



SAMPLE PAPER

MENTORS TALENT SEARCH EXAMINATION

FOR STUDENTS IN CLASS VIII AND GOING TO CLASS IX

Time : 3 hours

Maximum Marks: 360

INSTRUCTIONS

(A) General :

1. This Question paper contains **FIVE** Parts (Physics, Chemistry, Mathematics, Biology & Analytical Ability) containing 90 questions in all.
2. This Question Paper contains 13 pages, other than the OMR.
3. The Question Paper has blank spaces at the bottom of each page for rough work.No additional sheets will be provided for rough work.
4. Blank papers, clip boards, log tables, slide rule, calculators, cellular phones, pagers and electronic gadgets, in any form, are **NOT** allowed.
5. This booklet also contains the **OMR** answer sheet (i.e., A machine gradable Response Sheet).

(B) Answering on the OMR:

6. Each question will have **4 choices** in both the Sections, out of which **only one choice is correct**.
7. Darken the bubble with **Ball Pen (Blue or Black) ONLY**.

(C) Filling – in Name and Registration No.

8. On the **OMR sheet**, write your Name and Registration No. in ink. Also, put your signature in the appropriate box in ink.

(D) Marking Scheme:

9. (a) For each question, you will be awarded **4 marks** if you have darkened only one bubble corresponding to the right answer.
(b) In case you have not darkened any bubble, you will be awarded 0 mark for that question.
(c) In all other cases, you will be awarded **-1 mark**.

Name :

Registration No.:

DO NOT BREAK THE SEALS ON THIS BOOKLET, AWAIT INSTRUCTIONS FROM THE INVIGILATOR.

SEAL

8. The most comfortable distance at which one can read with a normal eye is about :
(A) 26 cm (B) 35 cm (C) 25 cm (D) 30 cm
9. The frequency of oscillation is basically the number of _____ per second.
(A) oscillations (B) vibrations (C) both A and B (D) neither A nor B
10. Regular reflection takes place when light is incident on a _____ surface .
(A) smooth (B) polished (C) regular (D) all of above
11. Gravitational force is
(A) attraction force (B) repulsion force
(C) both (A) and (B) (D) none of these
12. Speed of sound in air at 0°C is
(A) 332 m/s (B) 270 m/s (C) 300 m/s (D) 400 m/s
13. Unlike charges
(A) always attract each other
(B) always repel each other
(C) can attract or repel depending on conditions and quantity of charge
(D) neither attract nor repel
14. Pitch of sound depends on
(A) frequency (B) velocity
(C) wave length (D) none of these

SECTION-B**(Comprehension Type)**

This section contains **2 paragraphs**. Based upon the each paragraph 3 multiple choice questions have to be answered. Each of these questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Paragraph-1

Two bodies A and B are rubbed together, on rubbing some charges are transferred from one body to another body and hence bodies get charged. The process is called the charging by friction.

15. About the charges on A and B,
(A) both get opposite nature of charge
(B) both get positively charged
(C) both get negatively charged
(D) nothing can be concluded
16. About quantity of charge on A and B,
(A) The quantity of charge on the body is proportional to its size.
(B) The quantity of charge on the body is inversely proportional to its size.
(C) The quantity of charge on both A and B is same.
(D) The positive charge will be more than the negative charge.
17. The charging is due to
(A) flow of electron (B) flow of protons (C) flow of nucleus (D) flow of ions

Paragraph-2

Two persons Roshan and Kunal are holding a rope and they both are pulling the rope. Mass of Roshan is two times that of Kunal. Roshan is very strong where as Kunal is weak. As per Newton's third law of motion, for every action there is equal and opposite reaction. The action and reaction acts on two different bodies in opposite directions.

18. Force on the rope by the Roshan is F_1 and that due to Kunal is F_2 . Then
- (A) $F_1 = F_2$ (B) $F_1 > F_2$
(C) $F_1 < F_2$ (D) The relation depends on their mood
19. About force on the rope due to Roshan and by the rope on the Roshan.
- (A) Force on the rope by the Roshan will be more than that due to rope on Roshan.
(B) Force on the rope by the Roshan will be less than that due to rope on Roshan.
(C) Force on the rope by the Roshan will be equal to that due to rope on Roshan.
(D) Force on the rope by the Roshan will depend on the friction between the foot of Roshan and ground.
20. Let F_1 be the force on A due to B and F_2 that on B due to A. Then
- (A) $F_1 = F_2$ and both the forces will be in same direction
(B) $F_1 \neq F_2$ and both the froces will be in same direction
(C) $F_1 = F_2$ and both the forces will be in opposite directions.
(D) $F_1 \neq F_2$ and both the forces will be in opposite directions.

PART-II : CHEMISTRY**SECTION-A****(Single Correct Answer Type)**

This section contains **14 multiple** choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

21. Petroleum is mainly a mixture of which one of the following class?
(A) Carbohydrates (B) Carbogens (C) Hydrocarbons (D) Alcohols
22. Which one is not a coal product?
(A) Coal tar (B) Coal gas (C) Lime (D) None of these
23. Which one of the following is a petrochemical?
(A) Ammonia (B) Coke (C) Acetone (D) Paraffin wax
24. Conversion of dead vegetation into coal is called
(A) carbonisation (B) distillation (C) coal gas (D) natural gas
25. Full form of LPG is
(A) Light petroleum Gas (B) Liquified Petroleum Gas
(C) Long pipe of Gas (D) Long petroleum Gas
26. Coal, petroleum, and methane are organic substances. They exist in different physical states. The physical states in which coal, petroleum, and methane respectively exist are
(A) Solid, liquid, and liquid (B) Solid, liquid, and solid
(C) Solid, liquid, and gas (D) Gas, liquid, and solid
27. A list of natural resources is given.
I. Wind II. Coal III. Trees
IV. Petroleum V. Sunlight VI. Biomass
Which of the following pairs of natural resources is exhaustible?
(A) II and IV (B) I and V (C) IV and VI (D) V and VI
28. Which of the following is not a synthetic polymer
(A) Polyisoprene (B) Polybutadiene
(C) Polyethylene terephthalate (D) Polyethylene
29. $\text{CH}_2 = \text{CH}_2$ is a :
(A) Monomer (B) Polymer (C) Isomer (D) Equimer
30. Which is not a polymer?
(A) Ice (B) Starch (C) Protein (D) Cellulose
31. Which of the following metal occurs in native state
(A) Ca (B) Au (C) Zn (D) Al

32. The most electro positive metal among the following is
(A) Zn (B) Fe (C) Ca (D) Na
33. The earthy impurities present in the mineral are called
(A) flux (B) slag (C) gangue (D) refractory material
34. The process of heating an ore in the absence of air below in melting point is known as
(A) Calcination (B) Roasting (C) Smelting (D) Poling

SECTION-B**(Comprehension Type)**

This section contains **2 paragraphs**. Based upon the each paragraph 3 multiple choice questions have to be answered. Each of these questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Paragraph-1

Magnesium metal can also be obtained from magnesite. The magnesite mineral is calcined and the magnesia (MgO) thus obtained is melted and electrolysed : In the commercial preparation, magnesia is mixed with the fluorides of Mg, Ba and Na in a steel tank at 1170k to 1220k. A set of cast iron rods are projected from the bottom of the tank into the electrolyte. The anode consists of carbon rods suspended from the top of the tank. Magnesium metal is liberated at the cathode in the molten state.

35. Magnesium oxide is obtained from magnesite by
(A) calcination (B) Roasting (C) Smelting (D) Poling
36. The reaction at cathode is
(A) $\text{Mg} \rightarrow \text{Mg}^{+2} + 2e^{-}$ (B) $\text{Mg}^{+2} + 2e^{-} \rightarrow \text{Mg}$
(C) $2\text{Cl}^{-} \rightarrow \text{Cl}_2 + 2e^{-}$ (D) $\text{Cl}_2 + 2e^{-} \rightarrow 2\text{Cl}^{-}$
37. In the commercial process Magnesium oxide is mixed with
(A) Mg F_2 (B) BaF_2
(C) NaF (D) Fluorides of Mg, Ba & Na

Paragraph-2

The polymeres are calssified into the four sub groups on the basis of magnitude of intermolecular force present in them. The mechanical properties are governed by the type of force present in them.

38. In which of the following, polymer chains are held with Hydrogen Bond
(A) Thermoplastics (B) Fiberes
(C) Thermosetting polymers (D) Elastomeres
39. Which of the following is a thermoplastics
(A) Polyvinyls (B) Bakelite (C) Terylene (D) Neoprene
40. Generally polyamides are
(A) Fibres (B) Thermoplastics
(C) Thermosetting plastics (D) Elastomeres

PART-III : MATHEMATICS**SECTION-A****(Single Correct Answer Type)**

This section contains **11 multiple** choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

41. Three numbers are to one another in the ratio 2 : 3 : 4. The sum of their cubes is 33957, then the numbers
(A) 14, 21, 28 (B) 15, 30, 45 (C) 14, 20, 25 (D) none of these
42. If $x + y = 12$ and $xy = 14$, then the value of $x^2 + y^2$ is
(A) 116 (B) 72 (C) 8 (D) none of these
43. When $x^{4a} + x^{2a} \cdot y^{2b} + y^{4b}$ is divided by $x^{2a} + x^a y^b + y^{2b}$, then the quotient is
(A) $x^{2a} + x^a y^b + y^{2b}$ (B) $x^{2a} - x^a y^b + y^{2b}$
(C) $x^{2a} + x^a y^b - y^{2b}$ (D) none of these
44. If the sum of length, breadth and depth of a cuboid is 19cm and the length of its diagonal is 11 cm, then the surface area of the cuboid.
(A) 120 cm² (B) 290 cm² (C) 240 cm² (D) none of these
45. 17 cards numbered 1, 2, 3, ..., 17 are put in a box and mixed thoroughly. One person draws a card from the box. Find the probability that the number on the card is divisible by 3 and 2 both
(A) $\frac{3}{17}$ (B) $\frac{5}{17}$ (C) $\frac{2}{17}$ (D) none of these
46. There are three distinct real numbers a, b and c that are solutions of the equation $x^3 - 4x = 0$. Then the value of product abc is
(A) 1 (B) 0 (C) 2 (D) none of these
47. If $3^x = 3^{20} \cdot 3^{20} \cdot 3^{18} + 3^{19} \cdot 3^{20} \cdot 3^{19} + 3^{18} \cdot 3^{21} \cdot 3^{19}$, then the value of x is
(A) 59 (B) 45 (C) 60 (D) none of these
48. A valid reason for concluding that 635 is not a perfect square of an integer is that 635
(A) It is an odd integer (B) it ends with 5
(C) it ends with 35 (D) sum of its odd digits is 8
49. How many numbers between 200 and 600 are divisible by 4, 5 and 6 ?
(A) 6 (B) 7 (C) 8 (D) 9
50. p, q and r are three positive number and $Q = \frac{p+q+r}{2}$. If $(Q - p) : (Q - q) : (Q - r) = 2 : 5 : 7$, then find the ratio of p, q and r ?
(A) 4, 8 (B) 3, 6 (C) 5, 10 (D) 6, 12

$$51. \quad \text{If } \frac{31}{19} = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{a/b}}}}$$

- (A) $ab = 36$ (B) $a^2 + b^2 = 113$ (C) $a + b = 11$ (D) $a + b = 5$

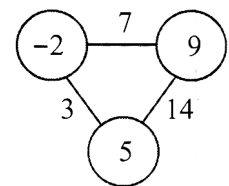
SECTION-B

(Comprehension Type)

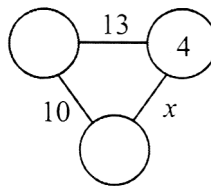
This section contains **2 paragraphs**. Based upon the each paragraph 3 multiple choice questions have to be answered. Each of these questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Paragraph-1

In each diagram shown in this problem, the number on the line connecting two circles is the sum of the two numbers in these two circles. An example of a completed diagram is shown to the right.

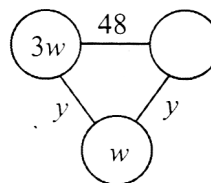


52. Then the value of x is



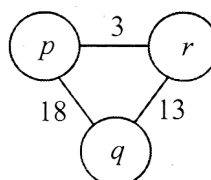
- (A) 2 (B) 3 (C) 5 (D) none of these

53. With justification, the value of y is



- (A) 32 (B) 39 (C) 33 (D) none of these

54. With justification, the value of p, q and r respectively is



- (A) $p = 4, q = 14, r = -1$ (B) $p = 4, q = 11, r = 1$
 (C) $p = 4, q = 15, r = -3$ (D) none of these

Paragraph-2

Consider the equation $x^2 - 2y^2 = 1$, which we label ①. There are many pairs of positive integers (x, y) that satisfy equation ①.

55. Then a pair of positive integers (x, y) with $x \leq 5$ that satisfies equation ① is
(A) (3, 2) (B) (2, 1) (C) (5, 7) (D) none of these
56. Then a pair of positive integers (u, v) such that $(3 + 2\sqrt{2})^2 = u + v\sqrt{2}$ and such that (u, v) satisfies equation ①.
(A) (17, 13) (B) (13, 17) (C) (17, 12) (D) none of these
57. Then a pair of positive integers (x, y) with $y > 100$ that satisfies equation ① is
(A) (577, 408) (B) (576, 488) (C) (577, 402) (D) none of these

Paragraph-3

If m is a positive integer, which is not a perfect square, then \sqrt{m} is irrational and if m is a positive integer which is not a perfect cube, then $\sqrt[3]{m}$ is irrational. Also if a & b are the positive integer which is not a perfect square and which is not a perfect cube then $\sqrt{a} \pm \sqrt{b}$ or $\sqrt[3]{a} \pm \sqrt[3]{b}$ is irrational. Where a & b are distinct, then answer the following questions.

58. $\sqrt{3} + \sqrt{5}$ is
(A) irrational (B) rational (C) Prime number (D) None of these
59. $(\sqrt{7} - \sqrt{5})^2$ is
(A) Rational (B) irrational (C) Prime number (D) none of these
60. $\left(\frac{1}{3\sqrt{2}}\right)^2$ is
(A) Rational (B) irrational (C) Prime number (D) none of these

PART-IV : BIOLOGY**SECTION-A****(Single Correct Answer Type)**

This section contains **15 multiple** choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

61. Nucleus was discovered by
 (A) Robert Koch (B) Leeuwenhoek (C) Robert Brown (D) Robert Hooke
62. Rough Endoplasmic reticulum synthesises
 (A) Proteins (B) Carbohydrates
 (C) Steroids and lipids (D) Nucleic acid
63. Hydrolytic enzymes occur in
 (A) Ribosome (B) Peroxisomes (C) Lysosomes (D) Glyoxysomes
64. Match the following :
- | Column A | Column B |
|-------------|---|
| 1. Immunity | (a) Aedes (Mosquito) |
| 2. Malaria | (b) Contaminated water |
| 3. Cholera | (c) Ability of body to fight infections |
| 4. Dengue | (d) Dog |
| 5. Rabies | (e) Female Anopholes |
- (A) 1(c), 2(e), 3(b), 4(a), 5(d) (B) 1(b), 2(d), 3(c), 4(e), 5(a)
 (C) 1(a), 2(c), 3(b), 4(e), 5(d) (D) 1(e), 2(a), 3(d), 4(b), 5(c)
65. Anthrax is caused by
 (A) Bacteria (B) Virus (C) Fungus (D) Protozoa
66. Which of the following micro-organism can be crystallised
 (A) Bacteria (B) Virus (C) Fungus (D) Protozoa
67. Which of the following is connecting link in between plants and animals
 (A) Bacteria (B) Paramecium (C) Euglena (D) Spirogyra
68. Aspergillosis is a disease which affects the
 (A) Cattle (B) Dogs (C) Monkeys (D) Poultry
69. Dodo is a/an species
 (A) Endangered (B) Vulnerable (C) Extinct (D) Rare
70. Which one of following fishes is a surface feeder?
 (A) Rohu (B) Marigals (C) Common carps (D) Catlas
71. Sowing of seeds is done by
 (A) Ploughing (B) Hybridization (C) Silo (D) Drill

72. Which one is an oil yielding plant among the following
(A) Lentil (B) Sunflower (C) Cauliflower (D) Hibiscus
73. Which one is not a source of carbohydrate
(A) Rice (B) Millets (C) Sorghum (D) Gram
74. Poultry fowl are susceptible to the following pathogens
(A) Viruses (B) Bacteria (C) Fungi (D) All the above
75. White revolution is related to
(A) Increase in milk production (B) Increase in fish production
(C) Increase in production of grains (D) Increase in egg production

PART-V : ANALYTICAL ABILITY

SECTION-A

(Single Correct Answer Type)

This section contains **9 multiple** choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

76. Hepatitis : Liver : : Conjunctivitis :

- (A) Lungs (B) Eye (C) Heart (D) Pancreas

77.

7	12	8	3
8	11	9	2
10	10	10	?

- (A) - 1 (B) 5 (C) 0 (D) 7

78. If 14 November 2006 is a Sunday, then 14 November 2706 is a

- (A) Sunday (B) Friday (C) Tuesday (D) Monday

79. 64, 29, 23, 11, ?

- (A) 4 (B) 5 (C) 6 (D) 8

80. 74, 63, 54, 45, ?

- (A) 34 (B) 33 (C) 39 (D) 36

81. How many degree will the minute-hand move, in the same time, in which the hour-hand moves 10° ?

- (A) 40° (B) 80° (C) 120° (D) 160°

In each question, a series of letters satisfying a certain pattern are given. Identify the pattern and then find the letter/letters that will come in place of the blank/blanks.

82. A, E, I, M, Q, U,,

- (A) B, F (B) Y, C (C) G, I (D) K, O

83. J, I, K, M, O, N, P, R, Q, S,

- (A) U (B) V (C) T (D) R

84. VS : LI :: PR :

- (A) EF (B) FH (C) GH (D) DF

SECTION – B
(Comprehension Type)

This section contains **2 paragraphs**. Based upon the first paragraph 3 multiple choice questions and based upon the second paragraph 3 multiple choice questions have to be answered. Each of these questions has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Paragraph-1

Mr Marx's and Mr Bagshaw's cars are black. The others have red ones. Mr Bagshaw and Mrs Chance have a white stripe on the sides of their cars. Miss Jenkins has a blue stripe on the side of her car. Mr Fleming and Mr Marx have silver stripes on the sides of their cars. Miss Jenkins' and Mr Fleming's have blue upholstery, the others have white.

85. Who has a car with blue upholstery and a silver stripe?
(A) Mr Bagshaw (B) Miss Jenkins (C) Mrs Chance (D) Mr Fleming
86. Who has a car with a silver stripe and white upholstery?
(A) Mr Bagshaw (B) Miss Jenkins (C) Mrs Chance (D) Mr Marx
87. Who has got the red car with a blue stripe and matching upholstery?
(A) Mr Bagshaw (B) Miss Jenkins (C) Mrs Chance (D) Mr Fleming

Paragraph-2

Jane, Rachel and Tessa are girls who are wearing a jacket, coat or skirt in blue, green or red. None of these articles of clothing is the same colour and each girl is wearing a different colour. The coat belonging to Tessa is not green. Rachel's jacket and Jane's skirt are the same colour. Tessa's skirt is red. Her jacket, Rachel's skirt and Jane's coat are all the same colour.

88. What colour is Tessa's coat?
(A) blue (B) green (C) red (D) yellow
89. Which girl has the green coat?
(A) Jane (B) Rachel (C) Tessa (D) None of these
90. Which girl has the blue jacket?
(A) Jane (B) Rachel (C) Tessa (D) None of these