Roll No. | | | | | | | Answer Sheet No._____

Sig. of Candidate._____ Sig. of Invigilator._____

BIOLOGY HSSC–I

SECTION – A (Marks 17)

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) Which scientist first developed the technique of vaccination in 1796 AD?

A. Robert Brown B. Edward Jenner

C. Emil Fischer D. Kosh Cant

(ii) Glycosidic bond is a covalent bond and is formed between two _____

A. Disaccharides B. Monosaccharides

C. Oligosaccharides D. Polysaccharides

(iii) Which term we will use when the two amino acids join each other?

A. Monopeptide B. Dipeptide

C. Tripeptide D. Tetra peptide

(iv) The presence of nucleus in the cell was reported by_____

A. T. Schwann B. Louis Pasteur

C. Robert Brown D. Rudolph Virchow

(v) Which part of the cell is formed on the inner surface of a plant cell at the end?

A. Primary cell wall B. Middle Lamella

C. Secondary cell wall D. All of these

(vi) The biological name of Onion is _____

A. *Solanum tubersom* B. *Allium cepa*

C. *Cassia fistula* D. *Lycopersicum esculentum*

(vii) The agent responsible for rabies is _____

A. Rabid dogs B. Foxes

C. Cats D. All of these

(viii) The smallest bacterium for example some members of genus Mycoplasma are about _____ in diameter.

A. 50 to 100nm B. 100 to 150 nm

C. 50 to 150 nm D. 100 to 200 nm

DO NOT WRITE ANYTHING HERE

(ix) The cell wall of each diatom consists of _____

A. Single shell B. Two shells

C. Four shells D. Six shells

(x) Malus (apple) belongs to family _____

A. Solanaceae B. Rosaceae

C. Fabaceae D. Poaceae

(xi) Liver flukes and tape worms belong to phylum _____

A. Porifera B. Platyhelminthes

C. Coelentrata D. Annelida

(xii) In which process/processes is the stored energy in carbohydrates released?

A. Photosynthesis B. Glycolysis

C. Respiration D. Glycolysis and respiration

(xiii) The molecular formula for chlorophyll 'a' is_____

A. $C_{55}H_{70}O_6N_4Mg$ B. $C_{55}H_{74}O_6N_4Mg$

C. $C_{55}H_{72}O_5N_4Mg$ D. $C_{55}H_{72}O_4N_5Mg$

(xiv) Parotid gland is found in _____

A. Stomach B. Mouth

C. Intestine D. Esophagus

(xv) The Mucosa of the stomach possesses _____ cells.

A. Mucous B. Parietal

C. Zymogen D. All of these

(xvi) Which part of the human lung lacks cartilages?

A. Trachea B. Bronchi

C. Bronchioles D. All of these

(xvii) The Anti-serum is a serum containing_____

A. Atnibiotics B. Antibodies

C. Antigens D. Anti-Rh factor

_____

For Examiner's use only:

Total Marks:	17
Marks Obtained:	

BIOLOGY HSSC–I

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. Molecular Biology b. Micro Biology c. Organelles **03**

(ii) What do you know about the Primary structure of Protein? **03**

(iii) a. What is Phyletic lineage? **02**
b. What is Chemotherapy? **01**

(iv) Write down the properties of Proteins. **03**

(v) a. What are the components of a nucleotide? **02**
b. Write two differences between DNA and RNA. **01**

(vi) a. List the factors affecting the rate of enzyme action. **02**
b. Complete the equation $E+S \rightarrow ES \rightarrow$ **01**

(vii) What are the salient features of the cell theory? **03**

(viii) a. Who discovered the Golgi apparatus? **01**
b. What is the function of Mitochondria? **01**
c. Where does the Nucleolus lie? **01**

(ix) Define **Species** and a **Bacteriophage**. **(2+1=03)**

(x) Write down the postulates of the germ theory of disease. **03**

(xi) Give ONE example each of the following:
a. Animal like protists b. Plant like protists c. Fungus like protists **03**

(xii) Differentiate between **Lichens** and **Mycorrhizae**. **03**

(xiii) a. What is Double Fertilization? **02**
b. Indicate whether the Monocotyledonae and Dicotyledonae are the sub-classes of Angiospermae or Gymnospermae? **01**

(xiv) What is the economic importance of family Solanaceae? **03**

(xv) a. Give one example each of Radial Symmetry and Bilateral Symmetry. **02**
b. Write one example each of **Acoelomates** and **Coelomates**. **01**

(xvi) Define the following:
a. Aerobic respiration b. Anaerobic respiration **02**
c. Oxidative phosphorylation **01**

(xvii) Write the common names of the following:
a. *Sarracenia pupurea* b. *Dionaea muscipula* c. *Drosera intermedia* **03**

(xviii) Write TWO characteristics each of the following:
a. Annelida b. Coelenterata c. Echinodermata **03**

(xix) Draw a labelled diagram of Single Circuit Heart (Fish). **03**

SECTION – C (Marks 26)

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

Q. 3 **a.** Describe in detail the structure and functions of DNA. **09**
b. What are the characteristics of enzymes? **04**

Q. 4 **a.** Define and explain Glycolysis. **09**
b. How does digestion take place in Amoeba? **04**

Q. 5 **a.** Explain the life cycle of a Moss. **06**
b. What is Cohesion Tension Theory? **05**
c. What do you mean by blue babies? **02**

Roll No. | | | | | | | Answer Sheet No._____

Sig. of Candidate._____ Sig. of Invigilator._____

BIOLOGY HSSC–I

SECTION – A (Marks 17)

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) How many bio-elements constitute 99% of our body mass?

A. 3 B. 6

C. 16 D. 93

(ii) A large regional community determined primarily by climate is called_____

A. Population B. Ecosystem

C. Biome D. Biosphere

(iii) A cell or organism and all its asexually produced offspring constitute a_____

A. Clone B. Variety

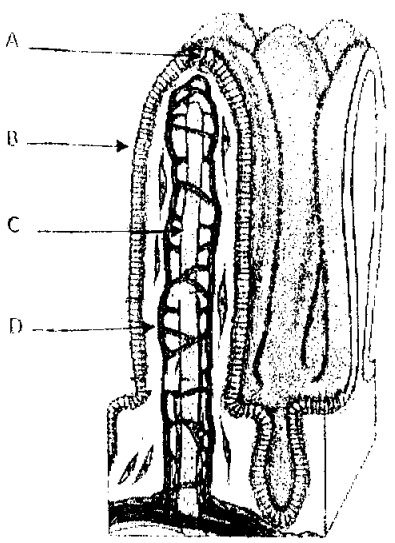
C. Population D. Species

(iv) Misuse of which antibiotic can affect Auditory Nerve, thus causing deafness?

A. Penicillin B. Streptomycin

C. Tetracycline D. Lovastatin

(v) Following is the diagram of a Villus in human intestine. Circle the labelled part (A/B/C/D) in which product of fats digestion enter.



(vi) What is **NOT** correct about RuBP?

A. 5-Carbon compound B. CO_2 acceptor

C. Most abundant protein in nature D. A metabolite of Calvin Cycle

(vii) Poales is the taxonomic group to which corn (*Zea mays*) belong. What is the rank of the taxon Poales?

A. Division B. Class

C. Order D. Family

(viii) Which of the following bonds is the potential source of chemical energy for cellular activities?

A. C – C bond B. C – H bond

C. C – O bond D. C – N bond

DO NOT WRITE ANYTHING HERE

(ix) To which group of Protozoa does the malarial parasite *(Plasmodium)* belong?

A. Apicomplexans B. Zooflagellates

C. Actinopods D. Ciliates

(x) Which phylum of Fungi have Septate, Dikaryotic Hyphae and produce sexual spores by Meiosis inside sac-like structures?

A. Zygomycota B. Ascomycota

C. Basidiomycota D. Deuteromycota

(xi) What is the special adaptation in Sundew plant (*Drosera intermedia*) for insectivory?

A. Bilobed Lamina of leaf B. Stiff bristles on leaf margin

C. Glandular tentacles on leaf D. Leaf modified into pitcher

(xii) Optimum pH for the lipid digesting enzyme Pancreatic Lipase is _____

A. 4.5 B. 6.8

C. 7.6 D. 9.0

(xiii) Engulfing of a liquid material by a cell in the form of a Food Vacuole is called _____

A. Endocytosis B. Phagocytosis

C. Pinocytosis D. Autophagy

(xiv) A severe form of food poisoning called Botulism is caused by _____

A. Clostridium B. Campylobacter

C. Salmonella D. Vibryo

(xv) When a cell is placed in hypertonic environment, it loses water. This loss of water from the cell is called _____

A. Diffusion B. Osmosis

C. Active Transport D. Facilitated Diffusion

(xvi) Which of the following diseases is also called Cooley's Anaemia?

A. Blood Cancer B. Thalassaemia

C. Oedema D. Sickle cell anaemia

(xvii) In which form most of the carbon dioxide is transported from tissues towards lungs?

A. As carboxyhaemoglobin attached to Haemoglobin in RBC

B. By Plasma proteins in Blood

C. As Bicarbonate ion in plasma

D. In dissolved form through blood

For Examiner's use only:

Total Marks:	**17**
Marks Obtained:	

BIOLOGY HSSC–I

2t

Time allowed: 2:35 Hours **Total Marks Sections B and C: 68**

NOTE: **Sections B and C comprises page 1-2. 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) A Triose sugar exists in two chemical forms:

a. Name these two forms of the sugar. **01**

b. Draw the structural formulae of the two forms. **02**

(ii) Angiosperms are the most advanced group of plant kingdom:

a. How many species of Angiosperms have been recorded so far? **01**

b. Name the structure in which the Ovules of Angiosperms are protected. **01**

c. Compare Monocotyledonous and Dictyledonous plants for any two features. **01**

(iii) Write a short note on the disease Thrombosis. **03**

(iv) How does Blue Babies condition occur in human beings? **03**

(v) Mammalia is the most advanced class of vertebrates:

a. Name the three bones present in the middle ear of mammals. **01**

b. Name the three sub-classes of mammals. **01**

c. What is the characteristic of R.B.C in mammals? **01**

(vi) Evolution of leaf in plants involved Overtopping and Plannation followed by Webbing:

a. Explain Overtopping. **02**

b. Which group of Tracheophytes lack leaves? **01**

(vii) Nucleotides are the building blocks of Nucleic Acids:

a. What is the main difference between Purines and Pyrimidines? **01**

b. Name the four Nucleotides of RNA. **01**

c. If the percentage of Adenine in the DNA of human cell is 30%.
What will be the approximate percentages of the rest of three nitrogenous bases? **01**

(viii) Define **Imbibition**, **Root Pressure** and **Cohesion.** **03**

(ix) Like other fields of science, Biology has a set methodology called Biological Method for solving problems:

a. Define Hypothesis. **01**

b. Differentiate between Deductive reasoning and Inductive reasoning by giving relevant examples. **02**

(x) Inhibitors are substances which react with enzymes but are not transformed into products:

a. What is the difference between Competitive and Non-competitive inhibitors? **02**

b. Give a relevant example of competitive inhibitor. **01**

(xi) Microscope is a useful tool for observing the fine details of the structure of organisms:

a. Differentiate between Magnification and Resolution of microscope. **02**

b. What are the extreme Resolutions and Magnifications of Light Microscope and Electron Microscope? **01**

(xii) Write down the three components of Cytoskeleton mentioning their physiological role. **03**

(xiii) Draw a labelled diagram of Bacteriophage. **03**

(xiv) Reproduce and complete the following table for the comparison of Gram Positive and Gram Negative bacteria, on your answer book: **03**

CHARACTERISTICS	GRAM POSITIVE	GRAM NEGATIVE
Number of major layers		
Chemical make up		
Overall thickness		
Outer membrane		
Periplasmic space		
Permeability		

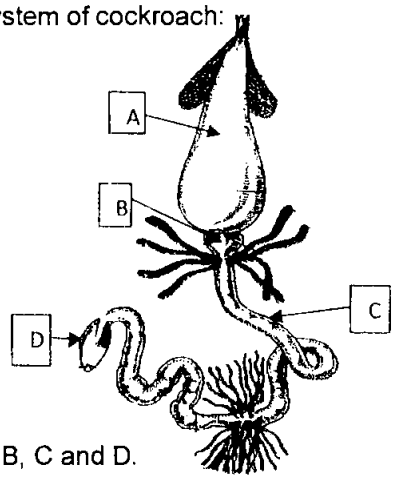
(xv) What is the nature, significance and types of Mycorrhizae? **03**

(xvi) Plant like Protests are also called Algae:

a. List the salient features of Green Algae. **02**

b. Give one example each of **Colonial**, **Filamentous** and **Sheet-like body forms** of green algae. **01**

(xvii) Following is the diagram of Digestive system of cockroach:



a. Identify the parts labelled as A, B, C and D. **02**

b. What is the function of the part labelled B? **01**

(xviii) One phylum of invertebrate animals is Annelida:

a. Explain the body segmentation of Annelids. **01**

b. What are the excretory organs of Annelids? **01**

c. Name the three classes of Annelida with examples. **01**

(xix) The first phase of photosynthesis is light reactions:

a. Name the reaction centre molecules of PS-I and PS-II. **01**

b. Under what conditions is the ATP generation shifted from non-cyclic to cyclic during light reaction? **01**

c. What is the site of light reactions inside Chloroplast? **01**

SECTION – C (Marks 26)

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

Q. 3 **a.** Explain any two double membrane bounded cytoplasmic organelles of a Eukaryotic cell with the help of labelled diagrams. **08**

b. Describe different Bacterial shapes. **05**

Q. 4 **a.** What happens to food inside Stomach? **08**

b. How are ATPs produced by Chemiosmosis? **05**

Q. 5 **a.** Explain the mechanisms of different types of Transpiration in plants. **08**

b. Write the distinguishing features of family Fabaceae and mention any four Scientific names and their Economic Importance of the members of Fabaceae. **05**