



General Instructions

- (i) **Duration:** The total duration of the examination is 3 hours (180 minutes).
- (ii) **Total Marks:** The complete paper carries a maximum of 200 marks.
- (iii) **Structure:** The paper has 3 Sections:
 - **Section A:** 50 Multiple Choice Questions (Physics).
 - **Section B:** 50 Multiple Choice Questions (Chemistry).
 - **Section B:** 100 Multiple Choice Questions (Biology).
- (iv) **Compulsory Questions:** All 200 questions are compulsory.
- (v) Each question has four options. Only **one** option is correct.
- (vi) **Correct Answer:** +1 marks.
- (vii) **Incorrect Answer:** (No Negative marking).
- (viii) **Unanswered/Marked for Review:** 0 marks.

1. A uniform disc of mass M and radius R is rotating about an axis through its center and perpendicular to its plane. What is its moment of inertia?

- (A) MR^2
- (B) $\frac{1}{4}MR^2$
- (C) $\frac{1}{2}MR^2$
- (D) $2MR^2$

2. What is the SI unit of Magnetic Induction?

- (A) Weber
- (B) Tesla
- (C) Henry
- (D) Coulomb

3. A charge of $2\mu\text{C}$ is placed in an electric field of intensity $4 \times 10^3 \text{ N/C}$. What is the force experienced by the charge?

- (A) $8 \times 10^{-6} \text{ N}$
- (B) $8 \times 10^{-3} \text{ N}$
- (C) $8 \times 10^{-2} \text{ N}$
- (D) 8 N

4. Which law states that magnetic susceptibility is inversely proportional to absolute temperature?

- (A) Faraday's Law
- (B) Curie's Law
- (C) Lenz's Law
- (D) Gauss's Law

5. Potential energy of a particle performing linear S.H.M is $0.1\pi^2 x^2$ joule. If the mass is 20 g , what is the frequency of S.H.M?

- (A) 0.5 Hz
- (B) 1 Hz
- (C) 2 Hz

(D) 4 Hz

6. What are the monomers of Bakelite?

- (A) Ethylene and Styrene
 - (B) Phenol and Formaldehyde
 - (C) Vinyl chloride and Ethylene
 - (D) Urea and Formaldehyde
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7. What is the coordination number of an atom in a Face-Centered Cubic (FCC) crystal structure?

- (A) 6
 - (B) 8
 - (C) 12
 - (D) 4
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8. Which reagent is typically used in Rosenmund reduction to convert acyl chlorides to aldehydes?

- (A) $LiAlH_4$
 - (B) $H_2/Pd - BaSO_4$
 - (C) $NaBH_4$
 - (D) $KMnO_4$
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9. What is the product obtained at the cathode during the electrolysis of molten NaCl?

- (A) Chlorine gas
- (B) Sodium metal

- (C) Sodium hydroxide
 - (D) Hydrogen gas
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10. What is the Van't Hoff factor (i) for a completely dissociated solution of K_2SO_4 in water?

- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
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11. Which mosquito vector is responsible for transmitting Filariasis (*Wuchereria bancrofti*)?

- (A) Anopheles mosquito
 - (B) Aedes mosquito
 - (C) Culex mosquito
 - (D) Mansonia mosquito
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12. What is the normal Tidal Volume (TV) in a healthy adult human?

- (A) 200 mL
 - (B) 500 mL
 - (C) 1000 mL
 - (D) 2000 mL
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13. When does the extrusion of the second polar body from the egg nucleus occur?

- (A) Before entry of sperm
- (B) During fertilization

- (C) After entry of sperm but before fertilization
 - (D) After embryonic development begins
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14. Which hormone dilates blood vessels to reduce blood pressure, acting opposite to Angiotensin II?

- (A) Aldosterone
 - (B) Renin
 - (C) Atrial Natriuretic Factor (ANF)
 - (D) Vasopressin
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