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BIOLOGY HSSC-I

Punjab Text Book Board

42

Time allowed: 2:35 Hours

Total Marks Sections B, C and D: 68

NOTE: The Questions of sections B, C and D are to be answered on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

SECTION – B (Marks 21)

(Chapters 1 – 8)

Q. 2 Answer any SEVEN parts from the following. All parts carry equal marks. (7 x 3 = 21)

- (i) a. What do you know about Biomes? (1.5)
- b. What is inductive reasoning? (1.5)
- (ii) Draw the structure of triglyceride.
- (iii) Write down the biological roles of plasma membrane.
- (iv) a. What will happen if a chromosome loses its centromere? (01)
- b. Enlist the functions of Leucoplast and Chromoplast. (02)
- (v) Why are scientific names more useful than the common names?
- (vi) Differentiate between lytic and lysogenic life cycle of a bacteriophage.
- (vii) How do autotrophic bacteria get food?
- (viii) Why are green algae considered as an ancestor group of green plants?
- (ix) Give the similarities and differences between fungi and plants.
- (x) Why are yeasts heavily used in genetic and molecular biology research?

SECTION – C (Marks 21)

(Chapters 9 – 14)

Q. 3 Answer any SEVEN parts from the following. All parts carry equal marks. (7 x 3 = 21)

- (i) Write down any three general characteristics of Bryophytes.
- (ii) Differentiate between Proterostomia and Deuterostomia.
- (iii) What do you know about infestation and disinfestation?
- (iv) Write down the economic importance of sponges.
- (v) a. What are accessory pigments? Give examples. (02)
- b. How does the action spectrum in photosynthesis occur? (01)
- (vi) a. Why omnivores are capable of eating meat and plants? (02)
- b. What are Nematocysts? (01)
- (vii) What are the factors that affect the oxygen carrying capacity of haemoglobin?
- (viii) Write down the symptoms and causes of pulmonary tuberculosis.
- (ix) Transpiration is a necessary evil. Briefly explain your answer with reasons.
- (x) What functions are performed by lymphatic system?

SECTION – D (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

- Q. 4** a. Describe the structure and working of human heart with diagrams. (3.5+3.5+2)
- b. Discuss the trends toward seed habit in plants. (04)
- Q. 5** a. Give a detailed account of digestion and absorption in small intestine with diagram. (6+2)
- b. Discuss the growth and reproduction in bacteria. (05)
- Q. 6** a. Describe Krebs's cycle in detail with a neat sketch. (6+3)
- b. What are the factors that affect the rate of enzyme action? (04)



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SECTION - A (Marks 17)

National Book Foundation

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Time allowed: 25 Minutes

Version Number 3 1 0 4

Note: Section - A is compulsory. All parts of this section are to be answered on the separately provided OMR Answer Sheet which should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Choose the correct answer A / B / C / D by filling the relevant bubble for each question on the OMR Answer Sheet according to the instructions given there. Each part carries one mark.

- 1) The secretion of pancreatic juice is controlled by:
A. Secretin B. Acetylcholine C. Erepsin D. Gastrin
- 2) Deoxygenated blood from Gall bladder is collected by _____ vein.
A. Hepatic Portal B. Splenic C. Mesenteric D. Cystic
- 3) After removal of infection from the body, the cells which shut down the immune response are _____ T-cells.
A. Cytotoxic B. Helper C. Suppressor D. Memory
- 4) Which one of the following is **NOT** the function of Smooth Endoplasmic Reticulum?
A. Synthesis of Lipids B. Storage of Calcium
C. Spindle formation D. Detoxification
- 5) The percentage of water in Jelly Fish is about:
A. 90 B. 85 C. 99 D. 20
- 6) Vitamin A is an example of:
A. Diterpene B. Triterpene
C. Polyterpene D. Monoterpene
- 7) Histidine decarboxylase is an example of:
A. Lyases B. Proteases C. Isomerases D. Transferases
- 8) Flow of electrons from PSII to PSI in Electron Transport chain occurs through:
A. $PC \rightarrow Cyt.b_6 \rightarrow Cyt.f \rightarrow PQ$ B. $PQ \rightarrow Cyt.f \rightarrow Cyt.b_6 \rightarrow PC$
C. $Cyt.b_6 \rightarrow Cyt.f \rightarrow PQ \rightarrow PC$ D. $PQ \rightarrow Cyt.b_6 \rightarrow Cyt.f \rightarrow PC$
- 9) Which one of the following virus has a polyhedral capsid with glycoprotein spikes at vertex?
A. Bacteriophage B. Adenovirus
C. Influenza Virus D. Tobacco Mosaic Virus
- 10) The shape of *Pseudomonas* bacterium is:
A. Spherical B. Spiral C. Coma like D. Rod like
- 11) The transfer of genetic material from one bacterium to the other through the third party is called:
A. Transduction B. Transformation C. Binary Fission D. Conjugation
- 12) The term Protista was proposed by:
A. Ernst Haeckel B. Robert Whittaker
C. Herbert Copland D. John Hog
- 13) *Trypanosoma* is a/an:
A. Zooflagellate B. Apicomplexan C. Dinoflagellate D. Ciliate
- 14) Ascomycota are commonly called _____ fungi.
A. Sac B. Club C. Slime molds D. Conjugating
- 15) All of the following are parts of female gametophyte in Angiosperms **EXCEPT**:
A. Synergids B. Egg cell
C. Generative Nucleus D. Antipodal cells
- 16) Sac like digestive system is a characteristic of phylum:
A. Mollusca B. Cnidaria C. Arthropoda D. Annelida
- 17) TACT theory does **NOT** include:
A. Translocation B. Tension C. Adhesion D. Transpiration

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SECTION – B (Marks 21)

(Chapters 1 – 7)

Q. 2 Answer any SEVEN parts from the following. All parts carry equal marks. (7 x 3 = 21)

- (i) Briefly explain any three diseases in Humans caused by Fungi.
- (ii) Write down the cause, symptoms and prevention of Pulmonary Tuberculosis.
- (iii) How are Red algae and Diatoms important for humans?
- (iv) Define Non Competitive inhibitor. Also write about Reversible Non Competitive inhibitors.
- (v) How does concentration of enzyme affect the rate of an enzyme action?
- (vi) Write any three unifying features of Archaea.
- (vii) Give any three differences between mRNA and tRNA.
- (viii) Enlist and define the types of Stereoisomers of Monosaccharides.
- (ix) Define:
 - a. Electrophoresis
 - b. Spectrophotometry
 - c. Resolution
- (x) Define Autophagy. How are lysosomes involved in it?

SECTION – C (Marks 21)

(Chapters 8 – 13)

Q. 3 Answer any SEVEN parts from the following. All parts carry equal marks. (7 x 3 = 21)

- (i) Give any three differences between Protostomes and Deuterostomes.
- (ii) Briefly explain the Apoplast pathway taken by water to reach the root xylem.
- (iii) Write about the structure of Bark in plants.
- (iv) In the following two adjacent cells:

Cell A	Cell B
$\Psi_w = -1400 \text{ kPa}$	$\Psi_w = -600 \text{ kPa}$
$\Psi_p = 600 \text{ kPa}$	$\Psi_p = 800 \text{ kPa}$
$\Psi_s = -2000 \text{ kPa}$	$\Psi_s = -1400 \text{ kPa}$

- a. Which cell has higher Water Potential?
- b. What will be the Water Potential and Solute Potential of cells at equilibrium?
- (v) Write about the structure of layers of the heart wall.
- (vi)
 - a. What is the role of Oral cavity in chemical digestion?
 - b. Define Peristalsis.
- (vii) How are Arterioles involved in Vasoconstriction?
- (viii) Write down the steps of action of the Complement System against a bacterium.
- (ix) Write about Natural Active and Natural Passive Immunity.
- (x) Briefly explain Coronary circulation in humans.

SECTION – D (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

- Q. 4
 - a. Explain the steps of Oxidative phase of Glycolysis. Also write their respective reactions. (5+3)
 - b. Write down the general characteristics of Class Mammalia in detail. (05)
- Q. 5
 - a. Write a detailed account of functions of Human Stomach. (08)
 - b. How does Bacteriophage replicate in a Lytic cycle? Also draw the diagram. (4+1)
- Q. 6
 - a. Explain Life cycle of a Fern. Also draw the diagram of its Life Cycle. (8+2)
 - b. Write down the functions of Golgi complex. (03)



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SECTION – B (Marks 21)

(Chapters 1 – 7)

Q. 2 Answer any SEVEN parts from the following. All parts carry equal marks. (7 x 3 = 21)

- (i) What is the role of Fungi in medicine industry?
- (ii) Name any three groups of Protozoa with one example of each.
- (iii) Briefly write about any two types of Archaea which inhabit extreme environmental conditions.
- (iv) Draw a flow sheet showing Calvin cycle.
- (v) Who proposed Induced Fit model for Enzyme Action? Briefly explain it.
- (vi) Define Irreversible Non- competitive inhibitors. Briefly explain with an example.
- (vii) Give any three differences between Starch and Glycogen.
- (viii) Define:
 - a. Centrifugation
 - b. Chromatography
 - c. Heterochromatin
- (ix) Why are Lysosomes called 'Suicidal Bags'? Explain briefly.
- (x) Write the names and functions of any three Plasma membrane proteins.

SECTION – C (Marks 21)

(Chapters 8 – 13)

Q. 3 Answer any SEVEN parts from the following. All parts carry equal marks. (7 x 3 = 21)

- (i) Briefly write about Land adaptation of Bryophytes for the absorption of Carbon dioxide.
- (ii) Briefly explain the role of evolution of pollen tube in evolution of seed.
- (iii) How do Chondrichthyes and Osteichthyes differ in Gills, Caudal fins and Skin?
- (iv)
 - a. What is the role of liver in Storage of Materials?
 - b. How does defecation reflex occur in infants?
- (v) Write about the groups of plants classified on the basis of Photoperiodism.
- (vi) Define vein and write down its structure.
- (vii) What do you know about Congenital Heart problem?
- (viii) Write down the steps of Inflammatory response in second line of defence.
- (ix) Briefly explain Autoimmune diseases.
- (x) Write down the structure of a typical Antibody.

SECTION – D (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

- Q. 4
- a. Describe Life Cycle of HIV. Also draw the diagram. (6+2)
 - b. Write about the general characteristics of class Aves in detail. (05)
- Q. 5
- a. How does absorption of digested food occur in the Small Intestine of Humans? (08)
 - b. Draw General structure of an amino acid. Write about Structural conformations in Proteins. (1+4)
- Q. 6
- a. Write a detailed account of Mechanism of Translocation of organic solutes in plants. Also draw the diagram. (4.5+1.5)
 - b. Write down the steps of Preparatory phase of Glycolysis. Also write the reactions. (5+2)

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