

STATE LEVEL TALENT SEARCH EXAMINATION-2019, RAJASTHAN
MENTAL ABILITY TEST (MAT) PAPER WITH SOLUTION

1. Given, B = 8, L = 7, O = 5, C = 9 and K = 4. Using the given total, find out the missing symbol in the blank.

L	?	K	K	K	=	24
---	---	---	---	---	---	----

(1) L (2*) O (3) B (4) K

Sol. As per given $L+x+K+K+K=24$
 $X=5$
 Then $x=O$

2. If $\uparrow = 12$, $A = 15$, $O = 3$ and $\square = 6$, then $\Delta - \uparrow + O = ?$
 (1) O (2) \uparrow (3) Δ (4*) \square

Sol. $\Delta - \uparrow + O =$

$$15 - 12 + 3 = 6(\square)$$

Questions (3 – 5)

Directions : In each of the following questions, all the equations except one have been solved according to a certain rule. You are required to solve the unsolved equation following the same rule and choose the correct answer out of the given options.

3. 10 (150) 15, 14 (224) 16, 13 (?) 15
 (1) 205 (2*) 195 (3) 178 (4) 197

Sol. As in que. $15 \times 10 = 150$
 $14 \times 16 = 224$
 $13 \times 15 = 195$

4. $4 \times 6 \times 2 = 351$, $3 \times 9 \times 8 = 287$, $9 \times 5 \times 6 = ?$
 (1) 270 (2*) 845 (3) 596 (4) 659

Sol. $4 \times 6 \times 2 = 351$, in this by logic each number is decreased by 1
 So by the same logic $9 \times 5 \times 6 = 845$

5. $9 \times 5 \times 2 = 529$, $4 \times 7 \times 2 = 724$, $3 \times 9 \times 8 = ?$
 (1*) 983 (2) 839 (3) 938 (4) 893

Sol. By observation answer is 983.

Questions (6 – 8)

Directions : In each of the questions given below, a letter series is given in which a term is missing shown by a blank with question mark (?). Choose the correct alternative for the missing term.

6. R, U, X, A, D, ?
 (1) F (2*) G (3) H (4) L

Sol. Logic is +3, +3, +3.... That's why answer is G

7. GH, JL, NQ, SW, YD, ?
 (1) EJ (2) FJ (3) EL (4*) FL

Sol. For first alphabet G J N S Y
 7 10 14 19 25 LOGIC IS Difference is +3,+4,+5 and so on final will be 32
 and at 32 position F is there.
 For second alphabet H L Q W D
 8 12 17 23 30 LOGIC IS Difference is +4,+5,+5 and so on final will be 38
 and at 38 position L is there
 So answer is FL

8. WFB, TGD, QHG, ?
(1) NIJ (2*) NIK (3) NJK (4) OIK

Sol. For first alphabet logic is -3,-3,-3 that's why answer is N
For second alphabet logic is +1,+1,+1 that's why answer is I
For third alphabet logic is +2,+3,+4 that's why answer is K
So answer is NIK

Questions (9 – 10)

Directions: In each of the questions given below, there is a certain relationship between two given numbers on left side of (: :) and one number is given on right side of (: :) while another number is to be found from the given alternatives, having the same relationship with this number as the numbers of the given pair bear. Choose the correct alternative:

9. 25 : 125 :: 36 : ?
(1) 180 (2) 206 (3*) 216 (4) 318

Sol. Logic is $n^2:n^3$

10. 5 : 36 :: 6 : ?
(1) 48 (2*) 49 (3) 50 (4) 56

Sol. Logic is $n : (n+1)^2$

11. If in a certain code language, 'MADRAS' is written as 'NBESBT', then how will 'BOMBAY' be written in that code ?
(1) CPNCBX (2*) CPNCBZ (3) CPOCBZ (4) CQOCBZ

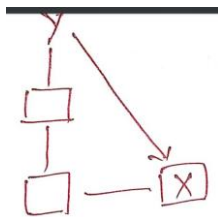
Sol. Each alphabet is replaced by next alphabet.

12. If E = 5, PEN = 35, then PAGE = ?
(1) 27 (2) 28 (3*) 29 (4) 36

Sol. Logic is sum of position in English alphabet so PAGE=16+1+7+5=29

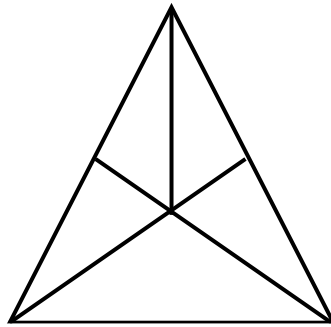
13. If X is the brother of the son of Y's son, then how is X related to Y?
(1) Son (2) Brother (3*) Grandson (4) Uncle

Sol. **Tree diagram as per given information**



as per X is grandson of Y.

14. How many triangles are there in the figure given below?



- (1) 11 (2) 16 (3) 14 (4*) 12

Sol. By observation

15. If a cube of 25 cm side is divided into 125 smaller cubes of equal volume, then the side of smaller cube thus formed will be
 (1) 2 cm (2) 3 cm (3*) 5 cm (4) 6cm

Sol. No of cubes = volume of larger cube/volume of smaller cube
 Let the side of smaller cube is A
 $A^3 = (25 \times 25 \times 25) / 125$
 $= 125$
 $= 5^3$
 $A = 5$

16. If the national day of a country was celebrated on the 4th Saturday of a month, then the date of celebration was (It is given that the first day of that month is Tuesday.)
 (1) 24th (2) 25th (3*) 26th (4) 27th

Sol. As 1 of the month is Tuesday then fourth Tuesday will be on 1+21=22 of the month
 Then on 23 is Wednesday, 24 is Thursday, 25 is Friday, 26 is Saturday.

17. The time on the clock is 9:15 and the hour hand points towards west. The direction of the minute hand is
 (1) North (2) South (3*) East (4) West

Sol. At 9:15 both the hands are in opposite direction if hour hand is in West direction then minute hand will be in East Direction.

Questions (18 – 20)

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

Ravi and Kunal are good in Hockey and Volleyball. Sachin and Ravi are good in Hockey and Baseball. Gaurav and Kunal are good in Cricket and Volleyball. Sachin, Gaurav and Michael are good in Football and Baseball.

18. Who is good in Hockey, Cricket and Volleyball ?
 (1) Sachin (2*) Kunal (3) Ravi (4) Gaurav
19. Who is good in Baseball, Cricket, Volleyball and Football ?
 (1) Sachin (2) Kunal (3*) Gaurav (4) Ravi
20. Who is good in Baseball, Volleyball and Hockey ?
 (1) Sachin (2) Kunal (3*) Ravi (4) Gaurav

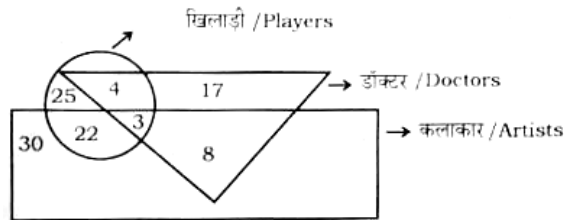
Sol.

NAME/SPORTS	HOCKEY	VOLLEYBALL	BASEBALL	CRICEKT	FOOTBALL
RAVI	GOOD	GOOD	GOOD		
KUNAL	GOOD	GOOD		GOOD	
SACHIN	GOOD		GOOD		GOOD
GAURAV		GOOD	GOOD	GOOD	GOOD
MICHAL			GOOD		GOOD

NOW BY OBSERVATION

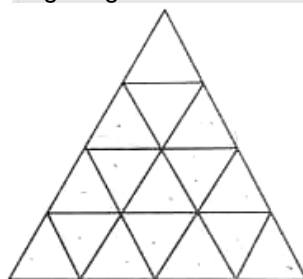
Questions (21 – 25)

Directions : Each of the following questions is based on the diagram given below. Study the diagram carefully and answer the questions based on it.



In the above diagram, 'rectangle' represents 'artists', 'circle' represents 'players' and 'triangle' represents 'doctors'.

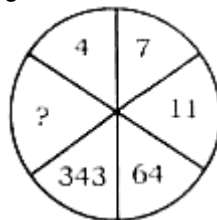
21. How many players are neither artists nor doctors?
(1*) 25 (2) 22 (3) 4 (4) 29
22. How many artists are players but not doctors ?
(1*) 22 (2) 3 (3) 25 (4) 8
23. How many artists are neither doctors nor players ?
(1) 22 (2) 8 (3) 25 (4*) 30
24. How many doctors are neither players nor artists ?
(1) 4 (2) 25 (3) 8 (4*) 17
25. How many doctors are players and artists both ?
(1) 4 (2) 7 (3*) 3 (4) 8
26. How many triangles are there in the figure given below ?



- (1) 23 (2) 26 (3) 28 (4*) 27

Sol. Numbers of triangles = 27

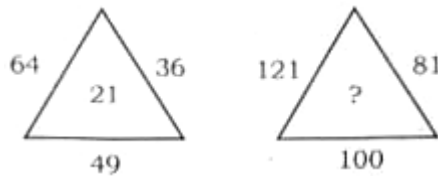
27. Find the missing term in the question given below :



- (1) 1332 (2) 1321 (3) 1231 (4*) 1331

Sol. Opposite to 4 is 4^3 Opposite to 7 is 7^3 so Opposite to 11 is $11^3=1331$

28. Find the missing term in the question given below :



- (1) 40 (2*) 30 (3) 20 (4) 10

Sol. Logic is in triangle the given number is sum of square root of outer numbers so answer is $11+9+10=30$

29. Find the missing term in the question given below :

2	3	8
4	5	10
6	7	12
32	50	?

- (1*) 200 (2) 92 (3) 128 (4) 30

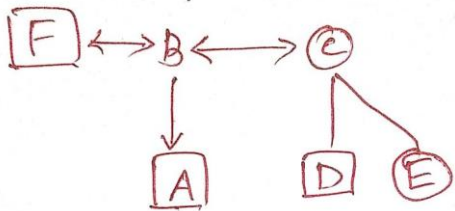
Sol. $(2+6)*4=32$
 $(3+7)*5=50$
So answer is
 $(8+12)*10=200$

Questions (30 – 32)

Directions : Read the following information carefully and answer the questions given below :
A is the son of B, C, B's sister, has a son D and a daughter E, F is the maternal uncle of D.

Tree diagram as per given information

In this tree square denotes for male and circle for Female. Person on same level are of the same generation.



30. How is A related to D ?
(1) Father (2) Nephew (3) Uncle (4*) None of these

Sol. A and D are cousin to each other

31. How is E related to F ?
(1) Sister (2) Daughter (3*) Niece (4) Wife

32. How many nephews does F have ?
(1) 0 (2*) 1 (3) 2 (4) 3

Sol. As per information we don't have information about B's gender that's why F has only one nephews

33. If a cuboid with length 10 cm, breadth 8 cm and height 8 cm is cut into smaller cubes of edge 2 cm each, then number of smaller cubes will be

- (1) 60 (2*) 80 (3) 64 (4) 96

Sol. No of cubes = volume of cuboid/volume of smaller cube
 $= (10*8*8)/2*2*2$
 $= 80$

34. If each of the twelve digits on a clock is replaced by vowels of English alphabet a, e, i, o, u in sequence (1 by a, 2 by e and so on), then the hour hand will be between which pair of vowels at 9:30 am ?

- (1) ae (2) ei (3) io (4*) ou
- Sol. At 9:30 hour hand will be between 9 and 10 and as per question 1=a,2=e and so on 9=O and 10=U that's why hour hand will be in between ou
- 35.** Which number has come maximum times in the following number series ?
5 4 3 3 5 4 8 8 3 2 5 3 6 5 5
(1*) 5 (2) 4 (3) 3 (4) 2
- Sol. By observation 5
- 36.** If in a certain code language 'RAMAN' is written as '18113114', then how will 'KAPILA' be written in that code ?
(1) 111196112 (2) 111169112 (3*) 111169121 (4) 116119121
- Sol. Each alphabet is replaced by its position in English alphabet so answer is 111169121
- 37.** If A = 1 and ANT = 35, then PAT = ?
(1) 32 (2) 47 (3) 25 (4*) 37
- Sol. Logic is sum of position of alphabet in English alphabet so answer is PAT=16+1+20=37
- 38.** If 'green' is called 'red', 'red' is called 'blue', 'blue' is called 'white', 'white' is called 'yellow', 'yellow' is called 'violet'; then what will be the color of grass ?
(1) Blue (2) Yellow (3) Violet (4*) Red
- Sol. As color of grass is Green and Green is called RED
- 39.** Which alternative shows the correct relation between 3^6 4^5 ?
(1) > (2) = (3*) < (4) None of these
- Sol. As $3^6=729$ and $4^5=1024$ its clear now less than symbol will be used.
- 40.** If $(x - 1)$ is a factor of the equation $x^3 + px^2 + 3x + q = 0$, then signs in place of (p) and (q) are
(1*) -, - (2) -, + (3) +, + (4) +, -
- Sol. By using factor theorem $P(1)=0$
 $=1p^3+3q=0$
Now by putting p=- and q=- we got the answer.

Questions (41 – 47)

Directions : In each question, a series is given with one missing term. Choose the correct alternative from the alternatives given below :

- 41.** AFI, JOR, MRU, ?
(1) GJU (2*) HMP (3) PMO (4) RJL
- Sol. In each term the internal logic is +5,+3(A+5=F and F+3=I) so answer will be H+5=M and M+3=P So answer is HMP
- 42.** bc, cde, de, efg, fg, ?
(1*) ghi (2) fgh (3) hij (4) ijk
- Sol. Skip first letter and join next two/one letter alternatively so answer is ghi
- 43.** C - 3, E - 5, G - 7, I - 9, ?, ?
(1) X - 24, M - 21 (2*) K - 11, M - 13 (3) O - 15, X - 24 (4) M - 18, K - 14
- Sol. Logic for alphabet +2,+2,+2 and so on so answer is K and M and logic for numbers is position of alphabet in English alphabet so answer is K-11,M-13
- 44.** 5, 16, 51, 158, ?
(1) 1452 (2) 483 (3*) 481 (4) 1454
- Sol. Logic is $*3+1, *3+3, *3+5$ then answer will be $158*3+7=481$
- 45.** 4, 6, 10, 16, 24, ?
(1) 40 (2*) 34 (3) 30 (4) 28
- Sol. Logic is +2,+4,+6, so on then answer will be $24+10=34$
- 46.** 3, 5, 9, 17, ?
(1*) 33 (2) 42 (3) 26 (4) 65
- Sol. Logic is $*2-1$ then answer will be $17*2-1=33$
- 47.** 2B, 4C, 8E, 14H, ?

- (1) 16 K (2) 20 I (3) 20 L (4*) 22 L

Sol. Logic for number is +2,+4,+6 and so on so next number will be 14+8=22
Logic for alphabet is +1,+2,+3 and so on so next alphabet will be H+4=L
So answer will be 22L

Questions (48 – 50)

Directions : In the following questions, there is a certain relation between two given words on left side of (: :) and one word is given on right side of (: :) while another word is to be found from the given alternatives, having the same relation with this word as the given pair has. Choose the correct alternative :

48. Sikkim : Gangtok : : Manipur : ?
(1) Dispur (2) Cherrapunji (3) Shillong (4*) Imphal

Sol. As capital of Sikkim is Gangtok in the same way capital of Manipur is Imphal.

49. Court : Justice : : School : ?
(1) Teacher (2) Student (3*) Education (4) Crime

Sol. In court we get justice in the same way in school we get Education.

50. Jama Masjid : Delhi : : Gateway of India : ?
(1) Hyderabad (2*) Mumbai (3) Delhi (4) Kolkata

Sol. As Jama masjid is in Delhi in the same way Gateway of India is in Mumbai

