

SYLLABUS**1. Science:**

- a. Physics:** Motion, Electricity, Magnetic effect of electric current
- b. Chemistry:** Acid, Bases & Salts, Structure of atom, Metals and non-metals, Chemical Reactions
- c. Biology:** Life processes, Control and Co-ordination

2. Maths: Triangles, Linear equations in two variables, Trigonometry introduction and identities, Polynomials, Mensuration, Statistics**3. Mental Ability:** Verbal and Non-verbal reasoning, General logical and analytical reasoning, Problems based on classification, data interpretation, analogy and series, coding-decoding, figures, Mathematical reasoning

Note: 1. Each Question is allotted 4 marks for each correct response. 1 mark will be deducted for indicating incorrect response of each question.

2. Actual paper will contain 90 Questions, 30 each from Science, Mathematics and Mental ability

SECTION –I (MATHEMATICS)

1. The base 'b' and height 'h' of a triangular field is 3 : 2 and the area of field is 108 sq. meter. Then $\frac{b+2}{h+8}$ is equal to
(A) 1 (B) 5
(C) 6 (D) 2
2. If $K = \tan(5^\circ) \tan(12^\circ) \tan(22^\circ) \tan(45^\circ) \tan(68^\circ) \tan(78^\circ) \tan(85^\circ)$ then $\frac{2k+1}{3}$ is equal to :
(A) 1 (B) 2
(C) 3 (D) 5
3. If Rs. 50 is distributed among 150 children giving 50p to each boy and 25p to each girl. Then the number of boys is :
(A) 25 (B) 40
(C) 36 (D) 50
4. A village has a population of 12000. Each person needs 150 l of water per day. The village has a tank measuring 20 m × 15 m × 6 m. The tank is full. How many days will water last?
(A) 1 (B) 2
(C) 5 (D) 10

5. If the equations $2x + 3y = 1$, $x + 2y = 2$ and $x - y + 2\lambda = 0$ have a unique solution. The $2\lambda - 6$ is equal to :
- (A) 0 (B) 1
(C) 2 (D) -1
6. If $f(x) = x^3 + x^2 + 2x - 1$ is divided by $x + 2$ gives remainder r and quotient $q(x)$. Then $q(2) + r$ is equal to
- (A) 3 (B) -3
(C) 4 (D) -4
7. If the first five elements of the set x_1, x_2, \dots, x_{10} are replaced by $x_i + 5$, $i = 1, 2, 3, 4, 5$ and next five elements are replaced by $x_j - 5$, $j = 6, 7, \dots, 10$, then the mean will change by
- (A) 0 (B) $\frac{n+1}{2}$
(C) 10 (D) 25
8. If 90% of A = 30% of B and B = $x\%$ of A, then the value of x is :
- (A) 600 (B) 800
(C) 300 (D) 900
9. The radius of a circle is decreased by 2m, then the ratio of the area of the original circle to the reduced circle becomes 3 : 1. Find its radius.
- (A) $(\sqrt{3} + 1)m$ (B) $(\sqrt{3} + 3)m$
(C) $(\sqrt{3} - 1)m$ (D) $2\sqrt{3}m$
10. $\frac{p}{q}$ form of $0.\overline{568}$ is
- (A) $\frac{658}{999}$ (B) $\frac{568}{999}$
(C) $\frac{698}{999}$ (D) $\frac{968}{999}$

SECTION-II (SCIENCE)

11. A body is thrown vertically upwards and rises to a height of 10m. The velocity with which the body was thrown upwards is ($g = 9.8 \text{ m/s}^2$)
- (A) 16 m/s (B) 15 m/s
(C) 14 m/s (D) 12 m/s
12. Four resistance each of 8Ω are connected to a square. The resistance between any two diagonally opposite terminals will be:
- (A) 12Ω (B) 2Ω
(C) 8Ω (D) $16/3\Omega$
13. A car travels $(1/4)^{th}$ of a circle with radius r . The ratio of the distance to its displacement is :
- (A) $1 : \pi/2\sqrt{2}$ (B) $\pi/2\sqrt{2} : 1$
(C) $1 : \pi/\sqrt{2}$ (D) $\pi/\sqrt{2} : 1$

14. Two lamps X and Y are connected in series. The lamp X glows brighter than Y. Then
(A) the resistance of X is greater than the resistance of Y
(B) the resistance of X is lesser than the resistance of Y
(C) the resistance of X is equal to the resistance of Y
(D) there is no relation between the resistances of X and Y
15. Which of the following is not a strong acid?
(A) H_2SO_4 (B) CH_3COOH
(C) HNO_3 (D) HCl
16. Rutherford's scattering experiment lead to the discovery of -
(A) nucleus (B) atom
(C) electron (D) neutron
17. The reaction $2\text{C}_2\text{H}_5\text{OH} + 2\text{Na} \longrightarrow 2\text{C}_2\text{H}_5\text{ONa} + \text{H}_2$ suggests that ethanol is
(A) Acidic in nature (B) Basic in nature
(C) Amphoteric (D) Neutral
18. Members of which of the following have similar chemical properties ?
(A) Isotopes (B) Isobars
(C) Allotropes (D) Both isotopes & allotropes
19. Which of the following digestive juices create acidic medium which facilitates the action of pepsin?
(A) Bile juice (B) Gastric juice
(C) Saliva (D) Pancreatic juice
20. Heart beat increases at the time of interview because of
(A) Hyper secretion of insulin (B) Hyper secretion of thyroxine
(C) Hyper secretion of oxytocin (D) Secretion of adrenaline

SECTION-III (MENTAL ABILITY)

21. There is a certain relationship between two given words on one side of : and one word is given on another side of :: while another word is to be found from the given alternatives, having the same relation with this word as the words of the given pair bear. Choose the correct alternative. Moon : Satellite :: Earth : ?
(A) Sun (B) Planet
(C) Solar System (D) Asteroid
22. Four words have been given out of which three are alike in some manner and the fourth one is different. Choose out the odd one.
(A) Turtle (B) Lamb
(C) Colt (D) Bitch
23. A number series is given with one term missing. Choose the correct alternative that will continue the same pattern and fill in the blank spaces. 0.5, 1.5, 4.5, 13.5, (.....)
(A) 45.5 (B) 39.5
(C) 30.5 (D) 40.5

24. Various terms of a letter series are given with one term missing as shown by (?). Choose the missing term out of the given alternatives A, B, D, G, (?)
- (A) M (B) L
(C) K (D) H
25. In a certain code, MONKEY is written as XDJMNL. How is TIGER written in that code?
- (A) QDFHS (B) SDFHS
(C) SHFDQ (D) UJHFS
26. Find the missing number: 2, 8, 18, 32, ?
- (A) 62 (B) 60
(C) 50 (D) 46
27. A girl introduced a boy as the son of the daughter of the father of her uncle. The boy is girl's
- (A) Brother (B) Son
(C) Uncle (D) Son-in-law
- Direction for Questions 28 -29. Study the following information to answer the questions :**
- (i) In class of boys and girls, Amar's rank is 12th and Meeta's ranks is 8th.
(ii) Amar's rank among the boys is 6th and Meeta's rank among girls is 3rd.
(iii) In the class Meeta's rank is 52nd from the other end.
(iv) From the other end, Amar's rank among the boys is 26th.
28. How many boys are there in the class?
- (A) 31 (B) 28
(C) 29 (D) Can't be determined
29. Which of the following is Meeta's rank among the girls from the other end ?
- (A) 23rd (B) 28th
(C) 26th (D) Can't be determined
30. If 'P' means '+'; 'R' means 'x' ; 'S' means '-' ; 'T' means '÷' then what is the value of
- $5 R 9 P 7 S 9 T 3 P 6 = ?$
- (A) 54 (B) 128
(C) 59 (D) 55

ANSWER KEY

1	A	16	A
2	A	17	A
3	D	18	D
4	A	19	B
5	B	20	D
6	B	21	B
7	A	22	D
8	C	23	D
9	B	24	C
10	B	25	A
11	C	26	C
12	C	27	A
13	B	28	A
14	B	29	C
15	B	30	D