



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.

Do not use lead pencil.

حصہ اول لازمی ہے۔ اس کے جوابات اسی صفحہ پر دے کر نام مرکز کے حوالے کریں۔ کٹ کر دیا نہ کیے کی اجازت نہیں ہے۔ سیڈ پینسل کا استعمال ممنوع ہے۔

Version No.			
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ROLL NUMBER					

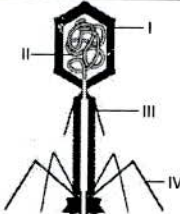
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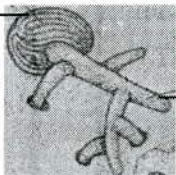
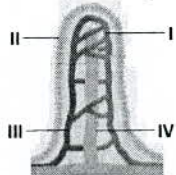
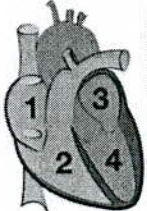
Answer Sheet No. _____

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

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

Question	Candidate Sign.							
	A	B	C	D				
1. A person is given vaccine of COVID. This is an example of:	Artificial Active immunity	Natural Active immunity	Artificial Passive immunity	Natural Passive immunity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Which structure is the genetic material of the virus? 	II	III	IV	I	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Advantages to life on land for early amphibians included:	Greater temperature variation	More food and no predation	Less O ₂ in the air than water	More food and more predation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. A group of ribosomes attached to mRNA is known as:	Glyoxisomes	Polysomes	Lysosomes	Peroxisomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Which of the following pair is mismatched?	Fat – lipids	Amino acid – protein	Starch – nucleic acid	Sugar – carbohydrate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. What can be found in both DNA and messenger RNA?	Sugar – phosphate chain	Ribose	Thymine	Double helix structure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The compound that enters Krebs's cycle from glycolysis is:	Oxaloacetate	Pyruvic acid	Acetyl-CoA	Citric acid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Mesosomes are infolding of the cell membrane and are involved in:	Protein synthesis	RNA synthesis	Metabolism	DNA replication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Chitin is found in the cell wall of fungi, which is also found in exoskeleton of:	Echinoderms	Molluscs	Chordates	Arthropods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Question		A	B	C	D	A	B	C	D
10.	The process illustrated in the figure is called: 	Fertilization	Germination	Host invasion	Photosynthesis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	In spermatophyte, seed is formed from.	Ovary	Anther	Embryo sac	Ovule	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	Which of the following pair of words are correctly matched ?	Scraping algae – siphon	Predation – tentacle	Nephridia – gizzard	Filter feeding – radula	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	Apical dominance is caused by:	Cytokinin	Ethene	Auxins	Gibberellins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	A diagram of villus is given. Which labelled part is a vessel of lymphatic system? 	II	III	IV	I	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	Which heart chamber pumps blood to the lungs? 	2	3	4	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.	In which of the following blood vessels the blood pressure is highest ?	Arteries	Capillaries	Veins	Aorta	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.	Which of the following cells are destroyed in an AIDS infection?	Helper T cells	B cells	Memory cells	Macrophages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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BIOLOGY HSSC-I

Time allowed: 2:35 Hours

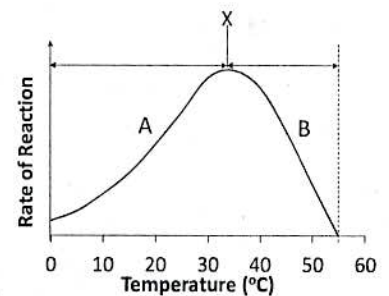
Total Marks Sections B and C: 68

NOTE: Answer any fourteen parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book. Write your answers neatly and legibly.

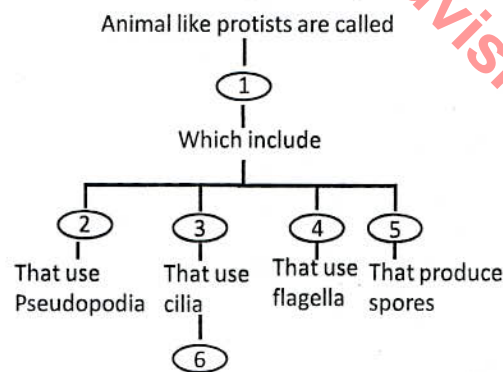
SECTION - B (Marks 42)

Q. 2 Attempt any FOURTEEN parts from the following. All parts carry equal marks. (14 x 3 = 42)

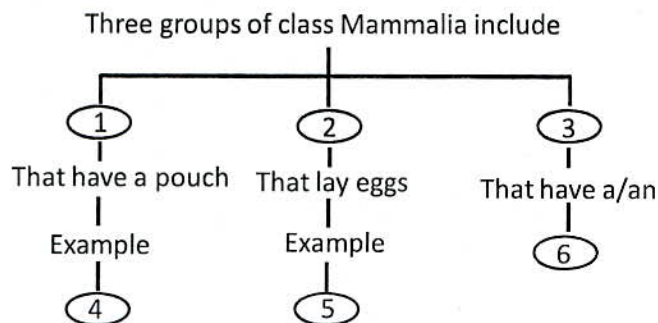
- (i) List any three organelles bounded by a single membrane and any three organelles bounded by double membrane.
- (ii) State property of water that allows each of the following to take place. Briefly explain its importance
 - a. The cooling of skin during sweating
 - b. The survival of fish in ice-covered lake
- (iii) The graph shows the effect of temperature on the rate of reaction of an enzyme.
 - a. What is indicated by X?
 - b. What is happening in region A?
 - c. What is happening in region B?



- (iv) Briefly explain what will happen if dead bodies are not decomposed by bacteria?
- (v) What will happen if plants are exposed to green light? Explain briefly.
- (vi) How penicillin affects bacterial cell? Describe briefly.
- (vii) Complete the concept map with the following terms:
Amoeba, Protozoan, Flagellates, Sporozoans, Ciliates, Paramecium.

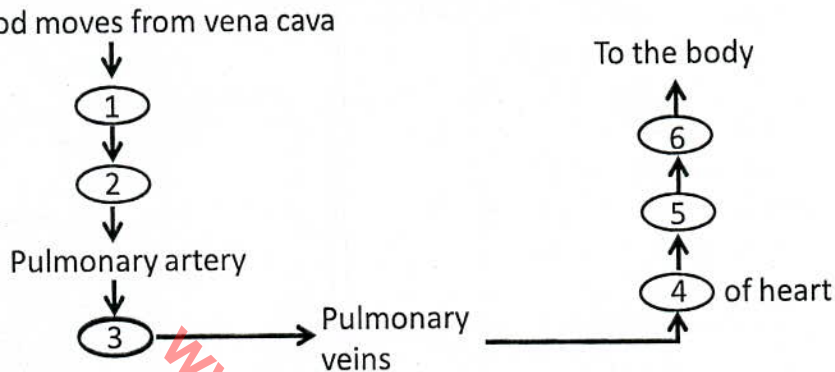


- (viii) List six features of bryophytes which made them to adapt on land.
- (ix) Why many insects are pests to humans when they are larvae but are beneficial when they are adult? Explain briefly.
- (x) Complete concept map:
Prototherian, Metatheria, Eutherian, Placenta, Kangaroo, Duckbill platypus.



- (xi) Differentiate between.
 - a. Collenchyma and sclerenchyma
 - b. Photoperiodism and Phototropism
 - c. Apoplast pathway and symplast pathway.

- (xii) Many animals including humans eat seeds such as beans, peas, peanuts and almonds. Why are seeds a good food source?
- (xiii) If stomach fails to produce HCl, how would this affect digestion? If left untreated how could this affect the body as whole?
- (xiv) Describe three functions of digestive system. Write down sequence of organs according to the order in which food passes through them.
- (xv) How would chronic diarrhoea affect homeostasis of the body?
- (xvi) What type of chemical reaction would be involved in the formation of glucose from starch or glycogen? Explain briefly.
- (xvii) Complete the concept map with the given terms:
Aorta, Left atrium, Left ventricle, Right atrium, Right ventricle, Lungs.



- (xviii) A new mother had chicken pox as a child. Why does not her new born child get the disease, even after being exposed to its virus?
- (xix) How photosynthetic pigments are arranged in photosystem? Differentiate between the two types of photosystem.
- (xx) Differentiate between viruses and viroid. Also give examples

SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks.

(2 x 13 = 26)

- Q. 3 a. What is plasma membrane? Explain in detail fluid mosaic model of plasma membrane.
b. How does body give inflammatory response when tissues are damaged?
- Q. 4 a. i. How does a bacterium reproduce sexually? Briefly explain.
ii. Photosynthesis and respiration are said to be complementary. How are these chemical reactions connected?
b. Describe uses of fungi in genetic engineering and antibiotic production.
- Q. 5 a. What does ECG stand for? Explain different phases with the help of labelled diagram.
b. Compare the osmotic adjustments in different groups of plants in different environments.

— 1HA-I 2310 —



BIOLOGY HSSC-I

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Do not use lead pencil.

حصہ اول لازمی ہے۔ اس کے جوابات اسی صفحہ پر دے کر نام مرکز کے حوالے کریں۔ کاٹ کر دوہارا

کھینچنے کی اجازت نہیں ہے۔ لید پنسل کا استعمال ممنوع ہے۔

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Version No.			
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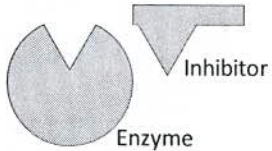
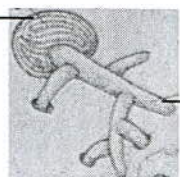
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Answer Sheet No. _____

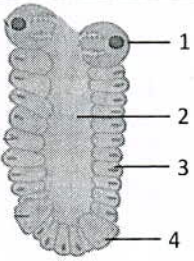
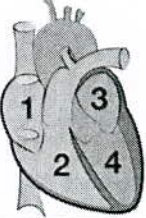
ہر سوال کے سامنے دیے گئے، کریکولم کے مطابق درست دائرہ کو پر کریں۔ Invigilator Sign. _____

Fill the relevant bubble against each question according to curriculum:

Candidate Sign. _____

Question	Candidate Sign.							
	A	B	C	D				
1. Fluidity of cell membrane is due to:	Lipids	Proteins	Carbohydrates	Vitamins	○	○	○	○
2. Which term describes both collagen and hemoglobin?	Enzyme	Fibrous Protein	Globular Protein	Macromolecule	○	○	○	○
3. The diagram below shows an enzyme and an inhibitor. Which of the following describe the inhibitor? 	Competitive, irreversible	Non competitive reversible	Non competitive, irreversible	Competitive, reversible	○	○	○	○
4. During dark reactions of photosynthesis:	Water is split off	Chlorophyll is activated	CO ₂ is reduced to organic compound	Glucose is broken down	○	○	○	○
5. Which of the following cells are responsible for antibody production?	Macrophages	T cells	B cells	Plasma cells	○	○	○	○
6. Which of the following may build coral reefs along with coral animals?	Myxomycota	Red algae	Brown algae	Green algae	○	○	○	○
7. In given diagram of fungi structure 1 and structure 2 represent: 	Fungal capsule and mycelium	Hyphae and lichen	Spore and hyphae	Lichen and mycelium	○	○	○	○
8. Which part of flower develops into fruit?	Ovary wall	Ovule	Anther	Stigma	○	○	○	○
9. A butterfly excretes its wastes through:	Spinnerter	Malpighian tubules	Spiracles	Tracheal tubes	○	○	○	○
10. The cambium and meristems are examples of _____ tissues.	Support	Protective	Growth	Transport	○	○	○	○



Question		A	B	C	D	A	B	C	D																
11.	<p>The given diagram shows the details of gastric gland in stomach wall. Which labelled part is concerned with secretion of HCl?</p> 	1	2	3	4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
12.	<p>The given diagram shows chambers of heart. Chamber labelled as 1 receives blood from which blood vessel?</p> 	Aorta	Vena Cava	Pulmonary arteries	Pulmonary veins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
13.	The lymphatic system performs which of the following functions?	Transport tissue fluid back into blood stream	Carries O ₂ and CO ₂ to and from body cell	Control metabolism	Exchange gases between blood and air	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
14.	When a pathogen enters the body, usually which cells are the first to attack it?	Macrophages	T cells	B cells	Plasma cells	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
15.	Bacterial membrane differs from Eukaryotic membrane in lacking:	Proteins	Lipids	Polysaccharide	Cholesterol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
16.	<p>Which of the following bacteria are correctly matched for their energy requirements?</p> <table border="1" data-bbox="110 1046 565 1250"> <thead> <tr> <th>Sr.</th> <th>Requirement</th> <th>Terms</th> </tr> </thead> <tbody> <tr> <td>I.</td> <td>Light</td> <td>Obligate Saprophytes</td> </tr> <tr> <td>II.</td> <td>Hydrogen</td> <td>Archaeobacteria</td> </tr> <tr> <td>III.</td> <td>Oxygen</td> <td>Obligate anaerobes</td> </tr> <tr> <td>IV.</td> <td>Oxygen</td> <td>Obligate aerobes</td> </tr> </tbody> </table>	Sr.	Requirement	Terms	I.	Light	Obligate Saprophytes	II.	Hydrogen	Archaeobacteria	III.	Oxygen	Obligate anaerobes	IV.	Oxygen	Obligate aerobes	I	II	III	IV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
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17.	<p>Which of the following characters do all vertebrates have in common at some point in their development?</p> <table border="1" data-bbox="110 1415 571 1614"> <tbody> <tr> <td>I.</td> <td>Bilateral symmetry</td> <td>Exoskeleton</td> <td>Lungs</td> </tr> <tr> <td>II.</td> <td>Back bone</td> <td>Postanal tail</td> <td>Lungs</td> </tr> <tr> <td>III.</td> <td>Pharyngeal pouches</td> <td>Notochord</td> <td>Backbone</td> </tr> <tr> <td>IV.</td> <td>Closed circulatory system</td> <td>Segmented bodies</td> <td>External fertilization</td> </tr> </tbody> </table>	I.	Bilateral symmetry	Exoskeleton	Lungs	II.	Back bone	Postanal tail	Lungs	III.	Pharyngeal pouches	Notochord	Backbone	IV.	Closed circulatory system	Segmented bodies	External fertilization	I	II	III	IV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I.	Bilateral symmetry	Exoskeleton	Lungs																						
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—1HA-I 2310-7101 HA—

ROLL NUMBER					





32

BIOLOGY HSSC-I

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

NOTE: Answer any fourteen parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book. Write your answers neatly and legibly.

SECTION – B (Marks 42)

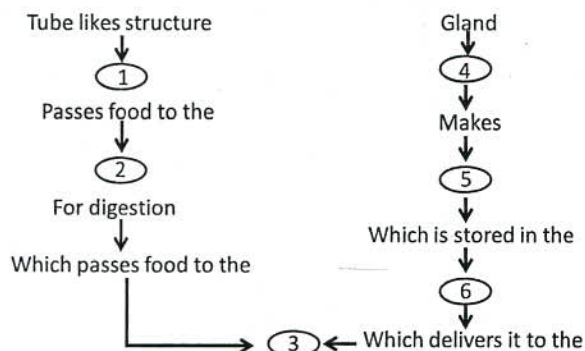
Q. 2 Attempt any FOURTEEN parts from the following. All parts carry equal marks.

(14 x 3 = 42)

- (i) List any six structural features that are different in Prokaryotic and Eukaryotic cells.
(ii) Complete the table below which shows functional categories of proteins.

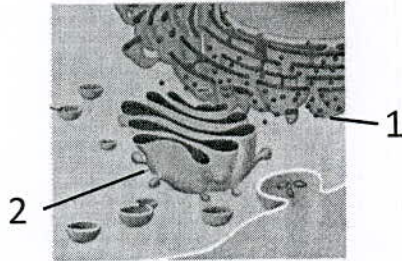
Category	Example
Transport of oxygen	
Enzyme	
	Insulin
Defensive	
	Actin and myosin
Storage	

- (iii) Proteases are used in biological washing powder. How would it remove a blood stain on clothes? Why these washing powders are recommended for use at low washing temperature?
(iv) Compare action spectrum and absorption spectrum of light with reference to photosynthesis.
(v) What is meant by "viruses are obligate intra cellular parasites"?
(vi) Describe the state of HIV virus in a person positive for HIV but not showing any symptom.
(vii) What role do contractile vacuoles play in helping fresh water protozoans?
(viii) Why are fungi placed in a separate kingdom?
(ix) Why bryophytes are called amphibian plants?
(x) When temperature increases and soil becomes drier, what happens to earth worms? How earth worms help to increase soil fertility?
(xi) Which organelle is a site for cellular respiration? Enlist any four of its characteristics.
(xii) Putting a ripened banana in a paper bag with an unripened fruit quickens its ripening. Explain what happens inside the bag.
(xiii) Distinguish between:
a. Lysosome – Peroxisomes
b. Chloroplast – Chromoplast
c. Microtubules – Microfilaments
(xiv) Explain why a person without a gall bladder is unable to digest fat efficiently?
(xv) Complete the concept map with the given terms;
Liver, Bile, Small intestine, Stomach, Oesophagus, Gall bladder.



- (xvi) When strepto coccus bacterium causes severe throat infection, it can get into blood and damage heart valves. How does this affect heart function?

- (xvii) The figure below is a diagram of a secretory cell of Pancrease. Name the parts labelled as 1 and 2. Enlist the processes occurring here.



- (xviii) Why is it adaptive for memory cell to remain in the immune system after an invasion by a pathogen?
(xix) Describe the structure and processes involved in innate immunity. How do these differ from acquired immunity?
(xx) In what kinds of environment is it expected to find slime mold? Give four salient features of slime mold.

SECTION – C (Marks 26)

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

- Q. 3** a. The two strands of DNA are not identical but are complementary. Give reasons. Also explain double helical structure of DNA molecule.
b. How do bacteriophages reproduce? Explain lytic and lysogenic cycle in detail.
- Q. 4** a. Below is a reaction of Calvin cycle
 $CO_2 + \text{Ribulose biphosphate} \rightarrow 3 \text{ Phospho glycerate}$
Which enzyme catalyses this reaction? Where does this reaction take place in plants? Explain next two phases of Calvin cycle.
b. Explain different modes of sexual reproduction in fungi. Also draw a labelled diagram of life cycle of flowering plant.
- Q. 5** a. Explain the conducting system of the heart? Why cardiac muscles are said to be myogenic?
b. How the structure of small intestine is adapted for absorption of digested products? Explain.

— 1HA-I 2310 HA —