

IMPORTANT INSTRUCTIONS

GENERAL INSTRUCTIONS

1. This booklet is your Question Paper.
2. Blank papers, clip boards, log tables, slide rule, calculators, mobile or any other electronic gadgets in any form are not allowed to be used.
3. Write your **Name** in the space provided in the first page of this booklet.
4. No rough sheets will be provided by the invigilators. All the rough work is to be done in the blank space provided in the question paper.
5. No query related to question paper of any type is to be put to the invigilator.

INSTRUCTIONS FOR OPTICAL RESPONSE SHEET (ORS)

- Darken the appropriate bubbles on the original by applying sufficient pressure.
- The original is machine-gradable and will be collected by the invigilator at the end of the examination.
- Do not tamper with or mutilate the ORS.
- Before answering the paper, fill up the required details in the blank space provided in the Objective Response Sheet (ORS).
- Use a **BLACK / BLUE BALL POINT** to darken the bubbles in the ORS sheet.
- Darken the bubble **COMPLETELY**.
- Darken the bubble **ONLY** if you are sure of the answer.
- The correct way of darkening a bubble is as shown here : ●
- There is **NO** way to erase or "un-darkened bubble".
- The marking scheme given at the beginning of each section gives details of how darkened and **not darkened** bubbles are evaluated.

Marks distribution of questions is as follows.

Vibro'NET						
S.No.	Subject	Nature of Questions	Marks to be awarded			
			No. of Questions	Correct	Wrong	Total
1 to 5	PART-I (Physics)	Single Choice Questions (SCQ)	5	4	0	20
6 to 10	PART-II (Chemistry)	Single Choice Questions (SCQ)	5	4	0	20
11 to 15	PART-III (Biology)	Single Choice Questions (SCQ)	5	4	0	20
16 to 30	PART-IV (Maths)	Single Choice Questions (SCQ)	15	4	0	60
31 to 45	PART-V (Mental Ability)	Single Choice Questions (SCQ)	15	4	0	60
Total			45			180

Zero marks '0' If none of the options is chosen (i.e. the question is unanswered).

Name _____

SPACE FOR ROUGH WORK

MENTAL ABILITY

This section contains 15 Multiple Choice Questions. Each question has four choices (A) (B) (C) and (D) out of which ONLY ONE is correct.

Directions : (Questions 1 to 2). In each of the questions given below, find the next term to fill the blank space.

1. 3, 5, 10, 12, 24, 26, ____
 (a) 52 (b) 30 (c) 28 (d) 48
2. 3, 6, 5, 20, 7, 42, 9, ____
 (a) 60 (b) 54 (c) 72 (d) 66

Directions : (Questions 3 to 4). In each of the questions, there are two words to the left of the sign (::) which are connected in some way. The same relationship exists between the third word and one of the four alternatives under it. Find the correct alternative in each case.

3. Play : Director :: Newspaper : ?
 (a) Owner (b) Editor (c) Manager (d) Columnist
4. Medicine : Sickness :: Book : ?
 (a) Ignorance (b) Knowledge (c) Author (d) Teacher
5. Lalit walks 8 km east, turns south-west and walks another 8 km. He again takes a turn towards north-west and walks another 8 km. In which direction from his starting point is he standing now?
 (a) North-East (b) South-East (c) West (d) East
6. A three centimeter cube has been painted blue on all its sides. It is cut into one centimeter cubes. How many cubes will be there with two sides painted blue?
 (a) 8 (b) 4 (c) 6 (d) 12
7. Arrange the following in the meaningful order
 (1) Cut (2) Put on (3) Mark (4) Measure (5) Tailor
 (a) 4, 3, 1, 5, 2 (b) 3, 1, 5, 4, 2 (c) 2, 4, 3, 1, 5 (d) 1, 3, 2, 4, 5
8. If x stands for +, y stands for -, z stands for ÷, p stands for ×, then what is the value of $10 \text{ p } 2 \times 5 \text{ y } 5$?
 (a) 10 (b) 15 (c) 20 (d) 25

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9. A man travels 12 km west, then 3 km towards south and then 8 km towards east. How far he is from the starting point?
- (a) 23 km (b) 20 km (c) 15 km (d) 5 km

10. Which runs faster? A train running at 60 km per hour

OR

A car speeding at 100 meters per 6 seconds?

- (a) Train (b) Car
(c) Both will progress at the same speed (d) It is not possible to say

Directions: In each question, four numbers/number-pairs are given, select the one which is different from the other three.

11. (a) 46, 32 (b) 62, 23 (c) 84, 24 (d) 24, 21

Directions : Select the correct alternative in each question.

12. If "GANESAN" can be written as "NASENAG", how, "RAJESH" can be written in the code?

- (a) SARHJE (b) JESHRA (c) SEHAJR (d) HSEJAR

13. If "CENTRE" is written as CNRCNR, how "HAPPY" can be written in that code?

- (a) HPYHP (b) YHPYA (c) AHPYA (d) HPYAP

Directions : (Questions 14 to 15). Find missing term in each of the following one.

14. 18, 10, 6, 4, 3, _____

- (a) 8 (b) 4 (c) 3.5 (d) 2.5

15. 3, 8, 22, 63, 185, _____

- (a) 285 (b) 295 (c) 310 (d) 550

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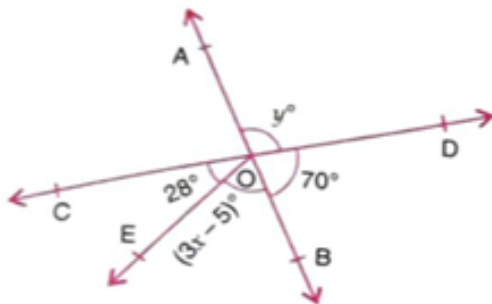
MATHEMATICS

This section contains 15 Multiple Choice Questions. Each question has four choices (a) (b) (c) and (d) out of which ONLY ONE is correct.

16. If $a = (-1) \times (-1) \times (-1) \dots 100$ times and $b = (-1) \times (-1) \times (-1) \dots 95$ times, then $a + b =$
 (a) -1 (b) -2 (c) 0 (d) 1
17. The product of two integers is 105. If one integer 3 more than - 10, then the other integer is
 (a) -7 (b) 15 (c) -15 (d) 7
18. The difference between the greatest and the least fractions out of $\frac{6}{7}, \frac{7}{8}, \frac{8}{9}$ and $\frac{9}{10}$ is :
 (a) $\frac{3}{70}$ (b) $\frac{1}{56}$ (c) $\frac{1}{40}$ (d) $\frac{1}{72}$
19. When 0.48 is written in the simplest form of its terms, the sum of its numerator and denominator is
 (a) 148 (b) 74 (c) 37 (d) 147
20. $3 \times 0.3 \times 0.03 \times 0.003 \times 30 =$
 (a) 0.0000243 (b) 0.000243 (c) 0.00243 (d) 0.0243
21. The whole number nearest to 457 and divisible by 11 is
 (a) 450 (b) 451 (c) 460 (d) 462
22. $(-1)^{301} + (-1)^{302} + (-1)^{303} + \dots + (-1)^{400}$
 (a) 1 (b) 101 (c) 100 (d) 0
23. $(1 + 3 + 5 + 7 + 9 + 11)^{3/2} =$
 (a) 36 (b) 216 (c) 256 (d) None of these

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24. If $abc = 0$, then find the value of $\left\{(x^a)^b\right\}^c =$
- (a) 1 (b) a (c) b (d) c
25. If $a = 3^{-3} - 3^3$ and $b = 3^3 - 3^{-3}$, then $\frac{a}{b} - \frac{b}{a}$
- (a) 0 (b) 1 (c) -1 (d) 2
26. If a and b are respectively the sum and product of coefficients of terms in the expression $x^2 + y^2 + z^2 - xy - yz - zx$, then $a + 2b =$
- (a) 0 (b) 2 (c) -2 (d) -1
27. The length of a rectangle is three times its width and its perimeter 56 m . The length is
- (a) 7 M (b) 14 M (c) 21 M (d) 28 M
28. The sum of three consecutive odd numbers is 81 . The middle number is
- (a) 25 (b) 27 (c) 31 (d) 29
29. $\angle A$ is an obtuse angle. The measure of $\angle A$ and twice its supplementary differ by 30° . Then, $\angle A$ can be
- (a) 150° (b) 110° (c) 140° (d) 120°
30. In Fig. if AOB and COD are straight lines, then



- (a) $X=29, Y=100$ (b) $x = 110, y = 29$
- (c) $X=29, Y=130$ (d) $x = 29, y = 110$

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PHYSICS

This section contains 05 Multiple Choice Questions. Each question has four choices (a) (b) (c) and (d) out of which ONLY ONE is correct.

31. A train travels at 60 km/h for the first 2 hours, then at 90 km/h for the next 1 hour. What is the average speed of the train for the entire journey?
- (a) 70 km/h
(b) 75 km/h
(c) 78 km/h
(d) 80 km/h
32. A closed glass bottle containing hot water is placed inside a bucket of cold water. After some time, the water in the bottle becomes cold. Which process of heat transfer is mainly responsible inside the bottle?
- (a) Radiation only
(b) Conduction only
(c) Convection inside water
(d) Both conduction and convection
33. Two shirts, one white and one black, are hung outside on a cold but sunny day. Which shirt will feel warmer and why?
- (a) White shirt, because it reflects more heat
(b) Black shirt, because it absorbs more radiation
(c) Both will feel the same, as sunlight is uniform
(d) Depends on thickness of the fabric
34. An electric bulb glows because:
- (a) The tungsten filament conducts current without resistance
(b) The tungsten filament resists current and becomes very hot, emitting light
(c) The glass cover produces light when heated
(d) Current passes through vacuum inside the bulb
35. A student switches on a circuit and observes that the compass needle nearby deflects. What can be concluded?
- (a) The circuit is open
(b) The current produces heat only
(c) Current produces a magnetic field around the conductor
(d) The compass is faulty

CHEMISTRY

This section contains 05 Multiple Choice Questions. Each question has four choices (a) (b) (c) and (d) out of which ONLY ONE is correct.

36. Which of these is NOT a natural acid?
- (a) Citric acid
 - (b) Acetic acid
 - (c) Hydrochloric acid
 - (d) Lactic acid
37. The neutralization reaction always produces —
- (a) Only salt
 - (b) Salt and acid
 - (c) Salt and water
 - (d) Base and water
38. Which of these is a slow chemical change?
- (a) Burning of LPG
 - (b) Explosion of cracker
 - (c) Rusting of iron
 - (d) Cooking of food
39. Which of the following shows a chemical change due to action of oxygen?
- (a) Melting of wax
 - (b) Cutting of paper
 - (c) Rusting of iron
 - (d) Dissolving salt in water
40. Which of the following is true for chemical changes?
- (a) They can always be reversed
 - (b) No new substance is formed
 - (c) New substance with new properties is formed
 - (d) They are always fast

BIOLOGY

This section contains 05 Multiple Choice Questions. Each question has four choices (a) (b) (c) and (d) out of which ONLY ONE is correct.

41. Which factor is directly necessary for photosynthesis?
(a) Carbon dioxide
(b) Oxygen
(c) Nitrogen
(d) Protein
42. Which chamber of the human heart pumps blood to the lungs for oxygenation?
(a) Right atrium
(b) Right ventricle
(c) Left atrium
(d) Left ventricle
43. Which part of the alimentary canal in humans is the main site for absorption of digested food?
(a) Stomach
(b) Small intestine
(c) Large intestine
(d) Oesophagus
44. In respiration, the energy released from glucose is stored in:
(a) Chlorophyll
(b) ATP
(c) DNA
(d) Proteins
45. Which plant tissue transports prepared food from leaves to other parts of the plant?
(a) Xylem
(b) Phloem
(c) Cambium
(d) Epidermis

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