

[This question paper contains 6 printed pages.]

1903

Your Roll No.

B.Sc. (Prog.)/B.Sc. (Hons.)/I E

Paper BY-105-BIOLOGY

(Admissions of 2008 and onwards)

Time : 3 Hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Section A (Botany)

Attempt three questions in all, including

Q. No. 1 which is compulsory.

1. (a) Match the following:

- | | |
|---------------------------|----------------------|
| (i) Tertiary structure | Cellulose |
| (ii) Primary cell wall | Singer and Nicholson |
| (iii) Electron microscope | Proteins |
| (iv) Nucleotides | Knoll and Ruska |
| (v) Plasma membrane | DNA |
- (5)

P.T.O.

(b) Define the following (any five):

(i) Buffers

(ii) Osmosis

(iii) Essential elements

(iv) Radioactive isotope

(v) Resolving power

(vi) Geometric isomers (5)

(c) Draw a well-labelled diagram of (attempt any one):

(i) A plant cell

(ii) A plant virus (3)

2. Write short notes on any **four** of the following:

(i) Compound microscope

(ii) Amino acids

(iii) Cellulose

(iv) Polypeptides

(v) Glycosidic linkage (12½)

3. Differentiate between any **four** of the following:

(i) Saturated and unsaturated fatty acids.

- (ii) TMV and Bacteriophage
 - (iii) Primary and secondary cell wall
 - (iv) Light microscope and electron microscope
 - (v) Active and passive transport (12½)
4. (a) Discuss any **three** important properties of water molecule which are important for existence of life on earth. Can life sustain without water? (6)
- (b) Discuss any **three** functional groups with examples. (3)
- (c) Explain the basic principle of microscopy. (3½)

Section B (Zoology)

Attempt three questions in all, including

Q. No. 1 which is compulsory.

1. (a) Name the Scientist who:
- (i) Discovered Nucleus
 - (ii) Coined the term Evolution
 - (iii) Proposed Three Domain classification
 - (iv) Coined the term Mitochondria

(v) Proposed Cell Theory (5)

(b) State True or False:

(i) Chloroplast is the site for respiration in eukaryotes.

(ii) Spindle fibres are formed by chromosome and nucleoproteins.

(iii) Binary fission is asexual mode of reproduction

(iv) Whittaker proposed five kingdom classification

(2)

(c) Match Column I with Column II:

Column I

Column II

(i) Bacteriophage

Protein

(ii) Ribosome

Interphase

(iii) Mitochondria

Transduction

(iv) Peptidoglycan

RNA

(v) Nucleolus

ATP

(vi) GAP phase

Bacteria

(6)

2. Answer any **four** of the following:

(i) Why are the Metaphase chromosomes said to be in dynamic equilibrium?

- (ii) Mitochondria and chloroplast are semiautonomous organelle. Explain.
- (iii) Draw a neat labelled diagram of cell cycle.
- (iv) Briefly describe Oparin-Haldane hypothesis.
- (v) Describe the theory of acquired inheritance.
- (vi) Describe the dissolution and formation of nuclear envelope during mitosis. (3,3,3,3)

3. Differentiate between any **three**:

- (i) Allopatry and Sympatry
- (ii) Mitosis and Meiosis
- (iii) Plant cell and Animal cell
- (iv) Somatic variation and Germinal variation
- (v) Eubacteria and Archaea (4,4,4)

4. Write short notes on any **three**:

- (i) Urey-Miller experiment
- (ii) Fossils
- (iii) Transcription
- (iv) Prophase I of Meiosis (4,4,4)

5. (a) Who gave the concept of Natural Selection? (1)
- (b) What are the various types of Natural Selection?
Explain with suitable example. (6)
- (c) Describe the various types of mutation. (5)