

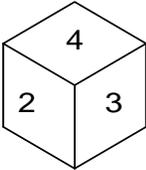
PART I : MAT**(Only One Option Correct Type) (+2, -1)**

This section contains 5 multiple choice questions. Each question has four choices (a), (b), (c) and (d) out of which **ONLY ONE** Option is correct.

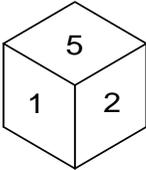
1. P, Q, R, S, T, U and V are members of a family consisting of four adults and three children, two of whom, U and V are girls. P and S are brothers. T is an engineer married to one of the brothers and has two children. Q is married to S and V is their child. Who is R?
(a) P's son (b) T's daughter (c) U's father (d) V's brother
2. In a certain code, TEMPORAL is written as OLDSMBSP. How to CONSIDER written in that code?
(a) BNMRSEFJ (b) RMNBSFEJ (c) RMNBJEFS (d) TOPDQDCH
3. A Watch which gains uniformly is 2 minutes slow at noon on Monday and is 4 min 48 sec. fast at 2 p.m on the following Monday. When was it correct?
(a) 2 p.m on Tuesday (b) 2 p.m on Wednesday
(c) 3 p.m on Thursday (d) 1 p.m on Friday
4. A person starts from a point A and travels 3 km eastwards to B and then turns left and travels thrice that distance to reach C. He again turns left and travels five times the distance he covered between A and B and reaches his destination D. The shortest distance between the starting point and the destination is
(a) 12 km (b) 15 km (c) 16 km (d) 18 km

Space for Rough Work

5. From the following figures of dice, find which number will come in the place of ‘?’.

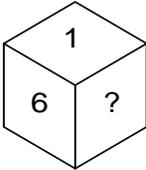


(a) 4



(b) 5

(c) 2



(d) 3

END OF MAT PORTION

Space for Rough Work

PART II : MATHEMATICS

(Only One Option Correct Type) (+4, -1)

This section contains 5 multiple choice questions. Each question has five choices (a), (b), (c), (d) and (e) out of which **ONLY ONE** Option is correct.

6. How many of the numbers between 100 and 300 begin or end with 2?
 (a) 60 (b) 90 (c) 91 (d) 110
7. If $x + \frac{2}{3 + \frac{4}{5 + \frac{7}{6}}} = 100$, then the value of x is :-
 (a) $99\frac{61}{135}$ (b) $13\frac{11}{135}$ (c) $11\frac{1}{74}$ (d) $13\frac{1}{74}$
8. Number of digits in the square root of 62478078 is:
 (a) 4 (b) 5 (c) 6 (d) 3
9. If $\frac{x}{a} = \frac{1}{a} - \frac{1}{x}$, then the value of $x - x^2$ is
 (a) $-a$ (b) $\frac{1}{a}$ (c) $-\frac{1}{a}$ (d) a
10. If $2^x = 4^y = 8^z$ and $\left(\frac{1}{2x} + \frac{1}{4y} + \frac{1}{6z}\right) = \frac{1}{12}$ then $x = ?$
 (a) 6 (b) 18 (c) $\frac{1}{6}$ (d) $\frac{1}{15}$

END OF MATHEMATICS PORTION

Space for Rough Work

PART III : PHYSICS

This section contains 5 multiple choice questions. Each question has four choices (a), (b), (c) and (d) out of which ONLY ONE Option is correct.

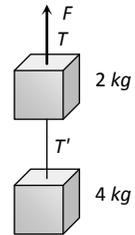
11. Two cars A and B are travelling in the same direction with velocities v_1 and v_2 ($v_1 > v_2$). When the car B is at a distance d ahead of the car A , the driver of the car A applied the brake producing a uniform retardation a . There will be no collision when

(a) $d < \frac{(v_1 - v_2)^2}{2a}$ (b) $d < \frac{v_1^2 - v_2^2}{2a}$ (c) $d > \frac{(v_1 - v_2)^2}{2a}$ (d) $d > \frac{v_1^2 - v_2^2}{2a}$

12. A 210 meter long train is moving due North at a speed of 25 m/s . A small bird is flying due South a little above the train with speed 5 m/s . The time taken by the bird to cross the train is

(a) 6 s (b) 7 s (c) 9 s (d) 10 s

13. Two blocks are connected by a string as shown in the diagram. The upper block is hung by another string. A force F applied on the upper string produces an acceleration of 2 m/s^2 in the upward direction in both the blocks. If T and T' be the tensions in the two parts of the string, then



(a) $T = 70.8\text{ N}$ and $T' = 47.2\text{ N}$ (b) $T = 58.8\text{ N}$ and $T' = 47.2\text{ N}$
(c) $T = 70.8\text{ N}$ and $T' = 58.8\text{ N}$ (d) $T = 58.8\text{ N}$ and $T' = 58.8\text{ N}$

Space for Rough Work

14. A ball is released from the top of a tower. The ratio of work done by force of gravity in first, second and third second of the motion of the ball is
(a) 1 : 2 : 3 (b) 1 : 4 : 9 (c) 1 : 3 : 5 (d) 1 : 5 : 3
15. If the *K.E.* of a body is increased by 300%, its momentum will increase by
(a) 100% (b) 150% (c) $\sqrt{300}\%$ (d) 175%

Space for Rough Work

PART IV : CHEMISTRY

(Only One Option Correct Type) (+2, -1)

This section contains 5 multiple choice questions. Each question has four choices (a), (b), (c) and (d) out of which ONLY ONE option is correct.

- 16.** Which of the following is pure substance?
 (a) Air (b) Gold (c) Soil (d) Salt solution
- 17.** The chloride of a metal has the formula MCl_3 . The formula of its phosphate will be:
 (a) M_2PO_4 (b) MPO_4 (c) M_3PO_4 (d) $M(PO_4)_2$
- 18.** Two chemical substances X and Y combine together to form a product P which contains both X and Y
 $X + Y \longrightarrow P$
 X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following statements concerning X , Y and P are correct?
 (i) P is a compound (ii) X and Y are compounds
 (iii) X and Y are elements (iv) P has fixed composition
 (a) (i), (ii) and (iii) (b) (i), (ii) and (iv) (c) (ii), (iii) and (iv) (d) (i), (iii), and (iv)
- 19.** Sulphur is soluble in:-
 (a) Water (b) Alcohol
 (c) Carbon disulphide (d) None of these
- 20.** Calculate the number of gram atoms and atoms present in 80 g of sulphur.
 (a) 2.5, 15.05×10^{23} (b) 3.5, 16.05×10^{23} (c) 0.5, 13.3×10^{22} (d) 2.3, 15.05×10^{23}

END OF CHEMISTRY PORTION

Space for Rough Work

PART V : BIOLOGY**(Only One Option Correct Type) (+2, -1)**

This section contains 5 multiple choice questions. Each question has four choices (a), (b), (c) and (d) out of which **ONLY ONE** option is correct.

21. Plant which bear naked seed
(a) Thallophyta (b) Bryophyta (c) Gymnosperm (d) Angiosperm
22. Sexually transmitted disease caused by virus
(a) Gonorrhoea (b) Syphilis (c) AIDS (d) Typhoid
23. Which vaccine are employed against the tuberculosis
(a) DPT (b) BCG (c) SABIN (d) MMR
24. Cell wall of bacteria is made up of -
(a) Mucopeptide (peptidoglycan) (b) Cellulose
(c) Lipo protein (d) Lipid
25. Which one is the sign of purity of food item?
(a) Agmark (b) ISI (c) NAFED (d) HAFED

END OF TEST PAPER

Space for Rough Work