

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

Section A is compulsory. Attempt **any four** questions from **Section B**.
The intended marks for questions or parts of questions are given in brackets [].

SECTION A - 40 MARKS

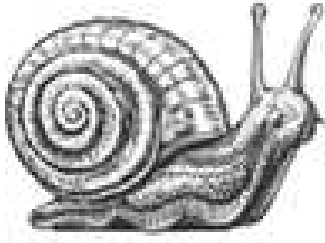
(Attempt **all** questions from this section)

Question 1

Choose the correct answer to the questions from the given options. (Do not copy the question. Write the answers only)

- (i) The site of glycolysis: [15]
(a) Cytoplasm (b) Chloroplast (c) Ribosome (d) Mitochondria
- (ii) The first antibiotic discovered by Alexander Fleming:
(a) Penicillin (b) Streptomycin (c) Erythromycin (d) Chlorotetracycline
- (iii) Fruit is a ripened_____.
(a) Zygote (b) Embryo (c) Ovary (d) Ovule
- (iv) The outermost hard brownish layer of the seed:
(a) Testa (b) Tegmen (c) Epicotyl (d) Aleurone Layer
- (v) The causative organism of Amoebiasis:
(a) Bacterium (b) Protozoan (c) Virus (d) Parasite
- (vi) **Assertion(A):** Axial skeleton includes the limbs and girdles of the human body.
Reason(R): Axial skeleton lies in the central axis of the body.
(a) A is True and R is False (c) Both A and R are True
(b) A is False and R is True (d) Both A and R are False
- (vii) **Assertion(A):** End products of anaerobic respiration in plants are ethyl alcohol and carbon dioxide.
Reason(R): Incomplete breakdown of cellulose occurs in the anaerobic respiration of plants.
(a) A is True and R is False (c) Both A and R are True
(b) A is False and R is True (d) Both A and R are False
- (viii) The small opening at the integument for the entry of pollen tube:
(a) Nucellus (b) Antipodals (c) Synergids (d) Microphyle
- (ix) The tubules of Golgi complexes are technically termed as:
(a) Cristernae (b) Microtubules (c) Cristae (d) Vesicles

- (x) Pollinating agent in Ornithophily:
 (a) Birds (b) Water (c) Insect (d) Wind
- (xi) The organism in the image given below belongs to the phylum_____.



- (a) Mollusca (b) Echinodermata (c) Cnidaria (d) Nematoda
- (xii) The number of metacarpals in the palm of appendicular skeleton:
 (a) 5 (b) 2 (c) 7 (d) 8
- (xiii) The innermost layer of epidermis of the skin that can actively divide:
 (a) Stratum corneum (b) Granular layer (c) Stratum malpighi (d) Cornified layer
- (xiv) Tom was at the gym when he overheard a conversation between two of his friends about vocal changes. "I noticed my voice has been getting deeper lately," said one of them. "Yeah, I think it's because my Adam's apple is getting bigger," the other friend replied.
 What is commonly called an 'Adam's apple'?
 (a) Larynx (b) Pharynx (c) Nasal cavity (d) Capsule
- (xv) Expanded form of AIDS is:
 (a) Active Immunity Deficiency Syndrome (c) Acquired Immuno Deficiency Status
 (b) Acquired Immuno Deficiency Syndrome (d) Active Immuno Deficiency Syndrome

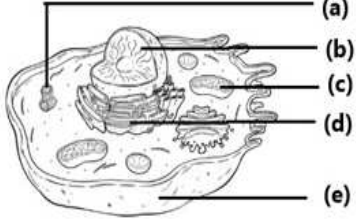
Question 2

- (i) Name the following [5]
- The storehouse of calcium and phosphorous for the rest of the body.
 - The pigment present in the cells of malpighian layer.
 - A large hole at the back part of the cranium.
 - The fibrous structural protein present in the skin.
 - A flap of tissue present at the entrance of trachea.
- (ii) Choose the odd one out from the following terms and name the category to which others belong: [5]
- Cycas, Pine, Fir, Mosses
 - Mustard, Mango, Pea, Vallisneria
 - Saliva, Sweat, Skin, Tears

(d) Cholera, Typhoid, Tuberculosis, Hepatitis

(e) Elbow, Ankle, Knee, Finger

- (iii) Given below is a structure of an animal cell. Match the structures marked (a) to (e) [5]
with their functions:

Structure of an animal cell	Functions
	<ol style="list-style-type: none">1. Supportive framework for the cell2. Regulates the entry of certain solutes and ions.3. Regulates cell division4. Regulates cell function5. Synthesis of respiratory enzymes6. Stores starch

- (iv) Define the following [5]

(a) Heat stroke

(b) Oxygen debt

(c) Respiration

(d) Vaccination

(e) Fertilization

- (v) Arrange and rewrite the terms in the correct order so as to be in a logical sequence [5]
starting from the underlined word:

(a) Larynx, Pharynx, Nostrils, Nasal chambers, Trachea

(b) Genus, Kingdom, Family, Species, Order

(c) Ovule, Polar nuclei, Ovary, Nucellus, Embryo sac

(d) Cytoplasm, Nucleus, Cell membrane, Nucleolus, Cell wall

(e) Protista, Plantae, Monera, Animalia, Fungi

SECTION B- 40 MARKS

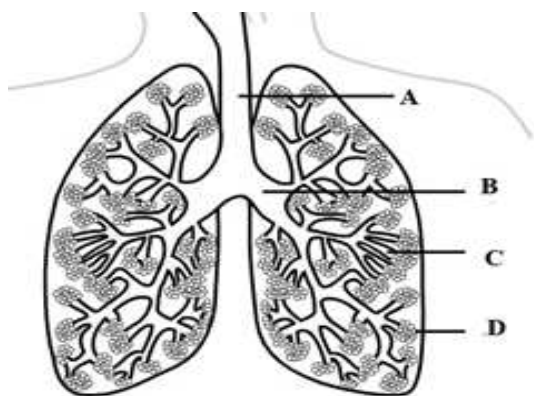
(Attempt **any four** questions from this section)

Question 3

- (i) Mention the most significant function of meibomian glands. [1]
- (ii) Rahul was climbing a mountain at high altitudes, and after a few hours, he started [2]
feeling breathless, dizzy, and fatigued. His body was struggling to get enough oxygen.
- (a) What is the cause of his symptoms?
- (b) How does the lack of oxygen affect the cells in your body during this situation?
- (iii) Mention the merits of local defence system. [2]

(iv) Why is the hip bone in the female skeleton different from the male? [2]

(v) The figure shown below represents a certain organ of the human chest cavity. Study the figure and answer the following questions. [3]



- (a) Identify the organ and the organ system.
- (b) Label the parts A, B, C, D.
- (c) Name the fluid filled between the protective layers of the organ and its significance.

Question 4

- (i) State any two functions of the skin. [1]
- (ii) Write the features of a good antibiotic. [2]
- (iii) Distinguish between anaerobic respiration in plants and animals. [2]
- (iv) Why are tomatoes often used as an example of chromoplast activity in plants? [2]
- (v) On a cold winter morning, Ravi walked outside without enough warm clothing. His hands and feet became cold and numb, and the tips of his fingers turned pale, while his nose appeared reddish. [3]

When he entered a warm room, his fingers regained their normal colour and warmth, and the cold sensation disappeared. Ravi soon began to feel comfortable again.

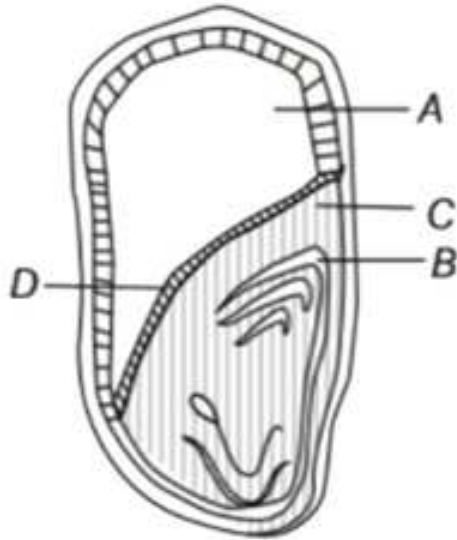
- (a) Name the biological process responsible for the pale colour of Ravi's fingers and the cold feeling.
- (b) Why does Ravi's skin regain its normal colour and warmth once he enters the warm room?
- (c) Explain how does the body reacts in the two different situations mentioned above in order to maintain the body temperature?

Question 5

- (i) Name the two types of metabolic activities in living organisms. [1]
- (ii) What is vaccine? Give an account on categories of vaccines. [2]
- (iii) Explain how is the germination in *Sonneratia* and *Rhizophora* different from typical [2]

seed germination?

- (iv) Distinguish between vital capacity and tidal volume. [2]
- (v) The diagram below shows the structure of a maize grain, which is a monocotyledonous seed. Study the diagram carefully and answer the following questions: [3]



- (a) Label the parts A, B, C and D.
- (b) Explain the role of the A in the monocotyledonous seed.
- (c) How is the structure of the maize seed different from a dicot seed?

Question 6

- (i) Mention any two conditions necessary for seed germination? [1]
- (ii) Why nucleolus is significant in the functioning of the cell? [2]
- (iii) Distinguish between leukoderma and albinism. [2]
- (iv) How the wind pollinated plants are well adapted for pollination? [2]
- (v) A professional soccer player sustains a fracture in the ankle joint during a match after a sudden twist while running. [3]
- A young athlete at a sports injured his knee while playing football.
- (a) Mention the type of the joints that fractured in the above mentioned situations.
- (b) What is the role of ligaments in the joints?
- (c) What is the significance of the fluid in between the membranes of the joint?

Question 7

- (i) Mention any two functions of human skeleton. [1]
- (ii) How do the C-shaped cartilage rings in the trachea contribute to the functioning of the respiratory system? [2]
- (iii) A student, Sarah, is conducting a microbiology experiment in her high school lab. She [2]

observes a sample of bacteria under the microscope and she writes down her observations:

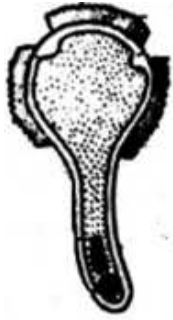
A: The rod-shaped bacteria seem to have a smooth surface.

B: The spherical bacteria form clusters.

What are the types of bacteria that observed by Sarah as mentioned in A and B?

(iv) Differentiate between active and passive immunity. [2]

(v) Study the figure given below and answer the following questions. [3]



(a) Identify the figure.

(b) Mention its outer and inner walls.

(c) What is the significance of nucleus in the given structure?

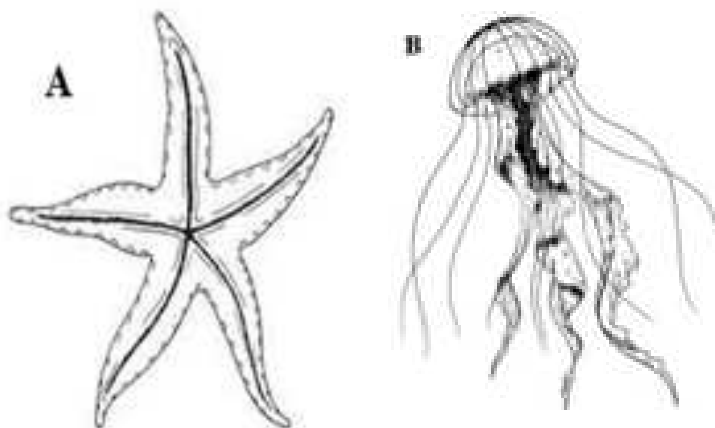
Question 8

(i) Which is the causative agent in typhoid? [1]

(ii) Mention any two drawbacks of two kingdom classification. [2]

(iii) What are the ways in which the carbon dioxide from the tissues is transported to the lungs by the blood? [2]

(iv) Study the figure given below and answer the following questions. [2]



(a) Mention the phylum of A and B.

(b) Write the major characteristics of the phylum A and B.

(v) Why lysosomes are called the intracellular digestive centre of the cell? [3]
