Version No.				
3	0	0	6	2

ROLL NUMBER					

BIOLOGY HSSC-I

SECTION – A (Marks 17)

Time allowed: 25 Minutes

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed.

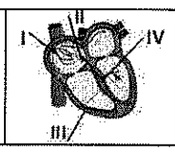
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حصہ اوّل لازمی ہے۔ اس کے جوابات اسی صفحہ پر دے کر نگرانِ مرکز کے حوالے کریں۔ کاٹ کر دوبارہ لکھنے کی اجازت نہیں ہے۔ لیڈ پنسل کا استعمال ممنوع ہے۔

Answer Sheet No. _____

ہر سوال کے سامنے دیے گئے، کریکولم کے مطابق درست دائرہ کو پُر کریں۔ **Invigilator Sign.** _____

Fill the relevant bubble against each question according to curriculum: **Candidate Sign.** _____

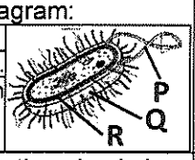
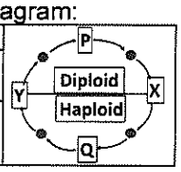
	Question	A	B	C	D	A	B	C	D
1.	Which protein provides support for tendons and ligaments?	Histone	Elastin	Casein	Keratin	○	○	○	○
2.	RNA lacks:	Cytosine	Adenine	Thymine	Guanine	○	○	○	○
3.	High specific heat capacity of water helps in:	Thermo stabilization	Producing cooling effect	Maintaining pH of medium	Transport of materials	○	○	○	○
4.	Absorption of different wavelengths by photosynthetic pigments is measured by:	Differential staining	Chromatography	Spectrophoto metry	Electrophoresis	○	○	○	○
5.	Which one of the following enzymes is **NOT** present in core of HIV?	Protease	Reverse transcriptase	Integrase	Transferase	○	○	○	○
6.	In which phase of bacterial growth, 'only increase in cell size' occurs?	Decline phase	Lag phase	Log phase	Stationary phase	○	○	○	○
7.	Which of the following is a bacterial disease?	Sleeping sickness	Herpes	Malaria	Ulcer	○	○	○	○
8.	The photosynthetic partner in a lichen is often:	Diatoms	Green algae	Brown algae	Dino flagellates	○	○	○	○
9.	The cell supporting herbaceous parts of plants having extra cellular deposition of cellulose and living protoplasm are:	Parenchyma	Sclerenchyma	Collenchyma	Tracheids	○	○	○	○
10.	Liver is **NOT** involved in the synthesis of:	Heparin	Albumin	Vitamin A	Cholecystokinin	○	○	○	○
11.	Identify the characteristic related to chondrichthyes:	Placoid scales on body	Homocercal caudal fin	Presence of operculum	Swim bladder for buoyancy	○	○	○	○
12.	Wood produced by the activity of vascular cambium is also called:	Inner bark	Phellogen	Secondary xylem	Secondary phloem	○	○	○	○
13.	In the given diagram, bundle of His are represented by: 	IV	I	II	III	○	○	○	○
14.	Identify the phylum with bilateral symmetry, saclike digestive system and no coelom:	Aschelminthes	Cnidaria	Nematoda	Platyhelminthes	○	○	○	○
15.	Dicots have:	Reticulate venation in leaf	Fibrous roots	Floral parts multiple of 3	Dispersed vascular bundles	○	○	○	○
16.	Morels and truffles are examples of:	Basidiomycota	Zygomycota	Deuteromycota	Ascomycota	○	○	○	○
17.	Natural rubber is a type of:	Waxes	Phospholipids	Terpenes	Steroids	○	○	○	○

BIOLOGY HSSC–I

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

SECTION – B (Marks 42)

Q. 2 Answers the following questions briefly. **(14 x 3 = 42)**

(i)	Elaborate the role of peroxisomes in plant and animal cells.	2+1	OR	Relate variety of proteins of plasma membrane with their respective roles.(Any three)	03
(ii)	Illustrate the formation of glycosidic bonds in: **a** Sucrose **b** Maltose	03	OR	Illustrate the process of non-cyclic photophosphorylation with labelling.	03
(iii)	Justify the significance of amino acid sequence by explaining example of sickle cell haemoglobin.	03	OR	Outline the process of C_4 photosynthesis in a flow chart.	03
(iv)	How do oxidoreductases, hydrolases and lyases work? Also give one example of each group.	03	OR	How does endospore formation occur in bacteria? How does it help bacteria to withstand unfavorable conditions?	2+1
(v)	Describe steps of lytic cycle of bacteriophage.	03	OR	Explain pathogenic role of fungi in human with their symptoms. (Any three)	03
(vi)	A person was bitten by snake. Antivenom was injected. **a** How does antivenom work? **b** Why was passive immunity preferred?	03	OR	A bacterium is shown in the diagram: **a** Name the structures P and R. **b** Write chemical composition of Q. **c** Name the process by which bacteria reproduces asexually. 	1x3
(vii)	T-cells are involved in specific defence. Name any three types of T-cells with their specific roles.	03	OR	Write about evolutionary adaptations in phylum arthropoda regarding respiration, excretion and nervous system.	03
(viii)	Briefly explain the flow of blood through heart as regulated by valves.	03	OR	Write down steps of swallowing action of bolus in oral cavity.	03
(ix)	**a** How does temperature affect rate of an enzyme catalyzed reaction? **b** Compare optimum temperature of enzymes in human and thermophilic bacteria in a graph.	2+1	OR	Name any three groups of Protista with one salient feature and example of each group.	03
(x)	In TACT theory of ascent of sap, how transpiration and adhesion help in process?	2+1	OR	Name and explain two hypotheses for evolution of single veined leaves.	03
(xi)	Complete the table: **Phylum** / **Distinguishing character** / **Example** **a** Cnidarian **b** Metameric segmentation **c** Snail	03	OR	Life cycle of fern is shown in diagram: **a** Name generations P and Q. **b** Which processes are shown by X and Y? **c** Which generation is dominant in ferns? 	03
(xii)	Write causative agent of cotton leaf curl disease. Also write symptoms and treatment of disease.	03	OR	Write down the mechanism of translocation in plants.	03
(xiii)	What are xerophytes? Enlist any four adaptations for their habitat. Also give example.	03	OR	How is dermis of skin involved in first line of defence?	03
(xiv)	Name two growth promoter and one growth inhibitor in plants with one major effect of each on plant body.	03	OR	Write mechanism of irreversible non-competitive enzyme inhibition with an example.	03

SECTION – C (Marks 26)

Attempt the following questions.

Q.3	Spermatophytes are seeded plants. How did seeds evolve?	06	OR	How are influx and efflux of potassium ions involved in regulating opening and closing of stomata? Explain in detail.	3+3
Q.4	Explain mechanical and chemical digestion in human stomach.	2+5	OR	Describe the structure and functions of Golgi complex. Also draw its diagram.	2+4 +1
Q.5	Give a detailed account of general characteristics of class Aves.	06	OR	Explain steroids and prostaglandins as important group of lipids. Describe their roles in living organisms.	3+3
Q.6	Bacteria show para sexuality. Explain transduction and transformation. Also draw diagrams showing processes.	5+2	OR	What is an electro cardio gram? Explain its different components. Also draw a neat sketch.	1+5 +1

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BIOLOGY HSSC-I

SECTION – A (Marks 17)

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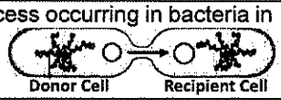
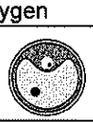
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Answer Sheet No. _____

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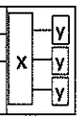
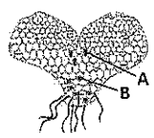
	Question	A	B	C	D	A	B	C	D
1.	Identify the process occurring in bacteria in given diagram: 	Transformation	Transduction	Conjugation	Translation	○	○	○	○
2.	Glyoxisomes will most probably be abundant in the seeds of:	Wheat	Pea	Beans	Peanut	○	○	○	○
3.	Which property of water helps to stabilize lipid bilayer of plasma membrane?	Cohesion	Ionization	Hydrophobic exclusion	High polarity	○	○	○	○
4.	The disease caused by viroids in human is:	Hepatitis D	Hepatitis A	Hepatitis B	Hepatitis C	○	○	○	○
5.	The difference between photosynthesis of cyanobacteria and algae is in:	Release of oxygen	Accessory pigments	Source of carbon	Source of hydrogen	○	○	○	○
6.	Which one of the following is an alga?					○	○	○	○
7.	All the following characteristics are related to monocots **EXCEPT**:	Vascular bundles in a ring	Floral parts multiple of three	Fibrous roots	Parallel veins	○	○	○	○
8.	In phylum Platyhelminthes, most systems are poorly developed **EXCEPT:**	Excretory system	Reproductive system	Digestive system	Nervous system	○	○	○	○
9.	Phellogen is also called:	Vascular cambium	Intercalary meristem	Lateral meristem	Cork cambium	○	○	○	○
10.	Water potential Ψ_w, solute potential Ψ_s and pressure potential Ψ_p are interrelated. If in a cell Ψ_w= –2100 kPa, Ψ_s = –3000 kPa, then Ψ_p will be:	5100 kPa	–5100 kPa	–900 kPa	900 kPa	○	○	○	○
11.	Increase in proportion of unsaturated fatty acids in plasma membrane is an adaptation in plants living in:	Water logged environment	Saline environment	Cold environment	Hot environment	○	○	○	○
12.	The mechanical tissue in seed coat are:	Collenchyma	Fibers	Sclerids	Parenchyma	○	○	○	○
13.	If bolus accidentally enters larynx instead of esophagus, it may be due to:	Lubrication in oral cavity	Wave of contraction and relaxation	Downward movement of larynx	Upward movement of palate	○	○	○	○
14.	The thickest layer of heart is:	Pericardium	Epicardium	Endocardium	Myocardium	○	○	○	○
15.	Identify the vein which does **NOT** open in vena cava?	Pulmonary vein	Hepatic vein	Iliac vein	Jugular vein	○	○	○	○
16.	Which pair describes aortic valve? I. Semilunar valve II. Between left ventricle and aorta III. Atrio ventricular valve IV. Passes deoxygenated blood	I,IV	I,II	II,III	III,IV	○	○	○	○
17.	The technique used to separate photosynthetic pigments is:	Chromatography	Electrophoresis	Spectro-photometry	Centrifugation	○	○	○	○

BIOLOGY HSSC–I

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

SECTION – B (Marks 42)

Q. 2 Answers the following questions briefly. **(14 x 3 = 42)**

(i)	The diagram represents a neutral lipid: **a** Name the components X and Y. **b** Name type of bond between X and Y. **c** Why this molecule is called neutral lipid? 	03	OR	Complete the table with reference to bacterial cell wall: **Character** / **Gram–ive** / **Gram+ive** Porins Peptidoglycans Thickness	03
(ii)	What are mesophytes? How they adapt to their environment? (Any four adaptions)	1+2	OR	What are evolutionary adaptations in echinoderms regarding digestion, respiration and nervous system?	03
(iii)	Differentiate between primary and secondary growth.(Any three differences)	03	OR	Differentiate between Mitochondria and Chloroplasts.(Any three differences)	03
(iv)	How does natural killer cell kill, 'cells infected by bacteria' and 'cancerous cells'?	03	OR	Laboratory manufactured sugars are not metabolized by enzymes in body. Justify.	03
(v)	How does pH affect the rate of an enzyme action? Compare the optimum pH for trypsin and papain.	2+1	OR	How does temperature affect activities of RuBisCO?	03
(vi)	Complete the table: **Character** / **Animal** / **Plant** / **Fungus** Mode of Nutrition Cell wall composition Presence of centriole	03	OR	A student accidentally got a small cut on finger in lab. What series of events would occur as inflammatory response to this injury?	03
(vii)	Draw the structure of an antibody. Label its parts. Write their specific roles.	03	OR	Draw an outline of Calvin cycle mentioning substrates and products of each step.	03
(viii)	**a** Why the Human Immunodeficiency Virus is called so? **b** Name two opportunistic diseases caused by HIV. **c** Name any two enzymes present in HIV core.	03	OR	**a** Why bryophytes are called amphibious plants? **b** Write any two distinguishing features of bryophytes.	1+2
(ix)	How does development of protostomes and deuterostomes differ in cleavage, coelom formation and blastopore fate?	03	OR	Draw and label the steps of lysogenic cycle of bacteriophage.	03
(x)	How does blood circulation occur between heart and kidneys? Elaborate the answer.	03	OR	What is feedback inhibition in enzymes? Elaborate with a proper example.	1+2
(xi)	Enlist the parts of large intestine. Also write the specific roles of large intestine.	1+2	OR	What is photoperiodism? How does it affect short day and long day plants? Give one example of each.	03
(xii)	Briefly explain Racemose and Cymose types of inflorescence.	03	OR	What is Mycorrhizae? Name and differentiate between its two types.	1+2
(xiii)	Name the parts of a bacterial flagellum. Also write their structures.	03	OR	Briefly describe any three benefits of bacterial flora of humans.	03
(xiv)	Complete the table: **Group** / **Character** / **Example** 1 / Whisk fern / / 2 / / Jointed stem / 3 / / / *Adiantum*	03	OR	Gametophyte of ferns is shown in the diagram: **a** What is other name for this structure? **b** Label parts A and B. **c** How does gametophyte of ferns differ from other plants' gametophytes? 	03

SECTION – C (Marks 26)

Attempt the following questions.

Q.3	Explain the components and mechanism of electron transport chain in mitochondria. Also draw the flow sheet.	4+2	OR	Describe general characteristics of class Mammalia.	06
Q.4	Describe the role of Lysosomes in Autophagy, intracellular digestion and autolysis. (Diagram is not required)	3+2 +2	OR	Explain the structure and role of different components of conducting system of human heart.	4+3
Q.5	Write down general characteristics of polysaccharides. Describe characteristics and molecular structure of starch and cellulose.	2+2 +2	OR	Explain the mechanisms of pathways taken by water to reach xylem tissue in plants.	06
Q.6	Explain development of male and female gametophytes in flowerings plants. Also draw life cycle of a flowering plant.	2+3 +2	OR	Outline the structure of pancreas and explain its role as an exocrine gland.	2+5