



BIOLOGY HSSC-I

SECTION - A (Marks 17)

Punjab Text Book Board

Time allowed: 25 Minutes

Version Number 1 8 6 8

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) At high altitude RBCs of human blood will:
A. Decrease in size
B. Decrease in number
C. Increase in number
D. Increase in size
- 2) Guttation in plants is more notable when:
A. Transpiration is low
B. Imbibition starts
C. Temperature is high
D. Relative humidity is low
- 3) Which of the following bonds is found in the molecular structure of Carbohydrates?
A. C-H
B. C-S
C. C-O
D. C-N
- 4) Pepsin (enzyme) works at the pH of:
A. 2.0
B. 6.5
C. 4.5
D. 5.5
- 5) Tay Sach's disease is caused because of the absence of an enzyme that is involved in the catabolism of:
A. Proteins
B. Lipids
C. Polysaccharides
D. Monosaccharides
- 6) Which one is NOT a viral disease?
A. Small pox
B. Poliomyelitis
C. Influenza
D. Anthrax
- 7) The tail of bacteriophage releases lysozyme to dissolve a portion of bacterial:
A. Slime
B. Capsule
C. Cell wall
D. Cell membrane
- 8) Cyst formation is a characteristic of some species of bacteria. It is resistance to:
A. Desiccation
B. pH
C. High temperature
D. Chemical agent
- 9) Which of the following organisms help in formation of lime stone deposits?
A. Radiolarians
B. Diatoms
C. Zooflagellates
D. Formas
- 10) Which one of following is NOT included in Chlorophyta?
A. Spirogyra
B. Polysiphonia
C. Ulva
D. Acetabularia
- 11) Which fungus is used for fermenting/producing soya sauce and soya paste from soya bean?
A. Penicillium
B. Agaricus
C. Neurospora
D. Aspergillus
- 12) The simplest of all bryophytes are:
A. Liverworts
B. Whisk ferns
C. Mosses
D. Hornworts
- 13) The common name of *Oryza sativa* is:
A. Wheat
B. Oats
C. Rice
D. Maize
- 14) The zoological name of earthworm is:
A. *Pheretima posthuma*
B. *Enterobius vermicularis*
C. *Hirudo medicinalis*
D. *Ascaris lumbricoides*
- 15) Animals with jointed legs belong to which phylum?
A. Annelida
B. Echinodermata
C. Mollusca
D. Arthropoda
- 16) Which one is NOT a phase of Calvin cycle?
A. Regeneration of CO₂ acceptor
B. Phosphorylation
C. Carbon fixation
D. Reduction
- 17) Gallstones are produced by the precipitation of:
A. Glucose
B. Vitamins
C. Proteins
D. Cholesterol



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Punjab Text Book Board

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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)

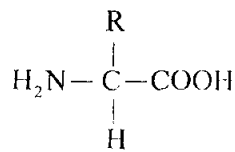
(Chapters 1 – 8)

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

(i) Define following terms: (1+1+1)

- a. Hydroponic Culture technique b. Integrated Disease Management
c. Endangered Species

(ii) The formula below shows the structure of an amino acid:



- a. What groups do H₂N and COOH represent in the formula? (1+1)
b. Name the bond formed between two such amino acids. (1)
- (iii) a. Name the non-protein part of an enzyme. (1)
b. Define inhibitors and name their types only. (1+1)
- (iv) Compare the structure and functions of Peroxisome and Glyoxysomes. (1.5+1.5)
- (v) a. What is hepatitis? Give its symptoms. (1+1)
b. What are causes of hepatitis B? (1)
- (vi) a. List two characteristics each of Gram-positive and Gram-negative bacteria. (2)
b. Differentiate between hormogonia and Akinetes. (1)
- (vii) a. What is the importance of marine algae? (1)
b. Name one animal of Zooflagellates and Apicomplexans. (1+1)
- (viii) a. What are water molds? (1)
b. What infamous role water molds have played in the human history? (2)
- (ix) a. Write down one difference between Rust and Smut. (1)
b. Define the following: (1+1)
i. Ascocarp ii. Parasexuality
- (x) What economic losses occur because of fungi (especially owing to plants diseases and decomposition). (2+1)

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) How have the bryophytes adapted terrestrial mode of life? (3)
- (ii) Which class of plants do the Equisetum and Adiantum belong to? Also write the characteristics of these classes. (1.5+1.5)
- (iii) Write down botanical names of the following angiospermic plants. (1+1+1)
a. Wheat b. Potato c. Amaltas
- (iv) What are parasites? How have parasitic Platyhelminthes adapted themselves to parasitic mode of life? (1+2)
- (v) Why have the Echinoderms been placed closest to phylum Chordates? Give three reasons. (3)
- (vi) Write down the name and characteristics of the earliest bird fossil. (1+2)

- (vii) What are the raw material and products of light reactions of photosynthesis? Where do light reactions take place? (2+1)
- (viii) Show by reactions: (1.5+1.5)
- a. Alcoholic fermentation b. Lactic Acid fermentation
- (ix) a. What is pyrosis? List its causes. (1+1)
- b. Name the pathogen that causes the disease tuberculosis. (1)
- (x) Name the respiratory pigments in humans. How do they help in the transport of oxygen within the body? (1+2)

SECTION – D (Marks 26)

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

- Q. 4** a. What are plastids? Describe their various types. Also draw diagram. (1+4+2)
- b. Describe the life cycle of Rhizopus. Also draw diagram. (4+2)
- Q. 5** a. Explain different steps in evolution of Megaphyll leaf. Also draw diagram. (3+1)
- b. What is Glycolysis? Describe various reactions in Glycolysis. Also draw diagram. (1+5+3)
- Q. 6** a. Write in detail the two hypotheses which explain the opening and closing of Stomata. (06)
- b. What is Cardiac cycle? Write down its various stages in humans. Also draw diagram. (1+4+2)



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SECTION – A (Marks 17)

National Book Foundation

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Time allowed: 25 Minutes

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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) _____ is called the Pacemaker of the heart.
A. A.V Node B. Bundle of His C. Purkinje Fibres D. S.A Node
- 2) The Hepatic Portal vein is formed by the union of splenic vein and _____ vein.
A. Cystic B. Superior Mesenteric
C. Inferior Mesenteric D. Hepatic
- 3) Natural killer cells release proteins called _____ to kill their target.
A. Interferon B. Interleukin C. Perforin D. Histamine
- 4) The basic protein subunit of Intermediate filament is:
A. Actin B. Vimentin C. Tubulin D. Tropomyosin
- 5) A plant cell stores Lipids in:
A. Elaioplast B. Proteinoplast C. Etioplast D. Amyloplast
- 6) Which one of the following is **NOT** a heteropolysaccharide?
A. Chitin B. Peptidoglycan C. Agar D. Pectin
- 7) Prostaglandins are derived from:
A. Phosphatidic acid B. Arachidonic acid
C. Linolenic acid D. Cholesterol
- 8) Cyanides are potent poisons of living organisms as they act as _____ inhibitors.
A. Reversible Non-competitive B. Non-competitive
C. Irreversible Non-competitive D. Competitive
- 9) Reovirus which causes diarrhoea is a _____ virus.
A. ds RNA B. ss DNA C. ss RNA D. ds DNA
- 10) Pleuritic pain, sudden chill and rusty red brown sputum are the main symptoms of:
A. Tuberculosis B. Typhoid C. Herpes D. Pneumonia
- 11) The condition in bacterium in which it possesses a **single** flagellum at both ends is called:
A. Amphibitrichous B. Amphilophotrichous
C. Amphitrichous D. Monopolar Bitrichous
- 12) For the first time, the level of Monera was raised to **Kingdom** level by:
A. John Hog B. Ehrenberg
C. Ernst Haeckel D. Herbert Copland
- 13) All of the following are green algae **EXCEPT**:
A. *Ulva* B. *Laminaria* C. *Spirogyra* D. *Chlorella*
- 14) Horsetails is the common name of group:
A. Lycopsidea B. Pteropsida C. Sphenopsida D. Psilopsida
- 15) Cartilaginous fishes possess all of the following characters **EXCEPT**:
A. Four pairs of gills B. J. Shaped stomach
C. Heterocercal tail D. Placoid scales
- 16) During development, Trochophore larva is formed in phylum:
A. Mollusca B. Arthropoda C. Echinodermata D. Cnidaria
- 17) Phellogen is also called:
A. Vascular Cambium B. Cork Cambium
C. Intercalary Meristem D. Lateral Meristem



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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 – 7)

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

- (i) Name the types of Centrifugation. Also write their mechanism.
- (ii) Give functions of any three Plasma Membrane Proteins.
- (iii) Define Heat Capacity of water. How does it help organisms to live in different conditions?
- (iv) Explain briefly the structure and function of mRNA.
- (v) Outline the mechanism of Photorespiration in plants.
- (vi) What are different uses of Bacteriophage in Genetic Engineering?
- (vii) Write the structure of basic parts of a Flagellum in bacterium.
- (viii) Define and explain briefly Transformation and Transduction.
- (ix) Draw and label life cycle of *Physarum*.
- (x) Write about the structure of Envelope and Capsid of Human Immunodeficiency Virus.

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) Name and define the Pathways taken by water to reach xylem vessels in plants.
- (ii) Write about the General characteristics of Phylum Aschelminthes.
- (iii) Briefly explain Starch Sugar Theory for opening of stomata.
- (iv) How do Auxins affect stem, roots and floral buds in plants?
- (v) Write about Aetiology, Prevention and Treatment of Dyspepsia?
- (vi) Differentiate between Artificial Active Immunity and Artificial Passive Immunity.
- (vii) Outline the structure of a typical Antibody.
- (viii) Write a note on the structure of different layers of an Artery.
- (ix) How do Interferons act as protective proteins?
- (x) a. What is the mechanism of Angioplasty?
b. Name the largest Lymphatic Duct in human body.

SECTION – D (Marks 26)

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

- Q. 4** a. Explain the development of Male and Female gametophytes and Double Fertilization in Flowering Plants. Also draw the diagram of Life cycle of a Flowering Plant. **07+02**
- b. Give an account of General Characteristics and Evolutionary Adaptations of Class Amphibia. **04**
- Q. 5** a. Describe the main steps of Calvin cycle. Also draw a labelled Calvin cycle. **06+02**
- b. How is Fungi used in Baking, Genetic Engineering and Antibiotics production. **05**
- Q. 6** a. Give a detailed account of structure of Small Intestine in Humans. **08**
- b. Describe the Groups of Enzymes on the basis of types of reactions. **05**



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- 1) During Interphase, nucleoli are formed by:
A. Primary Constriction B. Secondary Constriction
C. Satellite DNA D. Heterochromatin
- 2) All of the following proteins are part of Microfilament EXCEPT:
A. Actin B. Tropomyosin C. Tubulin D. Troponin
- 3) The structural protein which provides support to the connective tissue is:
A. Collagen B. Histone C. Keratin D. Elastin
- 4) The length of each turn of DNA is:
A. 2 nm B. 10 nm C. 3.4 nm D. 34 nm
- 5) Histidine decarboxylase is an example of _____ type of enzymes.
A. Lyases B. Transferases C. Oxidoreductase D. Hydrolase
- 6) The genome of Retrovirus consists of:
A. ss RNA B. ds RNA C. ss DNA D. ds DNA
- 7) The transfer of genetic material from one bacterium to another through third party is called:
A. Conjugation B. Translation C. Transduction D. Transformation
- 8) The correct sequence of Ribosomal RNA of Archaea is:
A. AACUCAA B. AAACUAAA C. AACUUCA D. AAACUUAAC
- 9) *Trypanosoma* is a/an:
A. Ciliate B. Apicomplexan C. Actinopod D. Zooflagellate
- 10) Which one of the following is NOT true about Bryophyta?
A. Lack Vascular Tissues B. Have Independent Sporophyte
C. Have Independent Gametophyte D. Have Multicellular Sex Organ
- 11) _____ belongs to group Pteropsida.
A. *Psilotum* B. *Lycopodium* C. *Equisetum* D. *Adiantum*
- 12) Hepatic vein receives blood from Gall Bladder via _____ vein.
A. Cystic B. Central
C. Inferior Mesenteric D. Gastric
- 13) The enzyme produced by liver for blood clotting is:
A. Histamine B. Biliverdin C. Histidine D. Heparin
- 14) Macrophages are derived from:
A. Monocytes B. Lymphocytes C. Neutrophils D. B. Cells
- 15) Endogenous Pyrogens produced in response to infection cause decrease in:
A. Body temperature B. Iron concentration
C. Interferon production D. Macrophage production
- 16) The locomotory organ of *Nereis* is:
A. Tube Feet B. Setae C. Parapodia D. Fins
- 17) The enzyme which consists of RNA and is found in ribosome is called:
A. Polysome B. Mesosome C. Ribozyme D. Centrosome



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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) Which organelle is called 'Suicidal bag' and why?
- (ii) Write about phases of Paper Chromatography.
- (iii) Name and define different types of Stereoisomers in monosaccharides.
- (iv) Write down the functions of Prostaglandins in Humans.
- (v) How does Bacteriophage cause infection to their host?
- (vi) What is CLCuD? Write about its Transmission, Symptoms and Treatment.
- (vii) Define and explain briefly Photoautotrophic mode of Nutrition in bacteria. Also give an example.
- (viii) Draw and label life cycle of a Mushroom.
- (ix) Fungi are neither placed in Kingdom Animalia nor in Kingdom Plantae. Comment.
- (x) Differentiate between: (one difference each)
 - a. Action and Absorption spectrum
 - b. Photophosphorylation and Photorespiration
 - c. Prion and Viroid

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) Name and explain briefly the hypotheses for the Evolution of Single Veined Leaves.
- (ii) Differentiate between the two groups of Coelomates.
- (iii) How did evolution of Integument around Megasporangium and Heterospory help in evolution of seed?
- (iv)
 - a. Define Vernalization and Photoperiodism
 - b. Write any two adaptations in Xerophytic plants for osmotic adjustment.
- (v) Write down the Names, Location and Functions of divisions of Pharynx in Humans.
- (vi) Write any two major Functions of Large Intestine in Humans.
- (vii) What are the causes of Ulcer? How can it be treated?
- (viii) Enlist any three types of Helper T-Cells with their functions.
- (ix) Skin is acting as First Line of Defence. Justify the statement.
- (x) Differentiate between Class Osteichthyes and Chondrichthyes (Any three differences)

SECTION – D (Marks 26)

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

- Q. 4**
- a. Explain the structure of Chambers and Valves present in Human Heart. Also draw a neat and labelled diagram of Human Heart. **07+02**
 - b. Give an account of General Characteristics of Class Mammalia. **04**
- Q. 5**
- a. Describe the Components and Mechanism of TACT theory. Also draw the diagram. **06+02**
 - b. Write a note on Non-competitive Inhibitors. **05**
- Q. 6**
- a. Discuss the steps involved in Kreb's cycle. Also draw well labelled cycle. **07+02**
 - b. Outline the Phases of Bacterial Growth. **04**