

MENTAL ABILITY TEST (MAT) PAPER WITH SOLUTION
Class - XII

1. If in a certain code language 'NAME' is written as 'MZLD', then how will 'PEON' be coded in that language ?

(1*) ODNM (2) ODMN (3) ONDM (4) OMND

Sol. Each alphabet replaced by previous alphabet

2. If P = 16 and TAP = 37, then CUP = ?

(1*) 40 (2) 38 (3) 36 (4) 39

Sol. Cup=3+21+16=40

3. If first half of English alphabet is written in reverse order, then which letter will be 15th from the right ?

(1) A (2*) B (3) C (4) D

Sol. As per question MLKJIGFEDCBANOPQRSTUVWXYZ

4. Adhar goes 4 km straight from his school. He turns to his right and walks 3 km. He again moves 2 km after turning right to reach his house. If his house is located in South-East direction from his school, then in which direction Adhar started moving initially from his school ?

(1) North (2) South (3*) East (4) West

5. Find the missing term in the following series :

ABD, DGK, HMS, MTB, SBL, ?

(1) ZKU (2*) ZKW (3) ZAB (4) XKW

Sol. For first alphabet +3,+4,+5 and so on so S+7=Z
 For second alphabet +5,+6,+7, and so on so B+11=K
 For third alphabet +7,+8,9 and so on so L+11=W answer is ZKW

Questions (6 – 13)

Directions : In each of the question Nos. 6 to 13 a series is given in which a term is missing shown by a blank with question mark (?). Find the correct alternative for the missing term.

6. BEAG, DGCI, FIEK, ?

(1) HMIE (2*) HKGM (3) HGKJ (4) HKLJ

Sol. For first alphabet +2,+2,+2 and so on so F+2=H
 For second alphabet +2,+2,+2, and so on so I+2=K
 For third alphabet +2,+2,+2 and so on so E+2=G
 For fourth alphabet +2,+2,+2 and so on so K+2=M answer is HKGM

7. A729, G343, ?, S27, Y1

(1) L64 (2) N75 (3) Q100 (4*) M125

Sol. For alphabet +6,+6, and so on so G+6=M
 For numbers $9^3, 7^3, 5^3=125$ so answer is M125

8. ABC, 6, EFG, 210, IJK, ?

(1) 1000 (2) 190 (3*) 990 (4) 999

Sol. Numeric term is product of position of alphabets previous term so answer is $9 \times 10 \times 11 = 990$

9. 3, 5, 9, 15, 23, 33, 45, 59, ?

(1) 60 (2) 81 (3) 72 (4*) 75

Sol. Logic is +2,+4,+6 and so on answer is $59+16=75$

10. 2, 8, 18, 32, 50, ?
 (1) 64 (2*) 72 (3) 70 (4) 68
 Sol. Logic is $2*1^2, 2*2^2, 2*3^2$ so on answer is $2*6^2=72$

11. Z9A, X7D, ?, T3J, R1M
 (1) W6F (2) S3H (3) G9V (4*) V5G
 Sol. For numeric logic is -2,-2,-2 and so on so answer is 5
 For first alphabet -2,-2,-2 and so on so missing alphabet is X-2=V
 For second alphabet +3,+3,+3 and so on so missing alphabet is D+3=G
 So answer is V5G

12. CD, HI, MN, ?
 (1) QS (2) OP (3) PQ (4*) RS
 Sol. Logic for both alphabet is +5,+5,+5 so answer is M+5=R and N+5=S

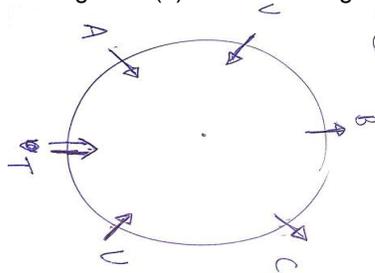
13. 12, 12, 24, 72, 288, ?
 (1*) 1440 (2) 1326 (3) 1456 (4) 1235
 Sol. Logic is $*2, *3, *4$ and so on answer is $288*5=1440$

Questions (14 – 18)

Directions : Read the following information carefully and answer the questions given below :

V, U and T are sitting around a circle facing the centre. A, B and C are sitting around the same circle but two of them are not facing the centre (they are facing the direction opposite to the centre). V is second to the left of C. U is second to the right of A. B is third to the left of T. C is second to the right of T. A and C are not sitting together.

14. Who of the following are not facing the centre ?
 (1) B and A (2) C and A (3*) B and C (4) Cannot be determined
15. Which of the following is the position of T in respect of B ?
 (1) Third to the right (2) Second to the right (3) Third to the left (4*) Third to the left or right
16. Which of the following is the position of V in respect of C ?
 (1) Second to the right (2) Third to the left
 (3*) Fourth to the right (4) Fourth to the left
17. Which of the following statements is correct ?
 (1) A, B and C are sitting together
 (2) V, U and T are sitting together
 (3) Sitting arrangement of two persons cannot be determined
 (4*) Those who are not facing centre, are sitting together.
18. Which of the following is the position of A in respect of U ?
 (1*) Second to the left (2) Second to the right (3) Third to the right (4) None of these



Sol. Arrangement is given in figure

Questions (19 – 23)

Directions : Each of the following questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the questions or not. Read both the statements and give answers.

19. What is the value of n ?

I. $3n + 2m = 18$

II. $n - m = 2n - (4 + m)$.

(1) Only I statement is sufficient to answer the question.

(2*) Only II statement is sufficient to answer the question.

(3) Both I and II statements are sufficient to answer the question.

(4) Both I and II statements are not sufficient to answer the question.

Sol. By second statement easily we can get $n=4$

20. If x and y are both positive integers, then how much greater is x than y ?

I. $x + y = 20$

II. $x = y^2$

(1) Only I statement is sufficient to answer the question.

(2) Only II statement is sufficient to answer the question.

(3*) Both I and II statements are sufficient to answer the question.

(4) Both I and II statements are not sufficient to answer the question.

Sol. As there are two variables and two equation so both equations are required to determine the value of x and y

21. If a and b are both positive, then what per cent of b is a ?

I. $a = \frac{2}{11}$

II. $\frac{b}{a} = 25$

(1) Only I statement is sufficient to answer the question.

(2*) Only II statement is sufficient to answer the question.

(3) Both I and II statements are sufficient to answer the question.

(4) Both I and II statements are not sufficient to answer the question.

Sol. We required $a/b \times 100$ so we required only equation 2 as its reciprocal already given.

22. The sum of ages of M, N and O is 50 years. What is N's age ?

I. N is 10 years older than M.

II. O is 30 years old.

(1) Only I statement is sufficient to answer the question.

(2) Only II statement is sufficient to answer the question.

(3*) Both I and II statements are sufficient to answer the question.

(4) Both I and II statements are not sufficient to answer the question.

Sol. We required both statements.

23. How is Mahi related to Adhar ?

I. Father of Adhar is the grandfather of Mahi's son.

II. Mahi has only one brother.

(1*) Only I statement is sufficient to answer the question.

(2) Only II statement is sufficient to answer the question.

(3) Both I and II statements are sufficient to answer the question.

(4) Both I and II statements are not sufficient to answer the question.

24. What degree of angle is made by the hands of clock at 9:30 ?

(1) 75°

(2) 90°

(3*) 105°

(4) 120°

Sol. By using formula $\text{angle} = (5.5M - 30H) = (5.5 \times 30 - 30 \times 9) = 105$



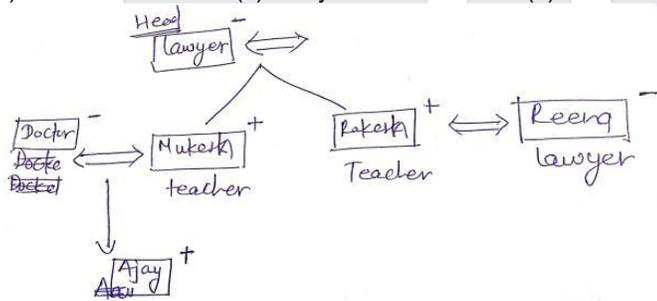
25. If today is Monday, then the day after 65 days will be
 (1) Wednesday (2) Friday (3) Saturday (4) Sunday
 Sol. After 63 days again Monday will come then after 65 days Wednesday will come.

Questions (26 – 30)

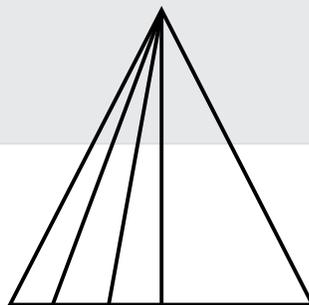
Directions : Read the following information carefully to answer the questions given below :

In a family of six persons, there are two couples. The lawyer is the head of the family and has two sons, Mukesh and Rakesh, both teachers. Mrs. Reena and her mother-in-law both are lawyers. Mukesh's wife is a doctor and they have a son, Ajay.

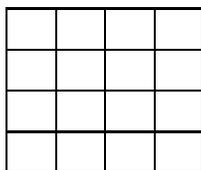
26. Which of the following is definitely a couple ?
 (1*) Lawyer – Teacher (2) Doctor – lawyer (3) Teacher – Teacher (4) Cannot be determined
27. What is the profession of Rakesh's wife ?
 (1) Teacher (2) Doctor (3*) Lawyer (4) Cannot be determined
28. How many male members are there in the family ?
 (1) Two (2*) Three (3) Four (4) Cannot be determined
29. What is / was Ajay's grandfather's occupation ?
 (1) Teacher (2) Lawyer (3) Doctor (4*) Cannot be determined
30. What is the profession of Ajay ?
 (1) Teacher (2) Lawyer (3) Doctor (4*) Cannot be determined



- Sol. 31. How many triangles are there in the figure given below ?

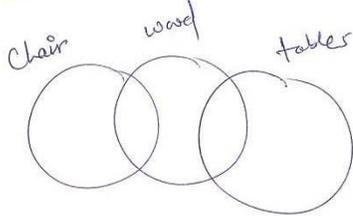


- (1) 5 (2) 12 (3) 9 (4*) 10
 32. How many squares are there in the figure given below ?



- (1) 16 (2) 17 (3) 25 (4*) 30
 Sol. Number of square = $4^2 + 3^2 + 2^2 + 1 = 30$

39. Statements : Some chairs are made up of wood.
Some tables are made up of wood.
Conclusions : I. All wooden things are either chairs or tables.
II. Some chairs are tables.
(1) Only conclusion I follows.
(2) Only conclusion II follows.
(3) Either conclusion I or II follows.
(4*) Neither conclusion I nor II follows.



Sol.

40. If the product of three consecutive integers is 210, then the sum of the two smaller integers of them is
(1) 13 (2*) 11 (3) 12 (4) 18

Sol. As the product is a multiple of 5 so one of the number will be 5 and rest number are 6 and 7 so answer will be 5+6=11 or we can solve for $x(x+1)(x+2)=210$

41. If $x : y = 3 : 4$, then what will be the value of $\frac{3x + 2y}{5x + 6}$?
(1) 17 : 39 (2) 5 : 11 (3) 1 : 1 (4*) None of these

Sol. As there is ratio given in x and y but in denominator only one variable is given so we cannot determine the value of given expression.

Questions (42 – 46)

Directions : If '+' is 'x', '-' is '+', 'x' is '÷' and '÷' is '-', then answer the questions given below based on this information.

42. $21 \div 8 + 2 - 12 \times 3 = ?$
(1) 14 (2) 9 (3) 13.5 (4) 11

Sol. $21-8 \times 2+12/3=9$

43. $6 + 7 \times 3 - 8 \div 20 = ?$
(1) -3 (2) 7 (3) 2 (4) 1

Sol. $6 \times 7/3+8-20=2$

44. $15 \times 5 \div 3 + 1 - 1 = ?$
(1) -1 (2) -2 (3) 3 (4) 1

Sol. $15/5-3 \times 1+1=1$

45. $9 - 3 + 2 \div 16 \times 2 = ?$
(1) 7 (2) 5 (3) 9 (4) 6

Sol. $9+3 \times 2-16/2=7$

46. $6 - 9 + 8 \times 3 \div 20 = ?$
(1) -2 (2) 6 (3) 10 (4) 12

Sol. $6+9 \times 8/3-20=10$

Questions (47 – 50)

Directions : Find the missing term in each of the questions given below.

47. $\begin{matrix} \boxed{6} & 2 & \boxed{84} & 7 & \boxed{?} & 9 \\ 3 & & 12 & & 15 & \end{matrix}$
 (1) 135 (2) 167 (3) 221 (4) 141

Sol. Logic is $3 \times 2 = 6$ and $12 \times 7 = 84$ then $15 \times 9 = 135$
48.

- | | | | |
|-----|-----|----|--|
| 81 | 36 | 25 | |
| 49 | 100 | 36 | |
| 9 | 64 | 16 | |
| 139 | 200 | ? | |
- (1) 107 (2*) 77 (3) 27 (4) 50

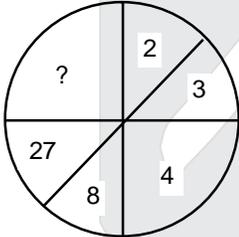
Logic is $81 + 49 + 9 = 139$, $100 + 64 + 36 = 200$, $25 + 36 + 16 = 77$

49.

A	D	H
F	L	M
?	N	R

 (1*) K (2) N (3) O (4) P

Sol. $A + 3 = D$ and $D + 4 = H$ applying same logic we get $k + 3 = N$

50. 
 (1) 56 (2) 49 (3) 45 (4*) 64

Sol. Logic is opposite to 2 is 2^3 and opposite to 3 is 3^3 so answer will be 64.



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