# ADMISSION CUM SCHOLARSHIP TEST

## SAMPLE TEST PAPER

**(For Students Going to Class 10th IN 2024)**

**COURSE OFFERED : CATAPULT**

**Time : 2 hours** **Maximum Marks: 240**

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

SEAL

### INSTRUCTIONS

**(A) General :**

1. This Question paper contains **FIVE** Parts (Physics, Chemistry, Mathematics, Biology & Mental Ability) containing 60 questions in all.
2. This Question Paper contains 11 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.:** | | | | | | | | | | | | | | | |

# PART-A : PHYSICS

**1.** Slope of a velocity – time graph gives

(A) the distance

(B) the displacement

(C) the acceleration

(D) the speed

**2.** According to Newton's third law of motion, action and reaction

(A) always act on the same body.

(B) always act on different bodies in opposite directions.

(C) have same magnitude and directions.

(D) act on either body at normal to each other.

**3.** Law of gravitation gives the gravitational force between

(A) the earth and a point mass only

(B) the earth and Sun only

(C) any two bodies having some mass

(D) two charged bodies only

**4.** When a body falls freely towards the earth, then its total energy

(A) increases (B) decreases

(C) remains constant (D) first increases and then decreases

**5.** Which kind of sound is produced by Earthquake before the main shock wave begins ?

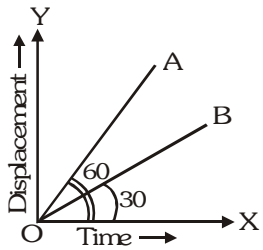
(A) ultrasound (B) infrasound (C) audible sound (D) none of the above

**6.** A car is moving along a straight road with a uniform acceleration. It passes through two points P and Q separated by a certain distance with velocity of 30 kmph and 40 kmph respectively. Velocity of the car, exactly midway between P and Q, is

(A) 33.3 kmph (B) 20 kmph (C) 25 kmph (D) 35.35 kmph

**Space for rough work**

**7.** If the displacement-time graph for the two particles A and B are straight lines inclined at angles of 30° and 60° with the time axis, then ratio of the velocities $v_A$: $v_B$ will be

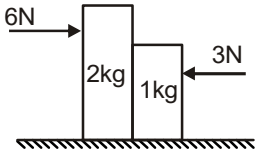



(A) 1 : 2 (B) 1 : 3 (C) $\sqrt{3}$ : 1 (D) 3: 1

**8.** A cricket ball of mass 100 g moving with a speed of 30 m/s is brought to rest by a player, then find the change in momentum of ball.

(A) –3.0 kg m/s (B) –4.0 kg m/s (C) –5.0 kg m/s (D) –6.0 kg m/s

**9.** Two forces of 6N and 3N are acting on the two blocks of 2 kg and 1 kg kept on frictionless floor. What is the force exerted on 2 kg block by 1 kg block ?




(A) 1 N (B) 2 N (C) 4 N (D) 5N

**10.** If the Earth is 1/4$^{th}$ of its present distance from the Sun, the duration of the year would be

(A) 1/4$^{th}$ of present year (B) 1/6$^{th}$ of present year

(C) 1/8$^{th}$ of present year (D) 1/16$^{th}$ of present year

**11.** If the linear momentum of a body is increased by 50%, its KE will increase by

(A) 50% (B) 100% (C) 125% (D) 150%

**12.** If wavelength of a sound wave in a medium is reduced by 50%, then what is the percentage change in its frequency?

(A) 25 % (B) 50 % (C) 75 % (D) no change

**Space for rough work**

# PART-B : CHEMISTRY

**13.** The density of water is maximum at

(A) 0°C (B) 277 K (C) 100°C (D) 283 K

**14.** Addition of impurities to water

(A) decreases the freezing point of water

(B) increases the boiling point of water

(C) does not affect the freezing or boiling point of water

(D) both (a) and (b)

**15.** Which of the following would be described as impure?

(A) Crystallized salt (B) Salt solution

(C) Rock salt (D) All of the above

**16.** Which one of the phrases would be incorrect to use?

(A) a mole of an element (B) a mole of a compound

(C) an atom of an element (D) an atom of compound.

**17.** The mass number A, atomic number Z and number of neutrons n are related as

(A) $n = A - Z$ (B) $n = A + Z$ (C) $n = A \times Z$ (D) none of these

**18.** As the solid melts to form liquid,

(A) interparticle forces of attraction decreases

(B) the kinetic energy of the particles increases

(C) compressibility increases

(D) all of these

**Space for rough work**

**19.** A mixture of sulphur and iron filings is heated strongly to obtain a residue. Which of the following is not a characteristic property of the residue?

(A) It can be separated into sulphur and iron filings by physical methods.

(B) Its composition does not change from one part to another.

(C) Its properties are entirely different from those of sulphur and iron filings.

(D) Its appearance is different from those of sulphur and iron filings.

**20.** The law of multiple proportions is illustrated by the pair of compounds

(A) sodium chloride and sodium bromide

(B) water and heavy water

(C) sulphur dioxide and sulphur trioxide

(D) magnesium hydroxide and magnesium oxide.

**21.** The present atomic weight scale is based on

(A) $C^{12}$ (B) $O^{16}$ (C) $H^{1}$ (D) $C^{13}$

**22.** When we put some crystals of potassium permanganate in a beaker containing water, we observe that after some time whole water has turned pink. This is due to

(A) boiling

(B) melting of potassium permanganate crystals

(C) sublimation of crystals

(D) diffusion

**Space for rough work**

**23.** Water was taken in four beakers labelled as I to IV. To these beakers, the following substances were added.

Beaker (I) Common salt

Beaker (II) Alum

Beaker (III) Potassium nitrate

Beaker (IV) A few drops of barium chloride and a few drops of dilute $H_2SO_4$.

After sometimes, the contents of the beakers were filtered. The contents of which beaker will leave residue on the filter paper.

(A) Beaker (I) (B) Beaker (II) (C) Beaker (III) (D) Beaker (IV)

**24.** In compound A, 1.00 g nitrogen combines with 0.57 g oxygen. In compound B, 2.00 g nitrogen combines with 2.24 g oxygen. In compound C, 3.00 g nitrogen combines with 5.11 g oxygen. These results obey the following law

(A) law of constant proportion (B) law of multiple proportion

(C) law of reciprocal proportion (D) law of partial pressure.

## PART-C : MATHEMATICS

**25.** If $x = 2 + \sqrt{3}$, then $\left(x + \frac{1}{x}\right)$ equals to

(A) $-2\sqrt{3}$ (B) 2 (C) 4 (D) $4 - 2\sqrt{3}$

**26.** The expression $(ax^2 + bx + c)$ is exactly divisible by $(2x - 1)$ and $(x + 2)$, it leaves a remainder 12 when divided by $(x - 2)$. Find the values of a, b, c.

(A) a = –2, b = 3, c = – 2 (B) a = 2, b = 3, c = – 2.

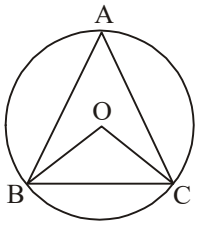
(C) a = –2, b = 3, c = 2. (D) a = 2, b = –3, c = – 2.

**Space for rough work**

**27.** The co-ordinates of a point lying in the second quadrant with ordinate 12 and abscissa three more than two-third of the square of ordinate is (– x, 12). Then the value of 'x' is equal to

(A) 96 (B) 99 (C) – 99 (D) – 93

**28.** An equilateral triangle ABC is inscribed in a circle with centre O. Then, $\angle BOC$ is equal to




(A) 30º (B) 60º (C) 90º (D) 120º

**29.** The y co-ordinate of a point is distance of that point from

(A) X-axis (B) Y-axis (C) Origin (D) none of these

**30.** The value of 'K' for which the system of equations has no solution :

$2x - Ky + 3 = 0$ and $3x + 2y - 1 = 0$

(A) $-\frac{4}{3}$ (B) $\frac{2}{3}$ (C) $-\frac{2}{3}$ (D) $\frac{4}{3}$

**31.** The perimeter of a right triangle is 132 cm. and the sum of the squares of its sides is 6050 $cm^2$. Then the sum of the perpendicular sides is equal to

(A) 77 cm (B) 55 cm (C) 44 cm (D) None of these

**32.** Three vertices of a parallelogram are (p + q, p – q), (2p + q, 2p – q) and (p – q, p + q). Then the fourth vertex is

(A) (–p, q) (B) (p, q) (C) (–q, q) (D) (–p, p)

**33.** If the length of a diagonal of a cube is $8\sqrt{3}$ cm , then its surface area is

(A) 512 $cm^2$ (B) 384 $cm^2$ (C) 192 $cm^2$ (D) 768 $cm^2$

**Space for rough work**

**34.** If the volumes of two cubes are in ratio 8 : 1, then the ratio of their edges is

(A) 2 : 1 (B) 4 : 1 (C) $2\sqrt{2}$ : 1 (D) 8 : 1

**35.** The median of following series 520, 20, 340, 190, 35, 800, 1210, 50, 80

(A) 1210 (B) 520 (C) 190 (D) none of these

**36.** A pair of dice is thrown once. The probability that the sum of the outcomes is less than 11 is

(A) 29/36 (B) 7/36 (C) 11/12 (D) 1/6

## PART-D : BIOLOGY

**37.** Most cell membranes are composed principally of

(A) DNA and ATP (B) Protein and Lipid

(C) Chitin and starch (D) Nucleotides and amino acids

**38.** The solution in which a cell will gain water by osmosis is termed as

(A) Isotonic solution (B) Hypertonic solution

(C) Hypotonic solution (D) Both (A) and (B).

**39.** Girth of stem increases due to

(A) Apical meristem (B) Lateral meristem

(C) Intercalary mertistem (D) Vertical meristem

**40.** Triceps and biceps are examples of

(A) Voluntary muscle (B) Involuntary muscle

(C) Sphincter muscles (D) Smooth muscles

**41.** What is classification?

(A) Grouping organisms together on the basis of the features they have in common.

(B) Grouping organisms together on the basis of how they respire.

(C) Grouping organisms together on the basis of how they feed.

(D) Grouping organisms together on the basis of how they survive.

**Space for rough work**

**42.** Water vascular system is a distinctive feature of

(A) Echinodermata (B) Annelida

(C) Chordata (D) Mollusca

**43.** Common cold is a/an

(A) Chronic disease (B) Congenital disease

(C) Acute disease (D) Genetic disorder

**44.** Vaccination

(A) Develops resistance against the attack of a disease.

(B) Can control every disease.

(C) Kills all the disease causing organisms in the area.

(D) Involves the use of antibodies

**45.** Health problems related to air pollution include

(A) Coughing (B) Asthma (C) Bronchitis (D) All of these

**46.** Which step is not involved in the carbon cycle ?

(A) Photosynthesis (B) Transpiration

(C) Respiration (D) Burning of fossil fuels

**47.** The production and management of fish is called

(A) Pisciculture (B) Apiculture

(C) Sericulture (D) Aquaculture

**48.** The use of fertilizers in farming is an example of

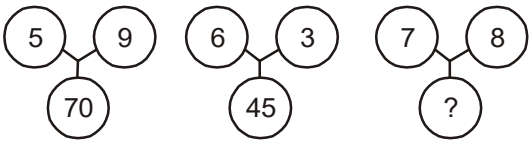
(A) No-cost production (B) Low-cost production

(C) High-cost production (D) None of these

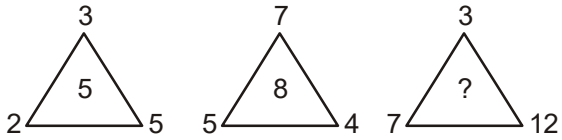
**Space for rough work**

# PART-E : MENTAL ABILITY

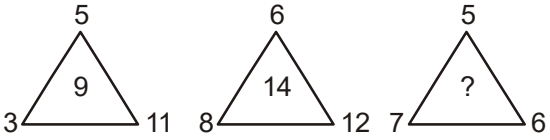
**Find the missing number**

**49.** 


(A) 85 (B) 81 (C) 75 (D) 64

**50.** 


(A) 9 (B) 11 (C) 14 (D) 16

**51.** 


(A) 12 (B) 9 (C) 8 (D) 6

**52.** If RADIO is written PYBGM, then how would OQDKNG be written in that code ?

(A) MOBIEL (B) MOBLIE (C) MOIBLE (D) MOBILE

**53.** If TRIANGLE is coded as SSHBMHKF, then SQUARE would be

(A) RRIASF (B) RPVBSF (C) RRTBQF (D) RPVBSD

**54.** If CRICKETER is coded as DQJBLDUDS, then PLAYER will be coded as

(A) QMBZFS (B) OMZZDS (C) QKBXFQ (D) QKBZDS

**Space for rough work**

**55.** Anil left home and cycled 10 km Southwards, turned right and cycled 5 km & turned right and cycled 10 km and turned left and cycled 10 km. How many kilometer wil he have to cycle to reach his home straight ?

(A) 10 km (B) 15 km (C) 20 km (D) 25 km

**56.** 'A' travelled Westwards 5 km, turned left and travelled 3 km, turned right and travelled 9 km. He them travelled North 3 km. How far was 'A' from the starting point now ?

(A) 3 km (B) 5 km (C) 10 km (D) 14 km

**57.** Amar travels one km due East, then 5 km due South, then 2 km due East and finally 9 km due North. How far is from the starting point ?

(A) 16 km (B) 8 km (C) 6 km (D) 5 km

**58.** Amit said, "This girl is the wife of the grandson of my mother, "How is Amit related to the girl?

(A) Father (B) Father-in-law (C) Grandfather (D) Husband

**59.** Introducing a girl, Vipin said, "Her mother is the only daughter of my mother-in-law. "How is Vipin related to the girl ?

(A) Uncle (B) Father (C) Brother (D) Husband

**60.** Showing the lady in the park, Vineet said, "She is the daughter of my grand father's only son." How is Vineet related to that lady ?

(A) Brother (B) Cousin (C) Father (D) Uncle

**Space for rough work**

# ANSWER KEYS

# SAMPLE TEST PAPER

**(For Students Going to Class 10th IN 2024)**

**COURSE OFFERED : CATAPULT**

## PHYSICS

| | | | |
|---|---|---|---|
| 1. (C) | 2. (B) | 3. (C) | 4. (C) |
| 5. (B) | 6. (D) | 7. (D) | 8. (A) |
| 9. (C) | 10. (C) | 11. (C) | 12. (D) |

## CHEMISTRY

| | | | |
|---|---|---|---|
| 13. (B) | 14. (D) | 15. (C) | 16. (D) |
| 17. (A) | 18. (D) | 19. (A) | 20. (C) |
| 21. (A) | 22. (D) | 23. (D) | 24. (B) |

## MATHEMATICS

| | | | |
|---|---|---|---|
| 25. (C) | 26. (B) | 27. (B) | 28. (D) |
| 29. (A) | 30. (A) | 31. (A) | 32. (C) |
| 33. (B) | 34. (A) | 35. (C) | 36. (C) |

## BIOLOGY

| | | | |
|---|---|---|---|
| 37. (B) | 38. (C) | 39. (B) | 40. (A) |
| 41. (A) | 42. (A) | 43. (C) | 44. (A) |
| 45. (D) | 46. (B) | 47. (A) | 48. (C) |

## MENTAL ABILITY

| | | | |
|---|---|---|---|
| 49. (C) | 50. (B) | 51. (C) | 52. (D) |
| 53. (C) | 54. (C) | 55. (B) | 56. (D) |
| 57. (D) | 58. (B) | 59. (B) | 60. (A) |