

Entrance Examination:

Biology Sample Questions

The Multiple-Choice Question (MCQ) Examination consists of THREE sections: Section A carries 30 marks, Section B carries 40 marks, and Section C carries 30 marks.

- **Section A consists of 30 MCQs, each carrying one mark.**
- **Section B consists of 20 MCQs, each carrying two marks.**
- **Section C consists of 6 MCQs, each carrying five marks.**

Instructions for MCQs:

- Each question has four suggested answers, A, B, C, and D, where the correct response is chosen from the four suggested answers.
- There is only ONE correct answer to each question.

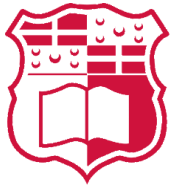
Sample Questions of Section A

1. Which protein does Ca^{2+} attach during muscle contraction according to the Sliding Filament Hypothesis?

- A. Actin.
- B. Myosin.
- C. Troponin.
- D. Tropomyosin.

2. Which of the following statements is true regarding the general structure of amino acids and the properties of their R groups?

- A. All amino acids have a central carbon atom bonded to a hydrogen atom, an amino group, a carboxyl group, and a unique R group. Cysteine and methionine are examples of amino acids with sulfur-containing R groups.
- B. The R group of an amino acid does not affect its chemical properties or function.
- C. Peptide bonds are formed between the R groups of amino acids.
- D. Methionine is the only amino acid with a sulfur-containing R group.



Sample Questions of Section B

1. Which of the following correctly identifies the structures of a chloroplast as revealed by electron microscopy?
A. Envelope - Double membrane structure surrounding the chloroplast; Stroma - Fluid-filled space containing enzymes; Grana - Stacks of thylakoids; Lamellae - Membranous channels connecting grana.
B. Envelope - Single membrane structure surrounding the chloroplast; Stroma - Fluid-filled space containing ribosomes; Grana - Single thylakoid discs; Lamellae - Membranous channels connecting stroma.
C. Envelope - Double membrane structure surrounding the chloroplast; Stroma - Fluid-filled space containing DNA; Grana - Stacks of thylakoids; Lamellae - Membranous channels connecting stroma.
D. Envelope - Single membrane structure surrounding the chloroplast; Stroma - Fluid-filled space containing starch grains; Grana - Single thylakoid discs; Lamellae - Membranous channels connecting grana.
2. Of the following which one represents the correct order for sperm in penetrating an ovum?
A. zona pellucida, vitelline membrane, perivitelline space, corona radiata.
B. vitelline membrane, zona pellucida, corona radiata, perivitelline space.
C. corona radiata, zona pellucida, perivitelline space, vitelline membrane.
D. zona pellucida, corona radiata, perivitelline space, vitelline membrane.

Sample Questions of Section C

1. In a population of butterflies, the allele for blue wings (B) is dominant over the allele for white wings (b). If the population is in Hardy-Weinberg equilibrium and the frequency of the blue-winged butterflies (BB and Bb) is 84%, what is the frequency of the white-winged butterflies (bb)?
A. 0.04
B. 0.16
C. 0.36
D. 0.64