-in-law is wife of Brother and their daughter is A. Parents of A and B are siblings.

So, A and B are cousins.

3)



Namita is daughter of Ajay and Vijay's paternal uncle. In that photograph Vijay is standing with Namita's only brother Anuj and Anuj's wife Pallavi. Pallavi's father-in-law is Paternal uncle of Ajay

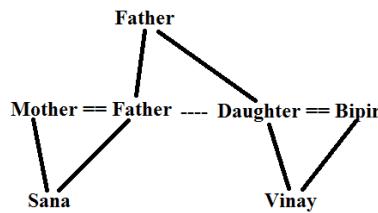
Mr. Gupta's Parents

Mr. Gupta

4)

Ms. Vidya's boss Mr. Gupta is the only child of his parents and A and B are two sons of Mr. Gupta. A and B are siblings of Vidya. So, Mr. Gupta is father of A, B and Ms. Vidya.

5)



Sana and Vinay went for shopping in a mall and there they meet Bipin who is husband of Sana's mother's father-in-law's only daughter, who is mother of Vinay. So, Bipin is father of vinay.

Directions for Questions 6 to 10

From the information given in the question relation between A, B, C, D, E, F, G and H is,

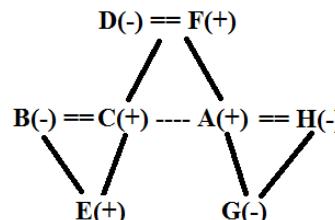
We use notations to denote the relations between the persons

+ve = Male

-ve = Female

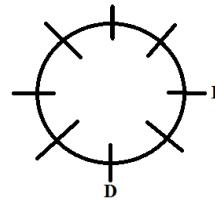
== (Double Line) = We use double line in between Husband-Wife

-- (Single Line) = We use single line in between siblings.



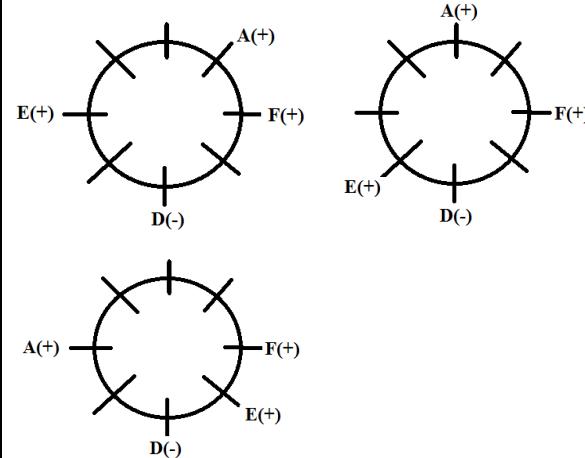
Now we will arrange them around a circle.

D and F are married couples. D, the wife of F, sit second to the left of her husband.



E, a bachelor, sits third to the right of his uncle A, but neither to the opposite nor to the immediate left of his father C and A is not an immediate neighbour of his mother D. So, we will place A and E.

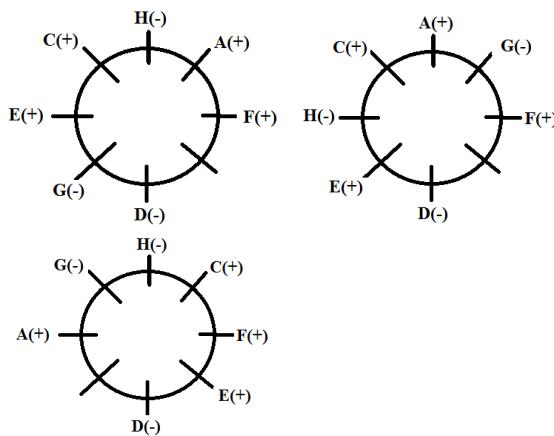
Total Three cases are possible by which we can place A and E



There is only one person sitting between C and his niece G, but that person is not G's father i.e. A.

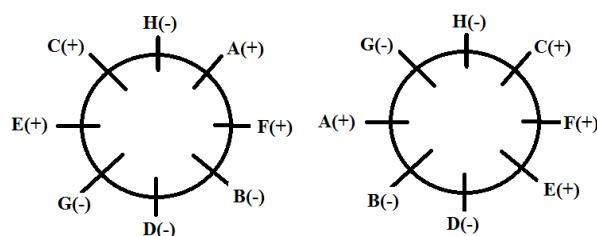
C and his sister-in-law i.e. H are immediate neighbour.

Now we will place C, G and H.

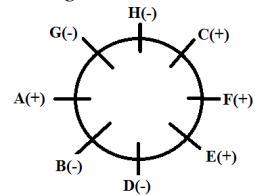


From the above 3 cases we cancel out the second case because in that A i.e father of G is in between G and C. But in the information its written as A should not be immediate neighbour of G and C.

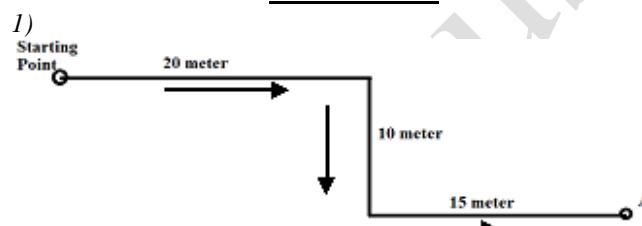
Now we will place remaining person B around the circle.



3 females should not be together. In the 1st case 3 females are sitting together so we eliminate the 1st case. So, final arrangement is,

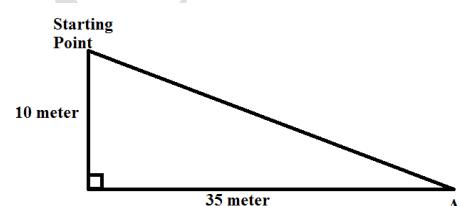


Direction sense



If we joint starting point and A. then distance between Starting point and A we have find out.

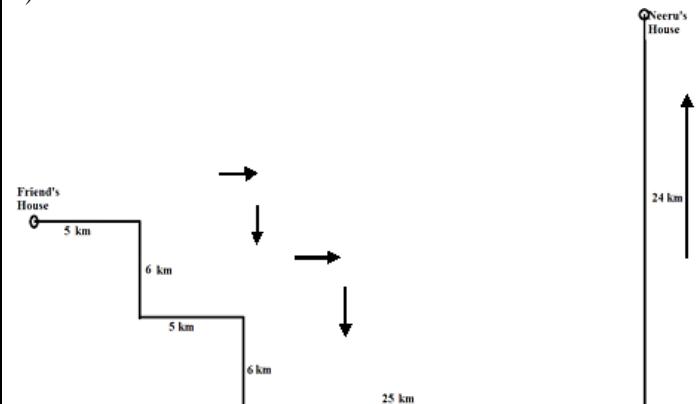
Now total Horizontal distance travelled = 35 meter and vertical distance travelled = 10 meter.



By Pythagoras we can fond out distance between starting point and A

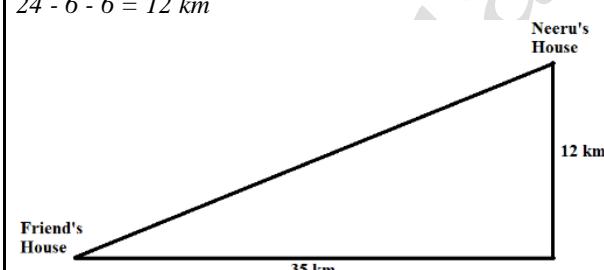
$$\text{Distance} = \sqrt{10^2 + 35^2} = 5\sqrt{53}$$

2)



Horizontal distance between Friend's house and Neeru's house = $5+5+25 = 35$ km

Vertical distance between Friend's house and Neeru's house = $24 - 6 - 6 = 12$ km



By Pythagoras theorem we can find out the distance between Friend's house and Neeru's house.

$$\text{Distance} = \sqrt{35^2 + 12^2} = 37 \text{ km}$$

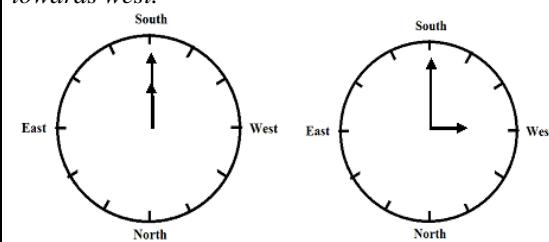
3) At 12 o'clock minute and hour hand will point towards 12 hour mark

A wall clock is place in such a way that at 12 o'clock the minute hand points towards the south.

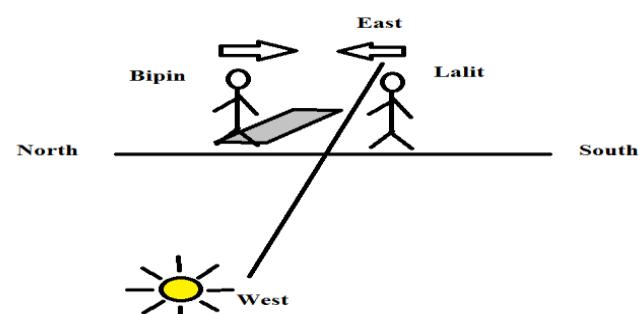
So, 12 hour mark is towards south direction

Remaining directions are as shown in the clock below,

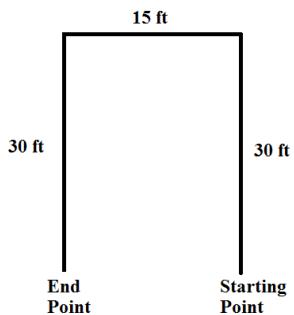
At 3 o'clock minute hand will point toward 3 hour mark and hour hand will point towards 12 hour mark. So hour hand will point towards west.



4) One evening, Bipin and Lalit were standing facing each other, it was observed that the shadow of Bipin was falling to his left. In the evening sun is in the west direction and remaining directions are shown in the diagram.



So, Lalit is facing towards North.



5)

Akash walked 30 ft towards north, then took a left turn and walked 15 ft. He again took a left turn and walked 30 ft. After that Akash is 15 ft to the North from starting point.

Clock

1) We use the formula

$$\theta = \left| \frac{11}{2}M - 30H \right|$$

Where,

$M = 30$ minutes

$H = 6$ hours

$\theta = \text{Angle between Minute Hand and Hour Hand}$ (This we have to find out)

After putting and solving we get the value if $\theta = 15^\circ$

2) We use the formula

$$\theta = \left| \frac{11}{2}M - 30H \right|$$

Where,

$M = 34$ minutes

$H = 2$ hours

$\theta = \text{Angle between Minute Hand and Hour Hand}$ (This we have to find out)

After putting and solving we get the value if $\theta = 127^\circ$

3) Suppose at time 3 hours x minutes angle between minute and hour hand be 180° i.e. they are exactly opposite to each other.

Now we use the formula

$$\theta = \left| \frac{11}{2}M - 30H \right|$$

Where,

$M = x$ minutes (This we have to find out)

$H = 3$ hours

$\theta = \text{Angle between Minute Hand and Hour Hand} = 180^\circ$

$$180 = \left| \frac{11}{2}x - 30 \times 3 \right|$$

After removing mod sign we get value as $+180$ or -180 .

So,

$$+180 = \frac{11}{2}x - 30 \times 3$$

$$x = \frac{540}{11} = 49\frac{1}{11}$$

$$-180 = \frac{11}{2}x - 30 \times 3$$

$$x = \frac{-270}{11} = -24\frac{6}{11}$$

Negative value for minutes is not possible so we will consider value of $x = 49\frac{1}{11}$ minutes

So, in between 3 and 4, two times angle between minute hand and hour hand would be 180° .

4) Hour hand move 1° in 2 minutes.

To move 28° hour hand takes 56 minutes.

Minute hand 6° in 1 minute.

So, in that 56 minutes minute hand move by $6 \times 56 = 336^\circ$

5) At time 8 hours x minutes minute and hour hand makes angle of 36°

So, we use the formula.

$$\theta = \left| \frac{11}{2}M - 30H \right|$$

Where,

$M = x$ minutes (This we have to find out)

$H = 8$ hours

$\theta = \text{Angle between Minute Hand and Hour Hand} = 36^\circ$

$$36 = \left| \frac{11}{2}x - 30 \times 8 \right|$$

After removing mod sign we get value as $+180$ or -180 .

So,

$$+36 = \frac{11}{2}x - 30 \times 8$$

$$x = \frac{552}{11} = 50\frac{2}{11}$$

$$-36 = \frac{11}{2}x - 30 \times 8$$

$$x = \frac{408}{11} = 37\frac{1}{11}$$

So, in between 8 and 9, two times angle between minute hand and hour hand would be 36° .

Timings are 8 hour $50\frac{2}{11}$ minutes and 8 hour $37\frac{1}{11}$ minutes

Answer for the question is option d.

Calendar

1) In first century to third century, number of leap years and ordinary years in every century are 24 and 76 respectively. Only in fourth century leap years are 25 and ordinary years are 75. Each leap year contains 2 odd days and ordinary year contains 1 odd day.

In four hundred years odd days are 0. So 400 years before current year must be the same day.

	Leap years	Ordinary Years	Odd days	Odd days
1 to 100	24	76	Remainder $(\frac{48+76}{7}) = \frac{124}{7} = 5$	5
101 to 200	24	76	Remainder $(\frac{48+76}{7}) = \frac{124}{7} = 5$	5
201 to 300	24	76	Remainder $(\frac{48+76}{7}) = \frac{124}{7} = 5$	5
301 to 400	25	75	Remainder $(\frac{50+75}{7}) = \frac{125}{7} = 6$ Total number of odd days = 21 $\frac{21}{7} = \text{Remainder} = 0$	6

So, day on 27th February 1603 = Thursday

2) From January 1, 2005 to Jan. 1, 2006 number of days are 365. Odd days in between that two dates = 1

Day on Jan. 1, 2006 = Sunday

3) From January 1, 2007 to Jan. 1, 2011 one leap year and 3 ordinary years are there.

Odd days in between that two dates = 5

Day on Jan. 1, 2011 = Saturday

4) Odd days in 57 days = 1

Next day of Friday i.e Saturday.

So, after 57 days Saturday must be there.

5) Odd days in 94 days = 3

Next third day of Sunday i.e Wednesday.

So, after 94 days Wednesday must be there.

6) Centurion year must be divisible by 400 to be a leap year. 500 is not divisible by 400 so it is not a leap year.

7) From 16th Nov, 2009 to 16th Nov, 2010 number of days are = 365.

Odd days in between that two dates = 1

We are moving 1 year back so,

Day on 16th Nov, 2009 = Wednesday

8) January 1, 2010 was Friday.

From January 1, 2010 to Jan. 1, 2011 number of days are = 365.

Odd days in between that two dates = 1

Day on Jan. 1, 2011 = Saturday

9) On 14th Feb, 2009 it was Saturday.

From 14th Feb, 2008 to 14th Feb, 2009 number of days are = 366.

Odd days in between that two dates = 2

Day on 14th Feb, 2008 = Thursday

10) January 1, 2008 is Tuesday.

From January 1, 2008 to Jan 1, 2009 number of days are = 366.

Odd days in between that two dates = 2

Day on Jan. 1, 2011 = Thursday

11) Calendar for the that year is same as 2011 when day on 1st January of that year and 1st January of 2011 is same. For that odd days between 2011 and that year must be 0 or multiple of 7. So in between year 2011 and 2022 odd days are 14.

Calendar of 2022 is same as 2011.

13) On 5th December 1993, Nirmala and Raju celebrated their anniversary on Sunday.

In between 1993 and 1997, one leap year and 3 ordinary years are there.

So, odd days in between that 2 years = 5

In 1997 Nirmala and Raju celebrate there anniversary on friday.

Coding Decoding

Question 1 to 5

Codes used for the words they are not in the sequential order they are in jumbled up order.

Word	Code used for word
Not	la
This	sa
Good	pa
Is	ni
Too	ri
Are	ka
You	bi
We	fa
Bad	ma
It	da/ta
Hot	ta/da

1) Code for you = bi

2) Code for hot ta/da

So, answer is cannot be determine.

3) ri is code for too.

4) code for too bad = ri ma / ma ri

Order for these code can be anything because code for the words are in jumbled up order.

5) In code section code for this and is i.e sa and ni must be present.

Code used for cold is something different than we have used all the codes.

So, code for 'this is cold' = si ni ga i.e. option e

6) In a certain code ALPHABET is written as YJNFYZCR.

Every letter is coded as previous second letter.

So code for word CHILDREN = AFGJBPC

7) In a certain code BUSINESS is written as FSWGRCWQ.

Letters at odd places coded with next fourth letter and letters at even places coded with previous second letter.

So, BANGALORE coded as FYREEJSPI

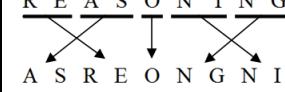
8) In a certain code GUNPOWDER is written as DEGNOPRUW.

Letters of the word GUNPOWDER are arranged in alphabetical order.

In that manner word HOSTPITAL is coded as AIOHLPST.

9) In a certain code REASONING is written as ASREONGNI.

Coding pattern is as shown bellow,



So word FRIZZLING coded as following the same pattern as IZFRZNGLI

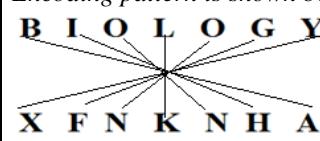
10) In a certain code SENSITIVE is written as HVMHRGREV.

If we arrange all alphabets in row then coding pattern is whatever position of letter from left is same position from right is also there and vice versa.

So, word HYDROGEN is coded as SBWILTVM.

11) In a certain code BIOLOGY is written as XFNKNHA.

Encoding pattern is shown bellow



In the same manner CHEMISTRY is coded as XQSRHLDB.

12) If QKKQUGQL is the code for OMISSION.

Letters at the odd places are coded by previous second letter and letters at even places are coded by next second letter this is the encoding logic.

Hence word RYVIWZB is coded as PATKUBZ.

Decision Making

1) Girish is born and brought up in the state of Kerala. He scored 70% marks in the entrance examination conducted by the college as well as in his graduation. Girish was born in 1994 and he did his graduation in the state of Delhi.

Primary Criteria	Alternate Criteria	Decision taken
(a) The candidate should have been born and brought up in the state of Maharashtra. (Not Fulfilled)	If the candidate has done his graduation in Maharashtra. (Not Fulfilled)	Then he/she is to be referred to the Chairman of the college.
(b) Have scored at least 65% marks in graduation. (Fulfilled)		
(c) Have scored at least 60% marks in the entrance examination conducted by the collage. (Fulfilled)		
(d) Not be more than 22 years old , as on 1st June 2014. (Fulfilled)	If the candidate has experience of at least six months as a team leader in any corporate company, then he/she is to be referred to the Principal of the college.	Then he/she is to be referred to the Principal of the college.

1st primary criteria and alternate criteria of that is not fulfilled hence candidate would not get admission.

2) is born and brought up in Mumbai(Capital of Maharashtra). She scored 80% marks in her graduation as well as in the entrance examination conducted by the college. Her date of birth is 22nd June, 1993.

Primary Criteria	Alternate Criteria	Decision taken
(a) The candidate should have been born and brought up in the state of Maharashtra. (Fulfilled)	If the candidate has done his graduation in Maharashtra.	Then he/she is to be referred to the Chairman of the college.
(b) Have scored at least 65% marks in graduation. (Fulfilled)		
(c) Have scored at least 60% marks in the entrance examination conducted by the collage. (Fulfilled)		
(d) Not be more than 22 years old , as on 1st June 2014. (Fulfilled)	If the candidate has experience of at least six months as a team leader in	Then he/she is to be referred to the Principal of the college.

	any corporate company, then he\she is to be referred to the Principal of the college.	
--	---	--

All the primary criteria are fulfilled hence candidate may be admitted in to the course.

3) The date of birth of Arun is August 7th, 1993. He is born and brought up in Maharashtra. He has scored 70% marks in his graduation and 80% marks in the entrance examination conducted by the college.

Primary Criteria	Alternate Criteria	Decision taken
(a) The candidate should have been born and brought up in the state of Maharashtra. (Fulfilled)	If the candidate has done his graduation in Maharashtra.	Then he/she is to be referred to the Chairman of the college.
(b) Have scored at least 65% marks in graduation. (Fulfilled)		
(c) Have scored at least 60% marks in the entrance examination conducted by the collage. (Fulfilled)		
(d) Not be more than 22 years old , as on 1st June 2014. (Fulfilled)	If the candidate has experience of at least six months as a team leader in any corporate company, then he\she is to be referred to the Principal of the college.	Then he/she is to be referred to the Principal of the college.

All the primary criteria are fulfilled hence candidate may be admitted in to the course.

4) Romeo has work experience of one year in a corporate company as a Team Leader. He is born and brought up in the Maharashtra. He scored 65% marks in his graduation and 80% marks in the entrance examination conducted by the college.

Primary Criteria	Alternate Criteria	Decision taken
(a) The candidate should have been born and brought up in the state of Maharashtra. (Fulfilled)	If the candidate has done his graduation in Maharashtra.	Then he/she is to be referred to the Chairman of the college.
(b) Have scored at least 65% marks in		

graduation. (Fulfilled)			A\\$B means A=B A@B means A>B A#B means A<B A&B means A=B A*B means A=B	1) Statements: O=A=R < S=Q Conclusions: I. Q>R (True) II. S>O (False) III. R=O (False) IV. R<O (False) A. Only I is true B. Only III is true C. Only IV is true D. Either III or IV is true E. Either III or IV and I are true
(c) Have scored at least 60% marks in the entrance examination conducted by the collage.(Fulfilled)				2) Statements: A=E=F<O>L Conclusions: I. L < F (False) II. E > O (False) III. A < O (False) IV. E > L (False) A. None is true B. Only I is true C. Only II is true D. Only III is true E. Only IV is true
(d) Not be more then 22 years old , as on 1st June 2014.(Don't have any information about date of birth)	If the candidate has experience of at least six months as a team leader in any corporate company, then he\she is to be referred to the Principal of the college.	Then he/she is to be referred to the Principal of the college.		3) Statements: B > Q < A = N Conclusions: I. N = A (True) II. L > Q (True) III. B > N (False) IV. Q < N (True) A. I, II and III are true B. I, II and IV are true C. I, III and IV are true D. I, III and IV are true E. All are true

We dont have any information about the date of birth of the Romeo hence data is inadequate to take any decision.

5) Sarathi was born in the state of Uttar Pradesh in the year 1994. He did his graduation in the state of Maharashtra. He scored 70% marks in graduation and 85% marks in the entrance examination conducted by college X.

Primary Criteria	Alternate Criteria	Decision taken
(a) The candidate should have been born and brought up in the state of Maharashtra. (Not Fulfilled)	If the candidate has done graduation in Maharashtra. (Fulfilled)	Then he/she is to be referred to the Chairman of the college.
(b) Have scored at least 65% marks in graduation. (Fulfilled)		
(c) Have scored at least 60% marks in the entrance examination conducted by the collage. (Fulfilled)		
(d) Not be more then 22 years old , as on 1st June 2014. (Fulfilled)	If the candidate has experience of at least six months as a team leader in any corporate company, then he\she is to be referred to the Principal of the college.	Then he/she is to be referred to the Principal of the college.

Hence 1st primary criteria is not fulfilled but alternate criteria for that gets fulfilled hence he/she is to be referred to the Chairman of the college.

A\\$B means A=B A@B means A>B A#B means A<B A&B means A=B A*B means A=B	1) Statements: O=A=R < S=Q Conclusions: I. Q>R (True) II. S>O (False) III. R=O (False) IV. R<O (False) A. Only I is true B. Only III is true C. Only IV is true D. Either III or IV is true E. Either III or IV and I are true
	2) Statements: A=E=F<O>L Conclusions: I. L < F (False) II. E > O (False) III. A < O (False) IV. E > L (False) A. None is true B. Only I is true C. Only II is true D. Only III is true E. Only IV is true
	3) Statements: B > Q < A = N Conclusions: I. N = A (True) II. L > Q (True) III. B > N (False) IV. Q < N (True) A. I, II and III are true B. I, II and IV are true C. I, III and IV are true D. I, III and IV are true E. All are true
	4) Statements: E < M = N > O = P Conclusions: I. P < M (False) II. P < N (True) III. M < O (False) IV. N > E (True) A. II and III are true B. II and IV are true C. III and IV are true D. I, and IV are true E. All are true
	5) Statements: A = E > F = G < H Conclusions: I. H > E (False) II. A = G (False) III. E > H (False) IV. A > F (True) A. None is true B. Only I is true C. Only II is true D. Only III is true E. Only IV is true

Input Output

Step Number	
Input	53 54 29 jam can man ban 15 86 90 63 van tan den
Step 1	van 53 54 29 jam can man ban 15 86 90 63 tan den
Step 2	van 53 54 29 jam can man ban 15 86 63 tan den 90
Step 3	tan van 53 54 29 jam can man ban 15 86 63 den 90
Step 4	tan van 53 54 29 jam can man ban 15 63 den 86 90
Step 5	man tan van 53 54 29 jam can ban 15 63 den 86 90
Step 6	man tan van 53 54 29 jam can ban 15 den 63 86 90
Step 7	jam man tan van 54 53 29 can ban 15 den 63 86 90
Step 8	jam man tan van 53 29 can ban 15 den 54 63 86 90
Step 9	den jam man tan van 53 29 can ban 15 54 63 86 90
Step 10	den jam man tan van 29 can ban 15 53 54 63 86 90
Step 11	can den jam man tan van 29 ban 15 53 54 63 86 90
Step 12	can den jam man tan van ban 15 29 53 54 63 86 90
Step 13 (This is Last step and called as output)	ban can den jam man tan van 15 29 53 54 63 86 90

1) Which of the following is the last step for the given input?

- a) Step 10 b) Step 9c) Step 11
d) Step 13 e) None of these

2) Which is the fourth element from the left end in step 7?

- a) can b) tan c) van d) 53 e) 54

3) How many elements are there between 'tan' and 'can' in step 10 of the given input?

- a) two b) five c) seven d) nine e) None of these

4) Which step number is the following rearrangement?

'jam man tan van 53 54 29 can ban 15 den 63 86 90'

- a) Step 5 **b) Step 7** c) Step 8

d) Step 9e) No such step

5) In the second last step, in a certain way 'den' is related to '86' and 'tan' is related to '53' in the same way, 'van' is related to.

- a) 54 b) man c) 29 d) 15 e) ban

Letter and Number Series

Direction for Questions 1 to 5

Find Out the Missing number in the following series.

- 1) 343, 64, 81, 100, 1331, 144, 2197, 196, ____

In this series composite numbers square and prime numbers cube is there.

Next number must be 15^2 (Composite number)= 225

- 2) 2000, 1996, 1980, 1944, 1880, ____

$$2000 - 4(2^2) = 1996$$

$$1996 - 16(4^2) = 1980$$

$$1980 - 36(6^2) = 1944$$

$$1944 - 64(8^2) = 1880$$

$$1880 - 100(10^2) = 1780$$

- 3) 2, 10, 24, 98, 200, ____, 1608

$$2 \times 4 + 2 = 10$$

$$10 \times 2 + 4 = 24$$

$$24 \times 4 + 2 = 98$$

$$98 \times 2 + 4 = 200$$

$$200 \times 4 + 2 = 802$$

- 4) NQF, LOD, JMB, HKZ, ____

See the first letter of each term, so first letter in the next term must be F

See the second letter of each term, so second letter in the next term must be G

See the third letter of each term, so third letter in the next term must be Y

Next term must be FGY

- 5) TMCI, VJGD, XGKY, ZDOT, ____

See the first letter of each term, so first letter in the next term must be B

See the second letter of each term, so second letter in the next term must be A

See the third letter of each term, so third letter in the next term must be S

See the fourth letter of each term, so fourth letter in the next term must be Q

Next term must be BASQ

Direction for Questions 6 and 7

Each of these Questions consist a series with one wrong number.

Find the wrong number.

- 6) 16, 24, 40, 64, 98, 136

$$16+8 = 24$$

$$24+16 = 40$$

$$40+24 = 64$$

$$64+32 = 96$$

$$96+40 = 136$$

So wrong number in the series is 98, at that place 96 must be there.

- 7) 78, 81, 86, 93, 102, 117

$$78+3 = 81$$

$$81+5 = 86$$

$$86+7 = 93$$

$$93+11 = 104$$

$$104+13 = 117$$

Prime number is get added in the current term to get the next term.

So, wrong term is 102, at that place 104 must be there.

Questions 8 to 10

8) Ajay is sitting in a row of thirty six people. He shifted seven places towards the left end. Now he becomes sixth from the left end. What is his present position from the right end?

Ajay is sixth form the left end so 5 persons must be there to the left of Ajay and remaining 30 persons must be to the right of Ajay. So his position from the right end is 31st.

9) In a row of boys facing south, Ravi is 8th from the left end and Raghav is 5th to the left of Ravi and 16th from the right end of the row. What is the total number of boys in the row?

Ravi is 8th from the left end, so 7 persons are there to the left of Ravi,

7 Ravi

Raghav is 5th to the left of Ravi, so in between Raghav and Ravi 4 persons are there,

2 Raghav 4 Ravi

Raghav is 16th from the right end of the row so 15 persons must be to the right of Raghav.

Already 5 persons are there to the right of Raghav so remaining 10 persons must be to the right of Ravi.

2 Raghav 4 Ravi 10

Total 18 boys are there in the row.

10) In a queue, nine members are standing behind Anjali, seven members are ahead of Meena and six members are in between Anjali and Meena. How many members are standing in the queue?

There are two cases in the first case Anjali is ahead of Meena and in the second case we consider Meena is Ahead of Anjali.

Case 1 (Anjali is 7th ahead of Meena)

Anjali 6 Meena 2

So total 10 members are there in a queue.

Case 2 (Meena is 7th Ahead of Anjali)

7 Meena 6 Anjali 9

So total 24 members are there in the queue

Two answers we are getting so answer is cannot be determine.

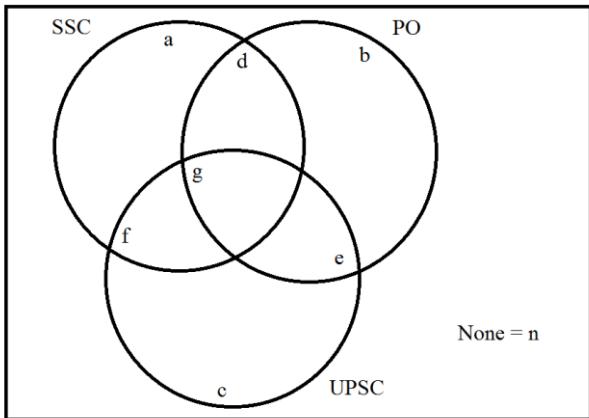
Venn Diagram

Direction for the questions 1 to 5

Read the following information carefully and answer the following question.

In a batch of 300 candidates, 45% of the candidates are appearing for SSC exam, 43% of the candidates are appearing for PO exam and 40% of the candidates are appearing for UPSC exam. 10% candidates are appearing for both SSC and PO, 12% candidates are appearing for both UPSC and PO, 15% candidates are appearing for both SSC and UPSC. 5% candidates are not appearing for any exam.

$$\text{Total} = 100\% = 300$$



$$a+d+f+g = 45\% \quad 1$$

$$b+d+e+g = 43\% \quad 2$$

$$c+e+f+g = 40\% \quad 3$$

$$d+g = 10\% \quad 4$$

$$e+g = 12\% \quad 5$$

$$f+g = 15\% \quad 6$$

$$n = 5\%$$

$$a+b+c+d+e+f+g+n = 100\%$$

$$a+b+c+d+e+f+g = 95\% \quad 7$$

$$\text{Adding equation 1, 2 and 3}$$

$$a+b+c+2.(d+e+f)+3.g = 128\% \quad 8$$

$$\text{Adding equation 4, 5 and 6}$$

$$d+e+f+3.g = 37\% \quad 9$$

$$\text{Subtracting 9 from 8}$$

$$a+b+c+d+e+f = 91\% \quad 10$$

$$\text{Solving 7 and 10 we get } g = 4\%$$

Putting the value of 'g' in equation 4, 5 and 6

$$d = 6\%$$

$$e = 8\%$$

$$f = 11\%$$

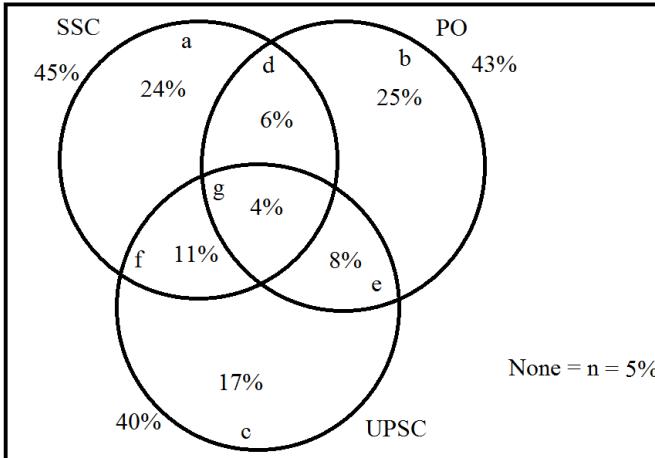
now from equation 1, 2 and 3 we get,

$$a = 24\%$$

$$b = 25\%$$

$$c = 17\%$$

$$\text{Total} = 100\% = 300$$



1) How many candidates are appearing for all the three exams?

Total candidates appearing for all the 3 exams = $g = 4\%$

So, 100% corresponds to 300, then 4% corresponds to 12.

- a) 12 b) 13 c) 14 d) 15 e) 16

2) How candidates are appearing for exactly one exam?

Candidate appearing for exactly one exam = $24\% + 25\% + 17\% = 66\%$

$100\% - 300$

$66\% - 198$

- a) 200 b) 216 c) 198 d) 194 e) 208

3) What is the percentage change in number of candidates appearing for exactly two exams when total changes from 300 to 450?

Total number of candidates = 300

Candidates passed in exactly 2 exams = 25%

100% corresponds to 300

25% corresponds to 75

If total number of candidates = 450

Candidates passed in exactly 2 exams = 25%

100% corresponds to 450

25% corresponds to 112.5

percentage change in number of candidates appearing for exactly two exams when total changes from 300 to 450 = $\frac{37.5}{75} \times 100$

$$= 50\%$$

- a) 10% b) 20% c) 30% d) 40% e) 50%

4) What is the ratio of the number of candidates appearing for SSC but not for PO to the number of candidates appearing for PO but not for SSC?

$$\frac{\text{number of candidates appearing for SSC but not for PO}}{\text{number of candidates appearing for PO but not for SSC}} = \frac{35}{33}$$

- a) 33:35 b) 35:33 c) 31:33

- d) 33:31 e) 35:31

5) What percent of candidates are appearing for at least two exams?

Candidates appearing for at least two exams = Candidate appearing for exactly 2 exams + Candidates appearing for exactly 3 exams

$$= (11\% + 6\% + 8\%) + 4\%$$

$$= 31\%$$

- a) 25% b) 29% c) 27% d) 31% e) 26%

6) How many candidates are appearing for at most two exams?

Candidates appearing for at most two exams = Candidates appearing exactly 2 exams + Candidates appearing exactly 1 exams + Candidates appearing for none of the exams

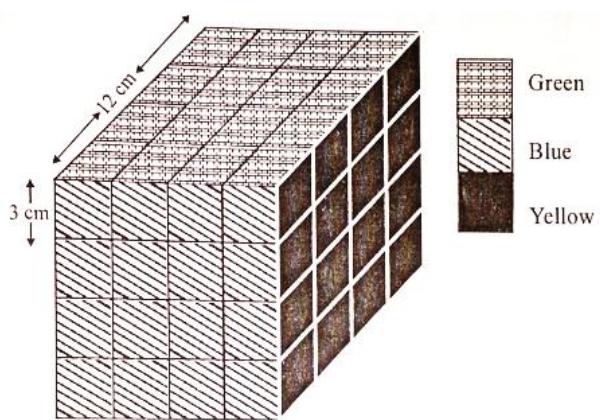
$$= (11\% + 6\% + 8\%) + (24\% + 25\% + 17\%) + 5\%$$

$$= 96\%$$

- a) 94% b) 91% c) 90% d) 71% e) 96%

Cubes

Direction : A solid cube of 12 cm been painted green, blue and yellow on pairs of opposite faces. it is then cut in cubical blocks of each side 3 cm.



1) A only

4) None of these

2) B & C

3) A & B

1. How many cubes have only one face painted?

Number of cubes only one face is painted = Pieces along a face except the corner pieces and pieces along the edges \times 6 (Total number of faces of cube)

$$= 4 \times 6 = 24$$

- 1) 8 2) 16 3) 24 4) 28

2. How many cubes have only two faces painted?

Number of cubes only two faces is painted = Pieces along a edge except the corner pieces \times 12 (Total number of edges of cube)

$$= 4 \times 6 = 24$$

- 1) 8 2) 16 3) 20 4) 24

3. How many cubes have only three faces painted?

Number of cubes Exactly three faces is painted = Pieces which are at the corners = 8

- 1) 0 2) 4 3) 6 4) 8

4. How many cubes have no face painted?

= Total number of pieces - Number of pieces whose at least one face is painted (Number of cubes only one face is painted + Number of cubes only two faces is painted + Number of cubes Exactly three faces is painted)

$$= 64 - (24+24+8)$$

$$= 8$$

OR

Total number of pieces of bigger cube = $6 \times 6 \times 6 = 64$

If we remove the outer layer then number of pieces inside that cube = $2 \times 2 \times 2 = 8$

- 1) 0 2) 4 3) 8 4) 12

5. How many cubes have at most one face painted?

Number of pieces whose at most one face is painted = Total number of pieces - Number of pieces whose exactly two or three faces are painted

$$= 64 - (8+24)$$

$$= 32$$

- 1) 24 2) 32 3) 30 4) 36

6. How many cubes have two faces painted yellow and green and all other faces unpainted?

There are four edges where exactly two faces of piece get painted by yellow and green colour.

cubes have two faces painted yellow and green and all other faces unpainted = Number of pieces along that single edge \times 4

$$= 2 \times 4 = 8$$

- 1) 4 2) 8 3) 16 4) 32