

## BIOLOGY PAPER I (THEORY)

### PART I (20 Marks)

Answer all questions.

#### Question 1

- (a) Give *one* significant difference between each of the following: [5]
- (i) Implantation and Parturition.
  - (ii) Active absorption and passive absorption.
  - (iii) Haemodialysis and Peritoneal dialysis.
  - (iv) Simple fruit and Aggregate fruit.
  - (v) Auricles and Ventricles.
- (b) Explain what would happen if: [5]
- (i) Excess fertilizers are added to soil.
  - (ii) Blood clots in the coronary artery.
  - (iii) Beta cells in the islets of langerhans are damaged.
  - (iv) Silicon emulsion is applied over the surface of leaves.
  - (v) Magnesium element is deficient in the soil.
- (c) Each of the following questions / statements have four suggested answers. Rewrite the correct answer in each case: [3]
- (i) The cell division in the tunica region of shoot apex is:
    - (A) Periclinal
    - (B) Horizontal
    - (C) Anticlinal
    - (D) Radial
  - (ii) The dark coloured dead wood present in the central region of old trees is:
    - (A) Spring wood
    - (B) Heart wood
    - (C) Sap wood
    - (D) Cambium
  - (iii) Dwarfism accompanied with mental retardation is due to hypo-secretion of:
    - (A) Growth hormone
    - (B) Thyroxine hormone
    - (C) Parathormone
    - (D) Adrenalin hormone

- (iv) Oxygen is released in photosynthesis by:
- (A) Photophosphorylation
  - (B) Photolysis of water
  - (C) Photorespiration
  - (D) Photons
- (v) The spinal nerve is:
- (A) A mixed nerve
  - (B) A sensory nerve
  - (C) A motor nerve
  - (D) A cranial nerve
- (vi) The cells of the areolar tissue which produce heparin are:
- (A) Fibrocytes
  - (B) Mast cells
  - (C) Macrophages
  - (D) Chondriocytes
- (d) Mention the most significant function of the following: [3]
- (i) Semi circular canals
  - (ii) Bowman's capsule
  - (iii) Parenchyma
  - (iv) Leg haemoglobin
  - (v) Guard cells
  - (vi) Alveoli
- (e) State the best known contribution of: [2]
- (i) Munch
  - (ii) Ronald Ross
  - (iii) Marshall Hall
  - (iv) Huxley
- (f) Expand the following : [2]
- (i) ABA
  - (ii) FSH
  - (iii) AIDS
  - (iv) DDT

**PART II (50 Marks)**

**SECTION A**

*Answer any three questions.*

**Question 2**

- (a) Give *four* differences between *root apex* and *shoot apex*. [4]
- (b) Explain the development of the different types of endosperms in angiosperms. [3]
- (c) Explain briefly: [3]
  - (i) Capillary water
  - (ii) Osmosis
  - (iii) Aeroponics

**Question 3**

- (a) Explain the C<sub>4</sub> cycle of photosynthesis. [4]
- (b) State *three* advantages and *three* disadvantages of vegetative reproduction. [3]
- (c) Mention *one* role and *one* deficiency symptom of the following elements in plant nutrition: [3]
  - (i) Phosphorus
  - (ii) Iron
  - (iii) Chlorine

**Question 4**

- (a) What are *tropic hormones*? Describe the feedback control of tropic hormones with an example. [4]
- (b) Explain the conduction of nerve impulse through a nerve fibre. [3]
- (c) Draw a labelled diagram of the T.S. of bone. [3]

**Question 5**

- (a) Explain the role of pancreas in digestion of various food materials. [4]
- (b) Briefly describe the stages in clotting of blood. [3]
- (c) Define: [3]
  - (i) Reparative regeneration
  - (ii) Capacitation
  - (iii) Menarchy

**Question 6**

- (a) State *four* differences between *transpiration* and *guttation*. [4]
- (b) Give an account of the secretory phase of menstrual cycle. [3]
- (c) Define: [3]
  - (i) Radial vascular bundle
  - (ii) Rigor mortis
  - (iii) Root pressure

## SECTION B

Answer any two questions.

### Question 7

- (a) Differentiate between *apes* and *man* with respect to the following characteristics: [4]
- (i) Posture
  - (ii) Cranium
  - (iii) Brow ridges
  - (iv) Locomotion
- (b) Define: [3]
- (i) Vestigial organs
  - (ii) Variations
  - (iii) Neo-Darwinism
- (c) Give *three* differences between *Natural Selection* and *Artificial Selection*. [3]

### Question 8

- (a) State *four* characteristics of the Cromagnon man. [4]
- (b) Explain the basic postulates of Darwinism. [3]
- (c) *Archaeopteryx* is a connecting link between *reptiles* and *birds*. Justify the statement by giving *two* characteristics of each group. [3]

### Question 9

- (a) *Persons suffering from G6PD deficiency are resistant to malaria*. Explain. [4]
- (b) Define: [4]
- (i) Genetic Erosion
  - (ii) Bioinsecticides
  - (iii) Antigen
  - (iv) Psychosis
- (c) Define *Biofortification*. [2]

### Question 10

- (a) List the activities of Community Health Services. [4]
- (b) Give *three* early diagnostic symptoms of cancer. [3]
- (c) Define: [3]
- (i) Carrying capacity
  - (ii) Implant
  - (iii) Carcinoma