

(a) GRR (b) GSS (c) ISS (d) ITT

**9. QPO, NML, KGI, ----, EDC**

(a) HJF (b) CAB (c) JKL (d) GHI

**10. BCB, DED, FGF, HIH, -----**

(a) JKJ (b) HGH (c) IJI (d) JHJ

**11. B, F, --, N, R**

(a) G (b) K (c) J (d) L

**12. ----, E, G, J, N**

(a) A (b) B (c) D (d) Z

**13. B, B, A, D, --, F**

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

**14. DCXW, FEVU, HGTS, ----**

(a) JKPO (b) JIRQ (c) CBYZ (d) JMRS

**15. AB, DEF, HIJK, -----, STUVWX**

(a) MNOPQ (b) LMNOP (c) LMNO (d) QRSTU

**16. A, C, E, G, ----**

(a) H (b) I (c) J (d) F

**17. L, N, Q, S, V, ----**

(a) W (b) Y (c) Z (d) X

**18. A, E, I, M, ----**

(a) P (b) Q (c) R (d) O

**19. DK, FN, HQ, ----**

(a) KS (b) JT (c) KT (d) JS

**20. LOQ, SVX, ZCE, ----**

(a) GJL (b) GLJ (c) GTL (d) JLG

**21. A, E, J, N, S, W, ----**

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

**22. ZYX, VUT, QPO, MLK, HGF, ----**

(a) DCB (b) CBA (c) BCD (d) EDC

**23. B, C, E, H, L, -----**

(a) Q (b) N (c) O (d) P

**24. R, M, I, F, D, ----**

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

**25. BCF, CDG, DHE, -----**

(a) FJ (b) EFG (c) DFI (d) EGI

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- (c) baaab (d) ababb

14. If alternate letters are deleted from the following series then which letter will divide the new series in two equal parts?

ABCDEFGHIJKLMNOPQRSTUVWXYZ.

- (a) N (b) M (c) K  
(d) O (e) None of these

15. If first half of the following series is written in the reverse order the which will be 7<sup>th</sup> letter to the left of 10<sup>th</sup> letter from your right?

ABCDEFGHIJKLMNOPQRSTUVWXYZ.

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

16. In the following series which is the 8<sup>th</sup> letter to the right of 16<sup>th</sup> letter from your left ?

ABCDEFGHIHUKLMNOPQRSTUVWXYZ.

- (a) K (b) Y (c) X  
(d) W (e) None of these

17. If the second half of the following series is written in the reverse order, which will be the 7<sup>th</sup> letter to the left of 23<sup>rd</sup> letter from your left?

ABCDEFGHIJKLMNOPQRSTUVWXYZ.

- (a) L (b) Y (c) X  
(d) P (e) None of these

18. How many meaningful English words can be formed with the letters ESRO using each letter only once in each word?

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

19. From the word 'ASTOUNDER', how many independent words can be made with-out changing the order of the letters and using each letter only once?

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

20. If in the English alphabet, all the letters at odd-numbered positions are written in serial order from left to right followed by the letters at even-numbered positions written in reverse

order, which letter will be sixth to the left of seventeenth letter from left?

- (a) D (b) B (c) V (d) U

21. 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

Four of the following five letter groups of the English alphabet given above are alike in a certain way and so form a group. On the basis of their position in English alphabet, which is the one that does not belong the group?

- (a) DKGK (b) FMI (c) MTP (d) HOL

22. If the letters from T to Z are interchanged by the letters A to G in such a way that A takes the position of T and so on, then which will be the third letter to the left of 18<sup>th</sup> letter from right?

English alphabet: 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 V

- (a) Y (b) U (c) V (d) C

23. Which letter will come exactly between the tenth letter from your left and the seventh letter from your right. Without changing any order in the original run of the alphabet?

- (a) N (b) P (c) O (d) Q

24. If the letters in the word RUTHENIUM are rearranged in the alphabetical order, which letter will be second to the right of middle letter?

- (a) I (b) T (c) N (d) R

25. How many pairs of letters are there in the word " CASTRAPHONE" which have as many letters between them in the word as in the alphabet?

- (a) 3 (b) 4 (c) 5 (d) 6

### STUDENT EXERCISE

Directions (1-5): Study the following arrangement and answer questions given:

648 483 295 333 261 312

5.  $6 : 17 :: 9 : ?$

- (a) 27 (b) 28 (c) 25 (d) 26

6.  $292 : 146 :: 582 : ?$

- (a) 291 (b) 292 (c) 272 (d) 286

7.  $25 : 81 :: 36 : ?$

- (a) 65 (b) 103 (c) 121 (d) 93

8.  $7 : 32 :: 35 : ?$

- (a) 156 (b) 160 (c) 146 (d) 172

9.  $5 : 30 :: 7 : ?$

- (a) 49 (b) 56 (c) 54 (d) 50

10.  $8 : 28 :: 27 : ?$

- (a) 64 (b) 65 (c) 8 (d) 28

**DIRECTIONS(11-15) : Choosing a similarly related pair as the given pair on the basis of the relation between the numbers in each pair.**

11.  $0.16 : 0.0016 :: 1.02 : ?$

- (a) 0.0102 (b) 0.102 (c) 1.020 (d) 10.20

12.  $9 : 80 :: 100 : ?$

- (a) 901 (b) 1009 (c) 9999 (d) 1099

13.  $7 : 56 :: 9 : ?$

- (a) 63 (b) 81 (c) 85 (d) 90

14.  $149 : 238 :: 159 : ?$

- (a) 248 (b) 250 (c) 260 (d) 268

15.  $49 : 81 :: 100 : ?$

- (a) 64 (b) 144 (c) 169 (d) 199

**DIRECTIONS (16-23): Choosing a similarly related pair as the given pair on the basis of the relation between the numbers in each pair.**

16.  $21 : 3 :: 574 : ?$

- (a) 23 (b) 82 (c) 97 (d) 113

17.  $182 : ? :: 210 : 380$

- (a) 156 (b) 246 (c) 342 (d) 442

18.  $121 : 12 :: 25 : ?$

- (a) 1 (b) 2 (c) 4 (d) 6

19.  $25 : 37 :: 49 : ?$

- (a) 41 (b) 56 (c) 60 (d) 65

20.  $3265 : 4376 :: 4673 : ?$

- (a) 2154 (b) 3562 (c) 5487 (d) 5784

21.  $18 : 30 :: 36 : ?$

- (a) 54 (b) 62 (c) 64 (d) 66

22.  $6 : 222 : 7 : ?$

- (a) 210 (b) 330 (c) 350 (d) 380

23.  $14 : 9 : 26 : ?$

- (a) 12 (b) 13 (c) 14 (d) 15

24.  $11 : 1210$

- (a) 6 : 216 (b) 7 : 1029 (c) 8 : 448  
(d) 9 : 729

25.  $7 : 24$

- (a) 30 : 180 (b) 23 : 72 (c) 19 : 58  
(d) 1 : 43

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**14. What is the code for "Astronomic"?**

- (a) 1\$6&293!4\*      (b) \*\$6&898!0%  
(c) %\$6&293!4\*      (d) %\$6&898!0\*  
(e) None of these

**15. "1#26&3@40" is the code for which of the following words?**

- (a) Isotropic      (b) Proptosis  
(c) Panasonic      (d) Inotropic  
(e) None of these

(16-20) In a certain coded language:

**'Move Fast Or Left Behind'** is coded as **'hc ma tj kl np'**

**'Men Left Behind The Journey'** is coded as **'at tj ma lp uf'**

**'Your Journey Ended Fast'** is coded as **'lp ry hc jq'**

**'The Life Ended Or Begin'** is coded as **'kl fd at cr ry'**

**16. What does the code 'np' stands for in the given code language?**

- (a) Move      (b) Fast      (c) Or  
(d) Left      (e) Begin

**17. What does the code 'fd cr' stands for in the given code language?**

- (a) Or Begin      (b) The Life      (c) Or Ended  
(d) Life Begin      (e) Life Ended

**18. What is the code of 'Your Men' in the given code language?**

- (a) jq tj      (b) jq uf      (c) uf hc  
(d) ry uf      (e) jq ma

**19. If in the given coded language 'Left My Legacy' is written as 'cs tj rk' then what would be the code of 'Journey Behind My Legacy'?**

- (a) lp at cs rk      (b) hc tj cs rk      (c) lp ma cs rk  
(d) Either option A or B  
(e) Either option B or C

**20. What is the code of 'The' in the given code language?**

- (a) fd      (b) ma      (c) cr  
(d) uf      (e) at

(21-25) In certain coded language:

**'Worst Thing To Happen'** is coded as **'ip tn bl rm'**

**'Stay Close To Heart'** is coded as **'pc ap ha bl'**

**'Your Stay Was Worst'** is coded as **'jr rm ha pi'**

**'Thing Stay In Heart'** is coded as **'ma pc ha tn'**

**21. What does the code 'jr' stand for in the given code language?**

- (a) heart      (b) stay  
(c) either 'stay' or 'close'      (d) worst  
(e) either 'your' or 'was'

**22. Which of the following is the code for 'Happen' in the given code language?**

- (a) rm      (b) ap      (c) tn  
(d) bl      (e) none of these

**23. Which of the following is the code for 'Heart' in the given code language?**

- (a) ma      (b) ha      (c) bl  
(d) pc      (e) none of these

**24. Which of the following is the code for 'Worst Stay' in the given code language?**

- (a) rm ha      (b) ap bl      (c) pi jr  
(d) rm pi      (e) none of these

**25. If 'In Your Dreams' is written as 'cd ma pi' then what would be the code of 'Dreams Close Thing'?**

- (a) cd bl rm      (b) ma pc tn      (c) cd tn ap  
(d) jr ha rm      (e) cd ap ha

A is the father of B. B is the only son of C. C is the daughter of D. C is the mother of E. E is the sister of F.

**2. How is C related to B?**

- (a) Father (b) Mother  
(c) Daughter (d) Son

**3. How is F related to A?**

- (a) Daughter (b) Father  
(c) Mother (d) Son

**4. If D is married to P, then how is D related to E?**

- (a) Daughter-in-law (b) Son-in-law  
(c) Father (d) Cannot be determined

**5. A is the son of C; C and Q are sisters; Z is the mother of Q and P is the son of Z. Which of the following statements is true?**

- (a) P and A are cousins  
(b) P is the maternal uncle of A  
(c) Q is the maternal grandfather of A  
(d) C and P are sisters

**6. If A + B means A is the brother of B; A % B means A is the father of B and A x B means A is the sister of B. Which of the following means M is the uncle of P?**

- (a) M % N x P (b) N x P % M  
(c) M + S % R % P (d) M + K % T x P

**7. Pointing to a girl Sandeep said, "She is the daughter of the only sister of my father." How is sandeep related to the girl?**

- (a) Uncle (b) Cousin  
(c) Father (d) Grandfather

**8. All the six members of a family A, B, C, D, E and F are travelling together. B is the son of C but C is not the mother of B. A and C are a married couple) E is the brother of C. D is the daughter of A. F is the brother of B. Who is the mother of B ?**

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

**9. Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle" How is the boy related to the girl?**

- (a) brother (b) nephew  
(c) uncle (d) son-in-law

**10. Pointing to a photograph. Bajpai said, "He is the son of the only daughter of the father of my brother." How Bajpai is related to the man in the photograph?**

- (a) nephew (b) brother  
(c) father (d) maternal uncle

**11. Pointing to a woman, Abhijit said, "Her granddaughter is the only daughter of my brother." How is the woman related to Abhijit?**

- (a) Sister (b) Grandmother  
(c) Mother-in-law (d) Mother

**12. Pointing to a person, Deepak said, "His only brother is the father of my daughter's father". How is the person related to Deepak?**

- (a) Father (b) Grandfather  
(c) Uncle (d) Brother-in-law

**13. Pointing to Gopi, Nalni says, "I am the daughter of the only son of his grandfather." How Nalni is related to Gopi?**

- (a) Niece (b) Daughter  
(c) Sister (d) Cannot be determined

**14. Pointing towards a girl, Abhisek says, "This girl is the daughter of only a child of my father." What is the relation of Abhisek's wife to that girl?**

- (a) Daughter (b) Mother  
(c) Aunt (d) Sister

**Directions(15-18): Study the following information carefully and answer the given question:**

**There are seven members in a family. J is the mother of K and mother in law of E) C is the daughter in law of N. E is the son of C who is**

married with F. G is spouse of E) There are only two married couple in the family.

15. How is F related with G?

- (a) Sister in law (b) Wife  
(c) Mother in law (d) Father in law  
(e) None of these

16. How many male members are there in the family?

- (a) Two (b) Three (c) Four  
(d) Five (e) Cannot be determined

17. How is K related with E?

- (a) Aunt (b) Sister (c) Brother  
(d) Cannot be determined (e) None of these

18. How is G related with J?

- (a) Daughter (b) Son-in-law (c) Daughter-in-law  
(d) Wife (e) Husband

Directions(19-20): Study the information given below and answer the questions based on it.

Eight members of a family A, B, C, D, E, F and H are going together to watch IPL final match. E is the son of B and F is the mother of H. D is the husband of H. F is the grand-father of A and husband of (b) There are equal male and equal female in the family. C is the only son of (d) G is the grand-daughter of (b) H has one child

19. The group of female member in the family are:

- (a) F, B, G, H (b) B, A, H, G (c) H, C, B, A  
(d) D, E, G, A (e) None of these

20. How is C related to G?

- (a) Brother (b) Sister (c) Cousin  
(d) Cousin Sister (e) Can't be determined

Direction (21-23): Study the following information carefully to answer the given questions:

M, N, O, P, Q, R and S are family members and there are two married couples in two generations of people who live in the same house) M is father of spouse of O. R is the maternal Uncle of S who is not a male) M is brother-in-law of R. P and S are sisters of each other. Q is son of N. O is a feminine gender.

21. If L is maternal uncle of S then how is L related to Q?

- (a) Grandmother (b) Father (c) Mother  
(d) Uncle (e) None of these

22. If P is grandchild of M then how is N related to J?

- (a) Uncle (b) Father (c) Mother  
(d) Grandmother (e) None of these

23. How is M related to P?

- (a) Grandmother (b) Uncle (c) Mother  
(d) Father (e) None of these

## 10. DIRECTIONS

### INTRODUCTION

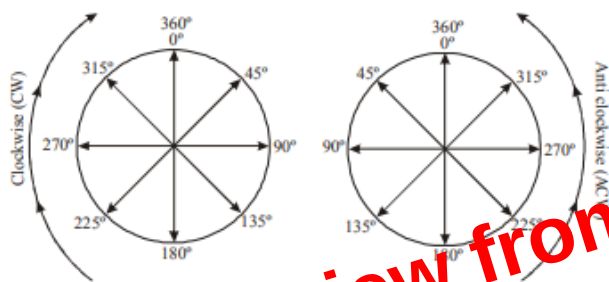
This part of reasoning comes under the category of common-sense reasoning. In fact, this segment gauges the sense of direction of a candidate.

### CONCEPT OF DIRECTION

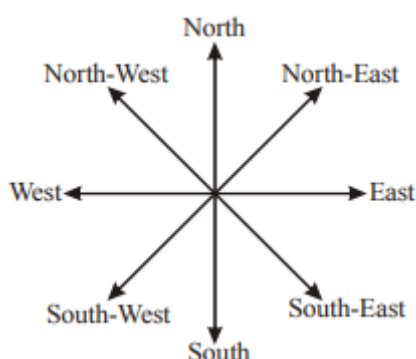
In our day-to-day life, we make our concept of direction after seeing the position of sun. In fact, this is a truth that sun rises in the East and goes down in the West. Thus, when we stand facing sunrise, then our front is called East while our back is called West. At this position our left hand is in the Northward and the right hand is in the Southward. Let us see the following direction map that will make your concept clearer.

### CONCEPT OF DEGREE

Let us see the following picture:



Direction Map

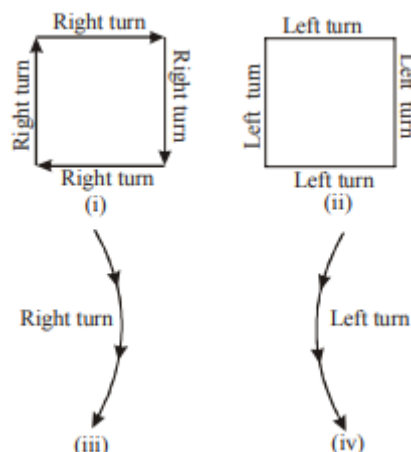


**Note:** On paper North is always on top while South is always in bottom.

**CONCEPT OF TURN:** Right turn = Clockwise turn

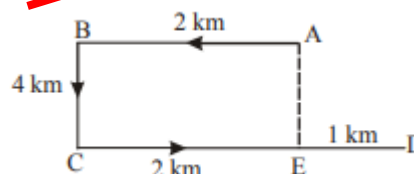
Left turn = Anticlockwise turn

Let us understand it through pictorial representation:



**EXAMPLE 1.** Raman walked 2 km West from his office and then turned South covering 4 km. Finally, he walked 3 km towards East and again move 1 km West. How far is Raman from his initial position.

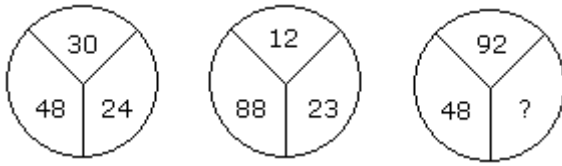
**Sol.** Raman starts from his office A, moves 2 km West upto B, then 4 km to the South upto C, 3 km East upto D and finally 1 km West upto E. Thus his distance from the initial position AE = BC = 4 km.



- Angle between two consecutive main directions is always  $90^\circ$ .
- Angle between two consecutive sub directions is always  $90^\circ$ .
- Angle between a main direction and a sub direction is always  $90^\circ$ .
- If our face is towards North, then after left turn our face will be towards West while after right turn, it will be towards East.
- If our face is towards South, then after left turn our face will be towards East and after right turn it will be towards West.
- If our face is towards East, then after left turn our face will be towards North and after right turn it will be towards South.

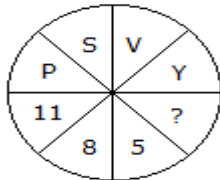
- (a) 30 (b) 13 (c) 70 (d) 118

15. Which one will replace the question mark ?



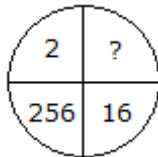
- (a) 60 (b) 46 (c) 86 (d) 75

16. Which one will replace the question mark ?



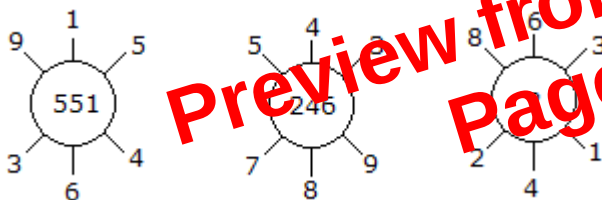
- (a) 3 (b) 2 (c) 7 (d) 6

17. Which one will replace the question mark ?



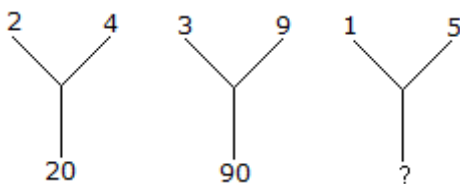
- (a) 8 (b) 32 (c) 4 (d) 16

18. Which one will replace the question mark ?



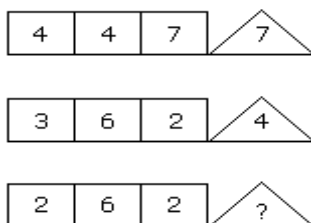
- (a) 262 (b) 622 (c) 631 (d) 824

19. Which one will replace the question mark ?



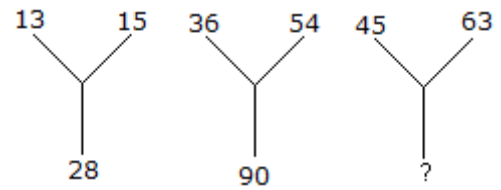
- (a) 20 (b) 26 (c) 25 (d) 75

20. Which one will replace the question mark ?



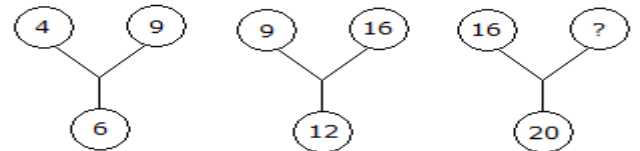
- (a) 2 (b) 4 (c) 6 (d) 8

21. Which one will replace the question mark ?



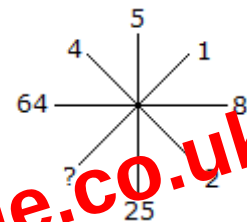
- (a) 18 (b) 19 (c) 108 (d) 28

22. Which one will replace the question mark ?



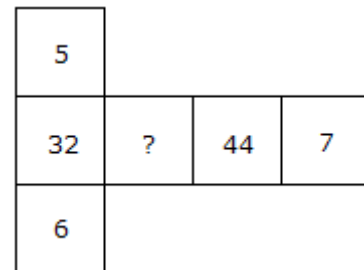
- (a) 60 (b) 50 (c) 25 (d) 21

23. Which one will replace the question mark ?



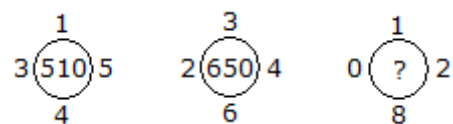
- (a) 1 (b) 2 (c) 3 (d) 4

24. Which one will replace the question mark ?



- (a) 33 (b) 38 (c) 32 (d) 37

25. Which one will replace the question mark ?



- (a) 660 (b) 670 (c) 610 (d) 690

Let us see some other cases of this type:

**Case II:**

**Input:** 50 32 Vandana Prerna Aradhna 100

**Step I:** 100 50 32 Vandana Prerna Aradhna

**Step II:** 100 Vandana 50 32 Prerna Aradhna

**Step III:** 100 Vandana 50 Prerna 32 Aradhna

In this case, largest number and the word coming last alphabetically get arranged alternately. Then the 2<sup>nd</sup> longest number and the word coming 2<sup>nd</sup> last alphabetically get arranged alternately and the process goes on till the arrangements of all the numbers and words get completed. In this case, arrangement completes in step III.

**Case III:**

**Input:** 50 32 Vandana Prerna Aradhna 100

**Step I:** Aradhna 50 32 Vandana Prerna 100

**Step II:** Aradhna 32 50 Vandana Prerna 100

**Step III:** Aradhna 32 Prerna 50 Vandana 100

In this case, arrangement starts with the word coming 1<sup>st</sup> alphabetically and such word is 'Aradhna' that comes at the 1<sup>st</sup> position from left in step I. In step II, the smallest number (32) comes at the 2<sup>nd</sup> position from left. In step III, the word coming 2<sup>nd</sup> alphabetically comes at the 3<sup>rd</sup> position from left and all the other members get arranged automatically.

**Case IV:**

**Input:** 50 32 Vandana Prerna Aradhna 100

**Step I:** Vandana 50 32 Prerna Aradhna 100

**Step II:** Vandana 100 50 32 Prerna Aradhna

**Step III:** Vandana 100 Prerna 50 32 Aradhna

**Step IV:** Vandana 100 Prerna 50 Aradhna 32

In this case, word coming last alphabetically comes 1<sup>st</sup> from left in step I and such word is 'Vandana'. In step II, the largest number (100) comes at the 2<sup>nd</sup> position from left. In step III, the word coming 2<sup>nd</sup> last alphabetically occupies the 3<sup>rd</sup> position from left, and such word is 'Prerna'. As the 2<sup>nd</sup> largest number (50) automatically get

arranged as per the pattern going on and hence this is not needed to be arranged in step IV. In step VI, the word coming 1<sup>st</sup> alphabetically comes at the 5<sup>th</sup> position from left and such word is 'Aradhna'. The smallest number (32) gets arranged automatically coming at the last position from left in step IV. Thus, it is clear that in this case the word coming 1<sup>st</sup> alphabetically and the greatest number get arranged alternately in 1<sup>st</sup> two steps; then 2<sup>nd</sup> last word alphabetically and 2<sup>nd</sup> largest number get arranged alternately finishing the whole arrangement in step IV.

**Case V:**

**Input:** 50 32 Vandana Prerna Aradhna 100

**Step I:** 32 50 Vandana Prerna Aradhna 100

**Step II:** 32 Vandana 50 Prerna Aradhna 100

**Step III:** 32 Vandana 50 Prerna 100 Aradhna

In this case, the smallest number comes at the 1<sup>st</sup> position from left in step I and such number is 32. In step II, the word (Vandana) coming last alphabetically occupies the 2<sup>nd</sup> place from left. In the 2<sup>nd</sup> step, the 2<sup>nd</sup> smallest number (50) takes the 3<sup>rd</sup> position from left automatically and also the word coming 2<sup>nd</sup> last alphabetically takes the 4<sup>th</sup> position from left automatically. Hence, there is no need to arrange '50' and 'Prerna'. In the III step, the largest number (100) occupies the 5<sup>th</sup> position from left completing the whole arrangement.

**Case VI:**

**Input:** 50 32 Vandana Prerna Aradhna 100

**Step I:** 100 50 32 Vandana Prerna Aradhna

**Step II:** 100 Aradhna 50 32 Vandana Prerna

**Step III:** 100 Aradhna 50 Prerna 32 Vandana

In this case, the logic is that the greatest number (100) comes at the 1<sup>st</sup> position from left in step I. In step II the word coming 1<sup>st</sup> alphabetically takes the 2<sup>nd</sup> position from left and the 2<sup>nd</sup> largest number (50) gets arranged automatically. Hence, in step III, we directly arrange the word coming 2<sup>nd</sup> last alphabetically (that word is 'Prerna') occupies the 4<sup>th</sup> position from left and the other two

**Input: Pull the cover and then push into**

**Step I: Pull the then and cover push into**

**Step II: then the pull into push cover and**

**Step III: into pull the then and cover push**

**Step IV: into pull and then the cover push**

and so on.

As per the rule followed in the above steps, find out the appropriate step for the given input or vice versa in the following questions.

**8. Input: Try your best until you get goal**

**Which of the following steps would be 'get goal try until you your best'?**

- (a) Step 2      (b) Step 3      (c) Step 4  
(d) Step 5      (e) None of these

**9. If Step VI of an input is 'deep gutter ball into the has fallen', which of the following would definitely be the input?**

- (a) has the ball fallen into deep gutter  
(b) ball has fallen into the deep gutter  
(c) deep gutter has fallen into the ball  
(d) gutter has deep ball fallen into the  
(e) None of these

**10. If Step IV of an input is 'We can't measure the depth without scale', what would be the 7th step?**

- (a) scale we the measure can't depth without  
(b) the we scale without depth can't measure  
(c) without we scale the can't measure depth  
(d) the we depth without scale can't measure  
(e) None of these

**11. Input: Standing hard always is impossible for all Which of the following will be 8th step for this input?**

- (a) hard all standing is impossible for always  
(b) hard all impossible is standing for always

(c) impossible all hard always for standing is

(d) impossible all for always hard standing is

(e) None of these

**12. If Step I of an input is 'Play and jump until you tired fully', what would be step VI of the input?**

- (a) jump fully tired you and play until  
(b) tired fully jump until play and you  
(c) tired fully play until jump and you  
(d) play fully tired you and jump until  
(e) None of these

**Directions (13-17):** A 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: cooler and wind helps in summer.**

**Step I: wind cooler and helps in summer.**

**Step II: wind summer cooler and helps in.**

**Step III: wind summer in cooler and helps.**

**Step IV: wind summer in helps cooler and)**

Since the words are already arranged, the machine stops after this step. Otherwise, the machine may carry on its logic until the words get fully arranged) Study the logic and answer the questions that follow:

**13. Which of the following will be the Step II for the input given below?**

**Input: in the bag five packets were kept.**

- (a) were pockets in the bag five kept.  
(b) packets were in the bag five kept.  
(c) kept were packets bag five in the)  
(d) Can't be determined  
(e) None of these

**14. Input: it should not be happened that day.**

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- a. None follows                      b. Only I follows  
c. Only II follow                      d. Only III follow  
e. Only II and III follow

**Directions (11 -25)** In each of the following questions some statements are given followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Give answer if: a. Only I follow b. Only II follows c. Either I or II follows d. Neither I nor II follows e. Both I & II follow

**11. Statements:**

Some Earth is moon

No moon is star

**Conclusions:**

I. Some star are Earth

II. Some moon are Earth

**12. Statements:**

Some House are Xiomi

Some Flat are Uber

No Xiomi is Uber

**Conclusions:**

I. All House are Flat.

II. No Flat is House

**13. Statements:**

All garbage are junk.

No junk is mail.

All junk are spam.

**Conclusions:**

I. All garbage are spam.

II. Some spam are mail

**14. Statements:**

Some cow is deer.

No deer is dog.

Some dog is fox.

**Conclusions:**

I. Some cow is fox.

II. Some fox is deer.

**15. Statements:**

Some Tannu are Mamta.

Some Naween are Jai.

No Naween is Mamta.

**Conclusions:**

I. Some Naween are Tannu.

II. Some Jai are Mamta

**16. Statements:**

All soil is dark.

Some dark is green.

No green is field

**Conclusions:**

I. Some dark is soil.

II. Some dark is not field

**17. Statements:**

All Men are Women.

All Women are Children.

No Children is young

**Conclusions:**

I. Some Children are Men

II. No men is Young

**18. Statements:**

All Letters are Vowels.

Some Vowels are Words.

No Word is Consonant

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**15. Statements:**

All dark is night.

No dark is dog.

Some dog is time.

**Conclusions:**

I. Some night is not dog.

II. Some time is not dark

**16. Statements:**

All baskets are Marbles.

Some marbles are sticks.

No stick is garden

**Conclusion:**

I. Some Gardens are baskets.

II. No Garden is Basket

**17. Statements:**

All Lenovo are Samsung.

No Samsung is Lava.

Some Moto are Samsung.

**Conclusion:** I. No Lava is Lenovo.

II. Some Lava is Moto.

**18. Statements:**

Some Pots are Mats

All Mats are Cats.

No Cat is Rat

**Conclusions:**

I. No Rat is Pot

II. Some Rats are not Mats

**19. Statements:**

No plants are tree.

All tree is fruit.

All fruit are herbs

**Conclusions:**

I. Some tree are herbs.

II. All herbs are plant

**20. Statements:**

Some Years are Month.

All Days are Years.

No Leap is Month.

**Conclusions:**

I. Some Months are days.

II. No Month is day.

**21. Statements:**

Some shirts are Pants.

Some Pants are ties.

No pant is bag.

**Conclusion:**

I. Some ties are bags.

II. Some ties are not bags.

**22. Statements:**

No Lic is Nabard

Some Sbi are Ibps

All Sbi are Nabard.

**Conclusions:**

I. All Ibps are Nabard.

II. Some Ibps are Lic is a possibility.

**23. Statements:**

No J is K.

Some K is D.

Some D is E.

No E is F

**Conclusions:**

I. Some E is K

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II. Some D is F

**24. Statements:**

Some apple is mango.

No mango is orange.

**Conclusions:**

I. No apple is orange.

II. Some orange is apple

**Directions(25):** In each question below, there are three or four statements followed by three or four conclusions numbered I, II, III and IV. You have to take the given statements to be and then decide which of the given conclusions logically follow(s) from the given statements.

**25. Statements:**

Some boxes are chairs

No chairs is roads

All roads are tents

**Conclusions:**

I. Some tents are chairs

II. Some roads are boxes

III. No chairs is tents

a. Only either I or II follows

b. Only either I or III follows

c. Only either II or III follows

d. All I, II and III follows

e. None of these

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## 18.CODED -INEQUALITIES

### INTRODUCTION

As we know,  $3 \times 3 = 9$

Now, we can say that the result of multiplication between 3 and 3 is equal to 9. Therefore,  $3 \times 3 = 9$  is a case of equality. But when we multiply  $3 \times 4$ , we get 12 as a result of this multiplication. It does mean that  $3 \times 4 \neq 9$

As  $3 \times 4$ , is not equal to 9, it is a case of inequality.

When, we come to know that one thing is not equal to another; there can be only two possibilities:-

(i) One thing is greater than another thing.

or

(ii) One thing is less than the another thing.

When, we denote (i) and (ii) mathematically, then we will write.

(i) One thing  $>$  another thing.

or

(ii) One thing  $<$  another thing.

where ' $>$ ' denotes 'greater than'.

and ' $<$ ' denotes 'less than'

Hence, you can write,

$$3 \times 4 > 9$$

$$4 \times 1 < 9$$

(  $3 \times 4 > 9$  ) means 'Product of 3 and 4 is greater than 9'.

(  $4 \times 1 < 9$  ) means 'Product of 4 and 1 is less than 9'.

Sometimes we come across two numbers where, we do not know the exact state of inequality between them.

Let us see :

$m \geq n$  means m is either greater than or equal to n.

$m \leq n$  means n is either less or equal to m.

Hence, we can summarize the signs to be used in inequalities as below:

'=' denotes equal to

'>' denotes greater than

' $\geq$ ' denotes greater than or equal to

'<' denotes less than

' $\leq$ ' denotes less than or equal to

### CHAIN OF INEQUALITIES

Sometimes two or more inequalities are combined together to create a single inequality having three or more terms. Such combination is called chain of inequalities.

#### Conditions for Combining Two Inequalities

**Condition I:** Two inequalities will be combined if and only if they have a common term.

**Condition II:** Two inequalities will 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.

**EXAMPLE**  $14 > 13$ ,  $13 > 12$  can be easily combined as ' $14 > 13 > 12$ '.

### Coded Inequalities

Here, Clearly,  $14 > 13$  and  $13 > 12$  have common term 13 and this common term is greater than 12 and less than 14. Hence,  $14 > 13$  and  $13 > 12$  have been combined into  $14 > 13 > 12$  as per the conditions I and II

$$17 < \textcircled{19} < 20$$

↓  
Common term

**EXAMPLE**  $17 < 19$ , and  $19 < 20$  can be easily combined as  $17 < 19 < 20$ .

Sol. On putting sign (=) in place of question mark (?)

$$I > J \geq K = L \leq N = M$$

$\Rightarrow$  means  $I > L$  and  $M \geq K$

Inequality depends upon combining more than two element with a common term. Now observe the below diagram thoroughly

**Accordance to this diagram**

**Definite Conclusion**

$$> = \rightarrow >$$

$$< = \rightarrow <$$

$$\geq = \rightarrow \geq$$

$$\leq = \rightarrow \leq$$

$$\geq > \rightarrow >$$

$$\leq < \rightarrow <$$

$$< = \leq \rightarrow <$$

$$> = \geq \rightarrow >$$

**Indefinite Conclusion**

$$\cdot > < \rightarrow \text{No relation} \quad \cdot \geq \leq \rightarrow \text{No relation}$$

$$\cdot > \leq \rightarrow \text{No relation} \quad \cdot \geq < \rightarrow \text{No relation}$$

**Case 1.  $< \text{ OR } >$**

Two signs opposite to each other will make the conclusion wrong But again if the signs are in same manner that will not make it wrong.

**EXAMPLE**

If  $A > B < C > D$  then  $A < C = \text{False}$ ,  $C > A = \text{False}$ .

But

If  $E > F > G > H$  then  $E > G = \text{True}$ ,

$F > H = \text{True}$ ,  $E > H = \text{True}$ .

**Statement:**  $A < D > C < E > B$

**Conclusions:**

$$\bullet C > B \rightarrow \text{False}$$

$$\bullet A < E \rightarrow \text{False}$$

$$\bullet D > B \rightarrow \text{False}$$

In simple way, whenever these two sign comes in opposite direction the answer will be false.

**Case 2.  $\leq \text{ OR } \geq$**

Two signs opposite to each other will make the conclusion wrong But again if the signs are same then it will be true.

**EXAMPLE**

If  $A \geq B \leq C$  then

$$A \leq C = \text{False}, C \geq A = \text{False}$$

But

If  $A \geq B \geq C$  then

$$A \geq C = \text{True}, C \leq A = \text{True}.$$

**Statement:**  $B \geq D \leq A \geq F \geq C$

**Conclusions :**

$$\text{I. } A \geq C \rightarrow \text{True}$$

$$\text{II. } B \leq F \rightarrow \text{False}$$

$$\text{III. } D \leq C \rightarrow \text{False}$$

**Case 3. Signs Priority**

1<sup>st</sup> Priority :  $< \text{ or } >$

2<sup>nd</sup> Priority:  $\leq \text{ or } \geq$

3<sup>rd</sup> Priority:  $=$

**Statement:**  $P \geq R > Q = T \geq S$

**Conclusions :**

$$\text{I. } P \geq Q \rightarrow \text{False}$$

$$\text{II. } P > Q \rightarrow \text{True}$$

$$\text{III. } Q \geq S \rightarrow \text{True}$$

**Case 4.**

When it occurs to you that the statement of order is opposite just change the sign into similar opposite direction. Then change the sign into similar opposite /corresponding / alternative direction.

If  $A > B > F > C < D < E$

than  $F < A \rightarrow \text{True}$

### EXAMPLE

$[\because A > B > F = F < B < A]$

**Statements :**  $A > B > F > C$ ;  $D > E > C$

**Conclusions:**

I.  $C < A \rightarrow \text{True}$

II.  $C > A \rightarrow \text{False}$

### Case 5. $>$ or $<$ and $\geq$ or $\leq$

Whenever there is two conclusions which are false then check for these two symbols ( $>$  or  $<$  and  $\geq$  or  $\leq$ ). In most of case where two conclusions are false and these two similar signs are not there respectively then that statement can call it as either or but should check there variable it should same.

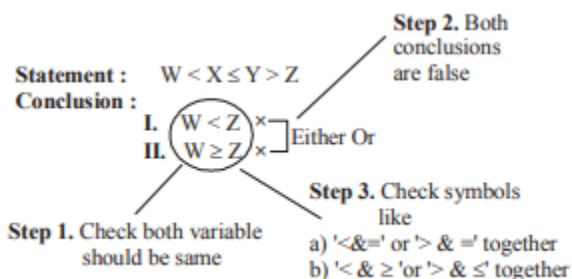
#### (A) Either Or :

Note : First thing need to check whether in conclusion any two or more conclusions are wrong then if it is therethen check whether the two variables are same. If It happens then write it as 'Either or' but after checking their symbols.

**Rules:**

1. Both conclusions should False
2. Should have same Predicate or Variable
3. Check the symbols

If above conditions are satisfied then write it as 'Either Or' Otherwise leave it.



**Example:**

**Statement :**  $H = W \leq R > F$   
**Conclusion :** I.  $R = H$   
 II.  $R > H$  ☐ Either Or  
**Statement :**  $H > L = E < T$   
**Conclusion :** I.  $H \leq T$   
 II.  $H > T$  ☐ Either Or  
**Statement :**  $S < T \geq R \geq M$   
**Conclusion :** I.  $M < T$   
 II.  $M = T$  ☐ Either Or  
**Statement :**  $I \geq H = T > S \leq R$   
**Conclusion :** I.  $I > T$   
 II.  $I = T$  ☐ Either Or

### B. Neither Nor :

First thing you need to check whether in your conclusion any 2 or more conclusions are wrong then write it as 'Neither Nor' but before checking their symbols

**Example:**

**Statement :**  $P > Q \geq S = R$   
**Conclusion :** I.  $P \geq R$   
 II.  $R > Q$  ☐ Neither nor  
**Statement :**  $L = T \leq J \geq K$   
**Conclusion :** I.  $L > K$   
 II.  $T \leq K$  ☐ Neither nor  
**Statement :**  $V < L \geq J \leq T$   
**Conclusion :** I.  $V < J$   
 II.  $L = T$  ☐ Neither nor  
**Statement :**  $G < K \leq T \leq M$   
**Conclusion :** I.  $G > T$   
 II.  $K \leq M$  ☐ Neither nor

### CLASSROOM EXERCISE

1. Statements:  $A \geq B$ ;  $C > G$ ;  $A \geq H$ ;  $B \geq C$ ;  $I = B$

**Conclusions:**

I.  $C > H$  II.  $H > B$

III.  $B > G$  IV.  $I > A$

A. Only I is true B. Only II is true

C. Either I or II true D. Neither I nor II is true

E. Only III is true

2. Statements:  $A \leq H$ ,  $G \geq H$ ;  $G > M$ ;  $O \leq M$

**Conclusions:**

I.  $G \geq A$  II.  $G \geq O$

III.  $H > M$  IV.  $H \leq G$

A. Only I, II and III are true

B. Only II is true C. Only IV is true

D. Only I and IV are true

C. Either I or II true     D. Neither I nor II is true

E. Both I and II are true

**5. Statements:**  $M < P \leq G = F \geq B$ ;  $H \geq F < I$ ;  $J \geq P$

**Conclusions:**

I.  $H \geq J$ ,

II.  $B < I$

A. Only I is true

B. Only II is true

C. Either I or II true     D. Neither I nor II is true

E. Both I and II are true

**Directions (6-10)** In these questions, relationships between different elements is shown in the

statements. These statements are followed by two conclusions. Give Answer

A. If only Conclusion I follows

B. If only Conclusion II follows

C. If either Conclusion I or II follows

D. If neither Conclusion I nor II follows

E. If both Conclusions I or II follow

**6. Statement:**  $B \geq E < N < Q < R = S$

**Conclusions:**

I.  $S > E$

II.  $C < B$

**7. Statement:**  $P < Q > N$ ;  $E = G > N$

**Conclusions:**

I.  $P > G$

II.  $R > N$

**8. Statement:**  $A > S > P > O = E$

**Conclusions:**

I.  $P \geq E$

II.  $S > E$

**9. Statement:**  $A = B \geq C$ ,  $D < C$

**Conclusions:**

I.  $A \geq D$

II.  $B > D$

**10. Statement:**  $P \geq R < Q = D > E > O$

**Conclusions:**

I.  $P > E$

II.  $Q > O$

**11. Which of the following symbols should be placed in the blank spaces respectively (in the**

**same order from left to right) in order to complete the given expression in such a manner that both ' $B > S$ ' as well as ' $E \leq F$ ' definitely holds true?  $B \_ A \_ S \_ E \_ D \_ F \_ G$**

A.  $>$ ,  $\geq$ ,  $<$ ,  $=$ ,  $<$ ,  $<$

B.  $>$ ,  $>$ ,  $\geq$ ,  $<$ ,  $>$ ,  $=$

C.  $\geq$ ,  $\geq$ ,  $\geq$ ,  $\leq$ ,  $>$ ,  $>$

D.  $>$ ,  $=$ ,  $\geq$ ,  $=$ ,  $\leq$ ,  $=$

E. Other than those given as options

**12. In Which of the following expressions does the expression ' $L = T$ ' and " $E \geq W$ " to definitely hold true?**

A.  $E \geq W \leq R = P < S \leq T$

B.  $U \geq T \geq M = W \leq E \geq L$

C.  $L \geq C > E \geq W = N \leq T$

D.  $E \geq W = A < B \leq S \leq T$

E.  $T \geq E = G \geq W = Y \geq L$

**13. Which of the following expressions is true if the expression  $P < T \leq Q = R \geq S$ ,  $M = W > A = R$  is definitely true?**

A.  $W \leq P$

B.  $S < P$

C.  $M < R$

D.  $W > Q$

E.  $Q \leq M$

**14. In which of these expressions ' $P > R$ ' and ' $P = R$ ' be definitely true?**

A.  $S > P \geq Q = G \geq R > V$

B.  $P < A \leq S \leq T < R$ ;  $V \geq O > T$

C.  $V \leq A \leq L = R < S = P$

D.  $P > S > C > F \leq H$ ;  $V < F < R$

E.  $S > T = O \geq P$ ;  $V < J = P > R$

**15. In which of these expressions ' $T > P$ ' and ' $T = P$ ' be definitely false?**

A.  $T \geq S \geq P \geq Q = G \geq R > V$

B.  $P < A \leq S \leq T$ ;  $V \geq O > T$

C.  $V \leq A \leq L = R < S$

D.  $S > C > F \leq H = P \leq Q = T$ ;  $V < F$

E.  $S > T = O \geq P$ ;  $V < J = P$

**16. Statements:**  $P = Q$ ;  $R \leq D$ ;  $E > R$ ;  $Q < D$

**Conclusions:**

I.  $D < Q$

II.  $D > E$

III.  $P > E$

IV.  $P > R$