







28

# BIOLOGY HSSC-I

## Revised Syllabus

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

**NOTE:** Answer any fourteen parts from Section 'B' and any two questions from Section 'C' 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 42)

- Q. 2 Attempt any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. ( 14 x 3 = 42)**
- (i) Name three types of proteins on the basis of structure. Also give one function of each type. 03
  - (ii) Give **ONE** function of each of the following organelle: 03
    - a. Rough Endoplasmic Reticulum
    - b. Chloroplast
    - c. Mitochondria
  - (iii) How does enzyme concentration affect the rate of an enzymatic action? 03
  - (iv) Write any three control measures against transmission of HIV. 03
  - (v) Diagrammatically represent life cycle of *Rhizopus*. 03
  - (vi) Define Holoenzyme, Competitive inhibition and Activator. 03
  - (vii) a. Which Photosynthetic Pigments are found in Algae? 02
    - b. Name the group of Algae to which Kelps belong. 01
  - (viii) Write down the contribution of the following: 03
    - a. De Duve      b. Louis Pasteur      c. Harshey and Chase
  - (ix) How are Mesophytes adapted to their environment? 03
  - (x) Enlist any three functions performed by Large Intestine in Man. 03
  - (xi) Define Mycorrhiza. Also define its types. 03
  - (xii) Write down any three differences between Monocots and Dicots. 03
  - (xiii) Write any three ways by which the Plasma Membrane regulates cell interactions with the environment. 03
  - (xiv) Name any three types of Epithelial cell of stomach with their secretions. 03
  - (xv) a. What is Natural Active Immunity? 02
    - b. Write any one effect of Pyrogens in the body. 01
  - (xvi) Define the following: 03
    - a. Transpiration      b. Photoperiodism      c. Homeostasis
  - (xvii) a. Define amphitrichous and peritrichous conditions in the bacteria on the basis of number and arrangement of flagella. 02
    - b. Who discovered bacteria? 01
  - (xviii) How do Fungi differ from animals? 03
  - (xix) Write the causative agent, symptoms and prevention of Typhoid. 03

### SECTION – C (Marks 26)

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

- Q. 3**
- a. Give the general characteristics of Class Mammalia. 07
  - b. Describe Watson and Crick Model for structure of DNA. 06
- Q. 4**
- a. Explain Kreb's Cycle. Also give its schematic representation. 09
  - b. Write a note on structure of Bacteriophage. 04
- Q. 5**
- a. Describe the structures and functions of Chambers and Valves present in Human Heart. Also draw the labelled diagram showing internal structure of Heart. 10
  - b. What are the uses of Gymnosperms? 03



Roll No. 

--	--	--	--	--	--

Sig. of Candidate. \_\_\_\_\_

Answer Sheet No. \_\_\_\_\_

Sig. of Invigilator. \_\_\_\_\_

## BIOLOGY HSSC-I

### SECTION – A ( Marks 17)

Time allowed: 25 Minutes

Revised Syllabus

**NOTE:** Section-A is compulsory and comprises pages 1–2. All parts of this section are to be answered on the question paper itself. It 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** Circle the correct option i.e. A / B / C / D. Each part carries one mark.

(i) Cristae are found in:

- |                          |                 |
|--------------------------|-----------------|
| A. Golgi Complex         | B. Mitochondria |
| C. Endoplasmic Reticulum | D. Chloroplast  |

(ii) In a Polysome, ribosomes are held together by:

- |                 |         |
|-----------------|---------|
| A. Peptide Bond | B. tRNA |
| C. rRNA         | D. mRNA |

(iii) Which of the following is a pentose sugar?

- |                     |             |
|---------------------|-------------|
| A. Glycerinaldehyde | B. Fructose |
| C. Deoxyribose      | D. Glycogen |

(iv) Testosterone is an example of:

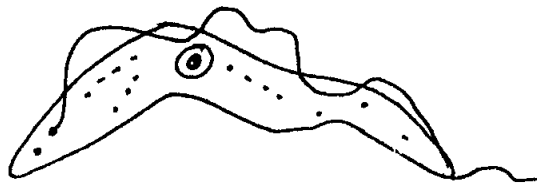
- |                 |             |
|-----------------|-------------|
| A. Terpenes     | B. Steroids |
| C. Lipoproteins | D. Waxes    |

(v) The condition in which flagella are distributed over entire surface of bacterial cell is called:

- |                  |                  |
|------------------|------------------|
| A. Peritrichous  | B. Lophotrichous |
| C. Amphitrichous | D. Monotrichous  |

(vi) Identify the given organism:

- A. *Plasmodium*  
B. *Trypanosoma*  
C. *Entamoeba*  
D. *Paramecium*



(vii) Which one of the following is **NOT** an organism?

- |               |                   |
|---------------|-------------------|
| A. Round Worm | B. Flat Worm      |
| C. Ring Worm  | D. Segmented Worm |

(viii) The feeding stage of slime mold is called:

- |                  |                      |
|------------------|----------------------|
| A. <i>Amoeba</i> | B. <i>Plasmodium</i> |
| C. Hyphae        | D. Rhizoid           |





# BIOLOGY HSSC-I

## Revised Syllabus

30

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

**NOTE:** Answer any fourteen parts from Section 'B' and any two questions from Section 'C' 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 42)

**Q. 2 Attempt any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. ( 14 x 3 = 42)**

- (i) Give **ONE** function of each of the following organelle: **03**
- Smooth Endoplasmic Reticulum
  - Plasmid
  - Lysosomes
- (ii) a. Draw general structure of an amino acid. **02**  
b. Which Polysaccharide is also called "Animal Starch"? **01**
- (iii) Write down the contribution of the following: **03**
- Sanger and Nicholson
  - Koshland
  - Robert Whittaker
- (iv) How does substrate concentration affect the rate of an enzymatic action? **03**
- (v) Define Cofactor, Coenzyme and Prosthetic group. **03**
- (vi) What are the Non-living characteristics of Viruses? **03**
- (vii) Diagrammatically represent the life cycle of HIV. **03**
- (viii) a. Define the types of Heterotrophic Bacteria. Give one example of each type. **02**  
b. Name the vaccine used against TB. **01**
- (ix) How do Fungi differ from Plants? **03**
- (x) Write down any three main features of Bryophytes. **03**
- (xi) Give three distinguishing characteristics of Phylum Aschelminthes. **03**
- (xii) Define Hydrophytes. How are they adapted to their environment? **03**
- (xiii) Give the scientific names of the organisms which cause the following diseases: **03**
- Malaria
  - Typhoid
  - Cholera
- (xiv) a. Which circuits are present in the Cardiovascular system of man? **02**  
b. Name the artery which supplies blood to the Heart. **01**
- (xv) Define the following terms: **03**
- Glycolipids
  - Transformation
  - Vernalization
- (xvi) What is Artificial Active Immunity? How does it work? **03**
- (xvii) a. Name any two pathways taken by water to reach xylem tissue in roots. **02**  
b. Who proposed Starch-Sugar Hypothesis for opening and closing of stomata? **01**
- (xviii) Write down the structure of an artery. **03**
- (xix) Write any three commercial applications of Gibberellins. **03**

### SECTION – C (Marks 26)

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

- Q. 3** a. Describe the different phases of Calvin Cycle. Also give its schematic representation. **09**  
b. What is Mutualism? How do Fungi show Mutualism? **04**
- Q. 4** a. Write down the general characteristics of Class Reptilia. **07**  
b. What are the functions performed by Plasma Membrane Proteins? **06**
- Q. 5** a. Give a detailed account of structure of Human Stomach. Illustrate internal anatomy of stomach with a labelled diagram. **09**  
b. What is Dyspepsia? Give its cause, prevention and treatment. **04**



Roll No. 

--	--	--	--	--	--

Answer Sheet No. \_\_\_\_\_

31

Sig. of Candidate. \_\_\_\_\_

Sig. of Invigilator. \_\_\_\_\_

## BIOLOGY HSSC-I

### SECTION - A ( Marks 17)

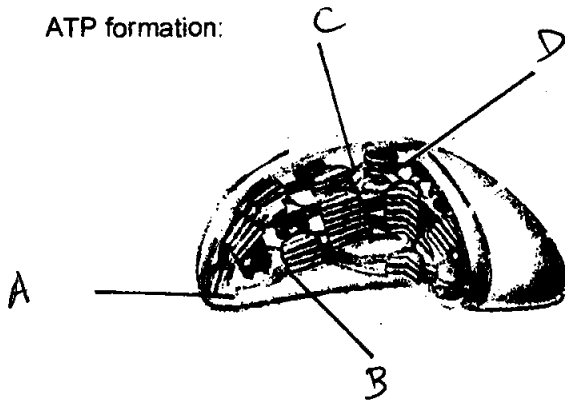
(Old Syllabus)

Time allowed: 25 Minutes

**NOTE:** Section-A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It 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.

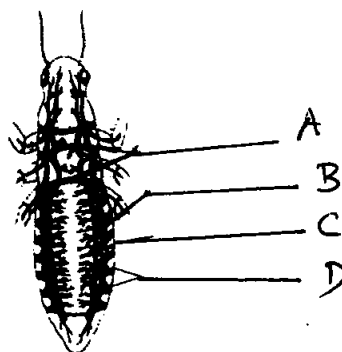
**Q. 1** Circle the correct option i.e. A / B / C / D. Each part carries one mark.

- (i) Out of 92 naturally occurring chemical elements, how many are commonly used in forming the chemical compounds from which living organisms are made?
- A. 12                      B. 16                      C. 14                      D. 10
- (ii) How much glucose does our blood normally contain?
- A. 0.08%                      B. 0.8%                      C. 8.0%                      D. 1.08%
- (iii) RNAs are synthesized by DNA in a process known as:
- A. Translation                      B. Transcription  
C. Transformation                      D. Reverse transcription
- (iv) In the given diagram of chloroplast encircle the part which is responsible for trapping of sunlight and ATP formation:



- (v) The optimum temperature for enzymes of human body is:
- A.  $32^{\circ}C$                       B.  $46^{\circ}C$                       C.  $37^{\circ}C$                       D.  $35^{\circ}C$
- (vi) The site which is responsible for break down of fatty acids to succinate is called:
- A. Lysosomes                      B. Peroxisomes                      C. Golgibodies                      D. Glyoxysomes
- (vii) Which is a phase of rapid growth in which bacteria divide at exponential rate?
- A. Lag phase                      B. Decline phase                      C. Log phase                      D. Stationary phase
- (viii) The disease, African sleeping sickness in human is caused by:
- A. Plasmodium                      B. Forams                      C. Entamoeba                      D. Trypanosoma

- (ix) *Aspergillus* belongs to phylum:  
 A. Zygomycota B. Ascomycota C. Deuteromycota D. Basidiomycota
- (x) The only living genera of Psilopsida is:  
 A. Psilotum and Psilophyton B. Psilotum and Cooksonia  
 C. Cooksonia and Tmesipeteris D. Psilotum and Tmesipeteris
- (xi) \_\_\_\_\_ can cause severe anemia and retards physical and mental growth in children.  
 A. Taenia B. Ancylostoma duodenale  
 C. Fasciola D. Enterobius vermicularis
- (xii) Venus flower Basket is made up of \_\_\_\_\_ sponge.  
 A. Euplectella B. Sycon C. Leucosolenia D. Spongilla
- (xiii) Select the correct order of energy transfer from accessory pigments to main photosynthetic pigment.  
 A. *Chl b* → Carotenoids → *Chl a* B. *Chl a* → *Chl b* → Carotenoids  
 C. Carotenoids → *Chl b* → *Chl a* D. Carotenoids → *Chl a* → *Chl b*
- (xiv) Chemical equations of different reactions are given below. Choose the reaction of oxidative phosphorylation  
 A.  $NADPH + H^+ + 3ADP + 3Pi + \frac{1}{2}O_2 \rightarrow (CH_2O)_3 + 6NADP + 9ADP + 9Pi + H_2O$   
 B.  $NADPH + H^+ + 3ADP + 3Pi + \frac{1}{2}O_2 \rightarrow NAD + H_2O + 3ATP$   
 C.  $2(C_3H_4O_3) + 2NADH_2 \rightarrow 2(C_2H_5OH) + 2NAD + 2CO_2$   
 D.  $2(C_3H_4O_3) + 2NADH_2 \rightarrow 2(C_3H_6O_3) + 2NAD$
- (xv) In the given diagram of respiratory system of cockroach, encircle the part which communicates with exterior by 10 pairs of apertures:



- (xvi) The maximum amount of Oxygen which normal human 100 ml blood absorbs and carries at the sea level is about:  
 A. 10 ml B. 20 ml C. 30 ml D. 40 ml
- (xvii) Which hormone stops the active transport of  $K^+$  into guard cells?  
 A. Gibberellins B. Auxins C. Cytokinins D. Abscisic Acid

For Examiner's use only:

Total Marks:

17

Marks Obtained:





# BIOLOGY HSSC-I

(Old Syllabus)

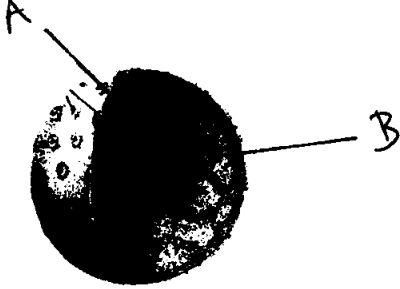
32

Time allowed: 2:35 Hours

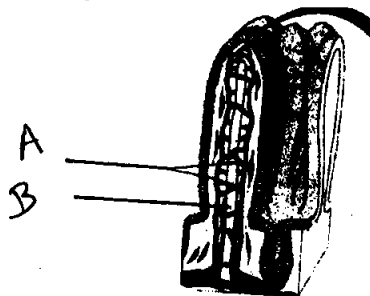
Total Marks Sections B and C: 68

**NOTE:** Answer any fourteen parts from Section 'B' and any two questions from Section 'C' 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 42)

- Q. 2** Attempt any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. ( 14 x 3 = 42)
- (i) Define the following:
    - a. Phyletic lineage 01
    - b. Integrated Disease Management 01
    - c. Endangered species 01
  - (ii) a. What is hydroponic culture technique? What is the significance of this technique? 02
  - b. Differentiate between population and community. 01
  - (iii) a. What is an ester? Express it with chemical equation. 02
  - b. Write down two differences between RNA and DNA. 01
  - (iv) Proteins are classified according to their structure:
    - a. Classify the proteins into different groups on the basis of structure, also give examples. 02
    - b. Draw structural formula of ATP. 01
  - (v) a. Give the name of the given diagram:
    - 
    - b. Name the labelled parts A and B. 01
    - c. Write down the functions of labelled part A. 01
  - (vi) What are the contributions of followings scientists in classification?
    - a. E. Chatton 01
    - b. Ernst Hackel 01
    - c. Lynn Margulis and Karlene 01
  - (vii) a. Write down any four differences between Gram-positive and Gram-negative bacterial cell wall. 02
  - b. What is super blue green algae? 01
  - (viii) a. What are inhibitors? How do Irreversible inhibitors check the reaction rate? 02
  - b. Define red tides. 01
  - (ix) a. What are water molds? 01
  - b. Which disease is caused by *Phytophthora infestans*? 01
  - c. What was the impact of this disease on Irish people? 01
  - (x) Why is fungi considered a successful group of land organisms? 03
  - (xi) a. What is double fertilization? In which plants do this occur? Also write its significance 02
  - b. Plants *Lycopodium* and *Equisetum* belong to which division? 01
  - (xii) Write down the botanical names of given plants:
    - a. Wheat 01
    - b. Potato 01
    - c. Shisham 01
  - (xiii) Write down the functions of the following organs:
    - a. Nematocysts 01
    - b. Syrinx 01
    - c. Swim bladder 01

- (xiv) How do Echinoderms resemble Chordates? **03**
- (xv) a. What is Z scheme? **01**  
 b. Name the photosystems involved in Z scheme. **01**  
 c. What are the products of Z scheme? **01**
- (xvi) Differentiate between Alcoholic and lactic acid fermentation **03**
- (xvii) Figure of Villus is given:



- a. What do the labelled parts A and B show? **01**  
 b. Write down the functions of part A and B? **02**
- (xviii) 70% of Carbon dioxide is transported in the blood in the form of bicarbonate in combination with sodium in the plasma:
- a. Write down the chemical equation of the reaction. **01**  
 b. Name the enzyme used in the reaction. **01**  
 c. What happens when bicarbonate reaches in the lungs? **01**
- (xix) Describe any three functions of lymphatic system. **03**

### SECTION – C (Marks 26)

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

- Q. 3** a. What is virulent phage? How does it reproduce inside the host cell? Give its various steps. **08**  
 b. What is HIV? Which cell is infected by HIV? Give its symptoms and mode of transmission. **05**
- Q. 4** a. Describe the general characters of Mammals. **05**  
 b. Differentiate between acoelomated and coelomated animals. Give examples. **04**  
 c. Write a note on class Gastropoda and Cephalopoda with examples. **04**
- Q. 5** a. What is cardiac cycle? Describe its various steps. **06**  
 b. Write down the functions performed by blood plasma. **03**  
 c. Describe the heart diseases given below: **04**  
 (i) Heart attack  
 (ii) Haemorrhage