



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. Who coined the term “Root Pressure Theory”?

- (A) Julius von Sachs
 - (B) Stephen Hales
 - (C) J. Priestley
 - (D) Charles Darwin
-

2. A particle performs linear S.H.M. with potential energy $U = 0.1\pi^2x^2$. If the mass is 20 g, what is its frequency?

- (A) 1.581 Hz
 - (B) 3.162 Hz
 - (C) 0.790 Hz
 - (D) 6.283 Hz
-

3. Which reagent is used in the Stephen reaction to reduce nitriles to imines?

- (A) $LiAlH_4$
 - (B) $SnCl_2/HCl$
 - (C) $NaBH_4$
 - (D) Zn/HCl
-

4. Where is angiotensinogen secreted from in the human body?

- (A) Kidney
 - (B) Pancreas
 - (C) Liver
 - (D) Spleen
-

5. What are the monomers used to synthesize Bakelite?

- (A) Ethene and Styrene
 - (B) Phenol and Formaldehyde
 - (C) Urea and Formaldehyde
 - (D) Ethylene glycol and Terephthalic acid
-

6. If a star A has radiant power three times that of the Sun and a temperature of 6000 K while the Sun has temperature 2000 K , what is the ratio of their radii ($R_A : R_{\text{Sun}}$)?

- (A) $1 : \sqrt{27}$
 - (B) $\sqrt{27} : 1$
 - (C) $1 : 9$
 - (D) $9 : 1$
-

7. What is the site of perception for photoperiodism induction in plants?

- (A) Roots
 - (B) Leaves
 - (C) Stem apex
 - (D) Flowers
-

8. Which molecule has a net dipole moment of zero among NH_3 , H_2O , NF_3 , and CCl_4 ?

- (A) NH_3
 - (B) H_2O
 - (C) NF_3
 - (D) CCl_4
-

9. What is the frequency of a wave with a speed of 30 m/s if the distance between 11 consecutive crests is 1 m ?

- (A) 30 Hz
- (B) 300 Hz
- (C) 330 Hz
- (D) 3 Hz

10. What are the irregular muscular ridges on the inner surface of the heart's ventricles called?

- (A) Trabeculae septomarginalis
- (B) Papillary muscles
- (C) Columnae carneae
- (D) Chordae tendineae

11. What is the name of the hydrocarbon that yields ethanal and propanone upon reductive ozonolysis?

- (A) But-2-ene
- (B) 2-Methylbut-2-ene
- (C) 2-Methylbut-1-ene
- (D) Pent-2-ene

12. Which codon is known for its dual function as both an initiator codon and the codon for Methionine?

- (A) UAA
- (B) AUG
- (C) UAG
- (D) UGA

13. What is the shunt resistance S needed if the galvanometer current I_g is 8% of the total current I ?

- (A) $\frac{2G}{23}$
- (B) $\frac{8G}{23}$
- (C) $\frac{23G}{2}$

(D) $\frac{G}{23}$

14. Who is credited with the discovery of DNA?

(A) James Watson

(B) Francis Crick

(C) F. Miescher

(D) Rosalind Franklin
