Edge Educellence

Sample Paper

(Class XI studying moving to Class XII)

(Medical)

<u>**IMPORTANT INSTRUCTIONS**</u>

A. GENERAL:

- Please read the instructions given for each question carefully and mark the correct answers against the question numbers on the answer sheet in the respective subjects.
- Duration of Test is 1 Hour.
- This Test contains 40 questions divided in 3 sections. Section I contains questions of Physics and Section II contains questions of Chemistry and Section III contains questions of Biology.
- Maximum marks are 80.

B. MARKING SCHEME :

Each subject in this paper consists of following 3 types of sections :-

SECTION – I

- The section contains **13** questions.
- Each question has four options. ***Only one*** of the four option is correct.
- For each question, marks will be awarded in one of the following categories :
  Full Marks   : +2, If only the correct options is marked.
  Zero Marks   : 0, In all other cases.

SECTION – II

- The section contains **13** questions.
- Each question has four options. ***Only one*** of the four option is correct.
- For each question, marks will be awarded in one of the following categories :
  Full Marks   : +2, If only the correct options is marked.
  Zero Marks   : 0, In all other cases.

SECTION - III

- The section contains **14** questions.
- Each question has four options. ***Only one*** of the four option is correct.
- For each question, marks will be awarded in one of the following categories :
  Full Marks   : +2, If only the correct options is marked.
  Zero Marks   : 0, In all other cases.

All the Best!

Section – I (Physics)

1. The frequency of vibration f of a mass m suspended from a spring of spring constant k is given by a relation $f = am^x k^y$, where a is a dimensionless constant. The values of x and y are
   (a) $x = \frac{1}{2}, y = \frac{1}{2}$
   (b) $x = -\frac{1}{2}, y = -\frac{1}{2}$
   (c) $x = -\frac{1}{2}, y = \frac{1}{2}$
   (d) $x = \frac{1}{2}, y = -\frac{1}{2}$

2. If L = 2.331 cm, B = 2.1 cm, then L + B = ?
   (a) 4.43 cm   (b) 4 cm   (c) 4.431 cm   (d) 4.4 cm

3. A bus is moving with a speed of 10 ms^{-1} on a straight road. A scooterist wishes to overtake the bus in 100 s. If the bus is at a distance of 1 km from the scooterist, with what speed should the scooterist chase the bus?
   (a) 40 m/s   (b) 10 m/s
   (c) 25 m/s   (d) 20 m/s

4. A jet lands on an aircraft carrier at 63 m/s. What is its acceleration in m/s^2 if it stops in 2.0 s?
   (a) – 35   (b) 34   (c) – 31.5   (d) – 33

5. A car moves from X to Y with a uniform speed v_u and returns to Y with a uniform speed v_d. The average speed of this round trip is:
   (a) $\frac{v_u + v_d}{2}$
   (b) $\sqrt{v_u v_d}$
   (c) $\frac{2v_d v_u}{v_d + v_u}$
   (d) $\frac{v_d v_u}{v_d + v_u}$

6. A particle is moving such that its position coordinates (x, y) are
   (2 m, 3 m) at time t = 0,
   (6 m, 7 m) at time t = 2s, and
   (13 m, 14 m) at time t = 5s
   Average velocity vector $(\vec{v}_{av})$ from t = 0 to t = 5s is
   (a) $\frac{7}{3}(\hat{\imath} + \hat{\jmath})$
   (b) $\frac{1}{5}(13\hat{\imath} + 14\hat{\jmath})$
   (c) $\frac{11}{5}(\hat{\imath} + \hat{\jmath})$
   (d) $2(\hat{\imath} + \hat{\jmath})$

7. The angular speed of a flywheel making 120 revolutions/minute is
   (a) $4\pi^2$ rad/s
   (b) 2π rad/s
   (c) 4π rad/s
   (d) π rad/s

8. A ball of mass 25 g, moving with a velocity of 2 ms^{-1} is stopped within 5 cm. The average resistance offered to the ball is
   (a) 1 N   (b) 2 N   (c) 5 N   (d) 10 N

9. A 10 N force is applied on a body to produce in it an acceleration of 1 m/s^2. The mass of the body is
   (a) 5 kg   (b) 20 kg   (c) 10 kg   (d) 15 kg

10. A force F = (2 + x)N acts on a particle in the x - direction. The work done by this force during a displacement from x = 1.0 m to x = 2.0 m is:
    (a) 3.5 J
    (b) 2.1 J
    (c) 4.5 J
    (d) 2.5 J

11. A particle of mass M is moving in a horizontal circle of radius R with uniform speed v. When it moves from one point to a diametrically opposite point, its

(a) momentum does not change
(b) kinetic energy changes by $\frac{Mv^2}{4}$
(c) kinetic energy changes by Mv^2
(d) momentum changes by $2Mv$

12. A boy comes running and sits on a merry - go - round. What is conserved?

(a) The kinetic energy of rotation
(b) Linear momentum
(c) The kinetic energy of function
(d) Angular momentum

13. What is the distance of the centre of mass of a half ring from its centre if its radius is 0.5 m?

(a) $\frac{1}{\pi}m$
(b) $\frac{1}{2\pi}m$
(c) $\frac{2}{3\pi}m$
(d) $\frac{1}{3\pi}m$

Section – I (Chemistry)

14. Choose the most appropriate answer for the statement, "Rearrangement of atoms occurs whenever a chemical bond breaks or is formed, when

(a) reactants disappear
(b) a chemical reaction takes place
(c) products appear
(d) catalysts are produced

15. 20 °F can also be written in K as

(a) 169.5 K
(b) 266.5 K
(c) 206.5 K
(d) 256.00 K

16. The molar mass of CO_2 is :

(Given : atomic masses of C = 12.00 u, O = 16.00 u)

(a) 14 u
(b) 38 u
(c) 44 u
(d) 28 u

17. What will be the wavelength of a ball of mass 0.1 kg moving with a velocity of 10 ms^{-1}?

(a) 6.266×10^{-34} m
(b) 6.696×10^{-34} m
(c) 6.626×10^{-34} m
(d) 6.326×10^{-34} m

18. According to quantum mechanics ψ^2 (r) the wave function squared gives:

(a) probability density of finding a proton
(b) probability of finding a neutron
(c) probability of finding an electron
(d) probability density of finding an electron

19. Consider the isoelectronic species, Na^+, Mg^{2+}, F^-, and O^{2-}. The correct order of increasing length their radii is_____.

(a) $O^{2-} < F^- < Na^+ < Mg^{2+}$
(b) $Mg^{2+} < Na^+ < F^- < O^{2-}$
(c) $F^- < O^{2-} < Mg^{2+} < Na^+$
(d) $O^{2-} < F^- < Mg^{2+} < Na^+$

20. Find the Incorrect match.

(a) Solid with highest density - Os
(b) Liquid with highest density - Hg
(c) Non - metal with highest melting point - S
(d) Metal with highest melting point - W

21. The effective distance between the centre of the nucleus of an ion and the point up to which the nucleus has an influence on its electron cloud is called_____:

(a) covalent radius
(b) anionic radius
(c) cationic radius
(d) ionic radius

22. Bond lengths are lower in elements having:

(a) double bond
(b) single bond

(c) triple bond (d) crystal structure

23. The electronic configurations of three elements A, B and C are given below:

A = 1s ^{2} 2s ^{2} 2p ^{6}

B = 1s ^{2} 2s ^{2} 2p ^{6} 3s ^{2} 3p ^{3}

C = 1s ^{2} 2s ^{2} 2p ^{6} 3s ^{2} 3p ^{5}

The bond between B and C will be

(a) Hydrogen (b) Covalent

(c) Coordinate (d) Ionic

24. Standard Molar Enthalpy of Formation is the standard enthalpy change for the formation of:

(a) one mole of a compound from its elements in their most stable states of aggregation.

(b) one mole of a compound from its elements in at a pressure of 10 bar and 30° C.

(c) one mole of a compound from its elements in at a pressure of 2 bar and 25° C.

(d) one kg of a compound from its elements in their most stable states of aggregation.

25. Hess's law is based on

(a) law of active mass

(b) law of conservation of mass

(c) law of conservation of mass and law of conservation of energy

(d) law of conservation of energy

26. The lattice enthalpy of an ionic compound is the enthalpy change which occurs when

(a) one gm of an ionic compound dissociates into its ions in a gaseous state.

(b) one mole of an ionic compound dissociates into its ions in a liquid state.

(c) one mole of an ionic compound dissociates into its ions in a gaseous state.

(d) one kg of an ionic compound dissociates into its ions in a liquid state.

Section – III (Biology)

27. Which are the term interchangeable?

(a) Species and subspecies (b) Taxonomy and systematics

(c) Genes and species (d) Kingdom and phylum

28. _____is an example of a fungal infection.

(a) Ringworm (b) Typhoid (c) AIDS (d) Cholera

29. Which is the correct word for the relationship between algae and fungi in lichens?

(a) Pathogens (b) Symbiosis

(c) Parasitism (d) Commensals

30. The structure formed by germinated fern spore is:

(a) Embryo (b) Thallus (c) Prothallus (d) Germpore

31. The small lateral outgrowth of the leaf base which protects the young leaf and its axillary buds in the young stage is called ____.

(a) Petiolate (b) Bracts (c) Stipules (d) Pulvinus

32. The staining procedure is developed by:

(a) Schleiden (b) Hans Christian Gram

(c) Schwann (d) A. V. Leeuwenhoek

33. Astral bodies are formed of _____.

(a) Microfilaments (b) Microvilli

(c) Intermediate filaments   (d) Microtubules

34. How many chambers are there in the heart of a crocodile?

(a) 5   (b) 3   (c) 4   (d) 2

35. The voice producing organ of birds is called as:

(a) Syrinx   (b) Larynx   (c) Bulbous   (d) Gizzard

36. 70% of carbon dioxide is transported as bicarbonate by the enzyme _____.

(a) Carbonates   (b) carbonic anhydrase

(c) Carbaminase   (d) Carbonic hydrase

37. Which of the following proteins is involved in blood clotting?

(a) Globulin   (b) Fibrinogen   (c) Albumin   (d) Biliirubin

38. The cells involved in inflammatory reactions are:

(a) Neutrophils   (b) Eosinophils   (c) Basophils   (d) Lymphocytes

39. Which of the following animals shows ammonotelic excretion?

(a) Sparrow   (b) Rohu   (c) Cat   (d) Human

40. During the resting stage, the axonal membrane is more permeable to which ion?

(a) Sodium   (b) Magnesium

(c) Calcium   (d) Potassium

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
(c)	(d)	(d)	(c)	(c)	(c)	(c)	(a)	(c)	(a)
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
(d)	(d)	(a)	(b)	(b)	(c)	(c)	(d)	(b)	(c)
21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
(d)	(c)	(b)	(a)	(d)	(c)	(b)	(a)	(b)	(c)
31.	32.	33.	34.	35.	36.	37.	38.	39.	40.
(c)	(b)	(d)	(c)	(a)	(b)	(b)	(c)	(b)	(d)