
BIOLOGY

SCIENCE Paper – 3

(Two hours)

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

*You will **not** be allowed to write during the 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.

*Attempt **all** questions from **Section I** and **any four** questions from **Section II**.*

The intended marks for questions or parts of questions are given in brackets [].

SECTION I (40 Marks)

*Attempt **all** questions from this Section*

Question 1

(a) Name the following: [5]

- (i) The region of the axis between the point of attachment of cotyledons and the plumule.
- (ii) The undigested cellulose which is fibrous in nature.
- (iii) A vaccine for Poliomyelitis.
- (iv) A large hole at the back of the cranium through which the spinal cord passes.
- (v) A serious food poisoning disease caused due to a bacterium in tinned foods.

This paper consists of 10 printed pages.

- (b) Given below are sets of five terms each. Rewrite the terms in correct order in a logical sequence beginning with the term that is underlined. [5]
- (i) Sacrum, Thoracic, Coccyx, Cervical, Lumbar
 - (ii) Larynx, Pharynx, Bronchioles, Nostrils, Alveoli
 - (iii) Pollen tube, Stigma, Ovary, Pollen grain, Embryo sac.
 - (iv) Rectum, Pharynx, Oesophagus, Duodenum, Stomach
 - (v) Nuclear membrane, Cell wall, Cytoplasm, Nucleolus, Cell membrane
- (c) Differentiate between the following pairs on the basis of what is given in the brackets: [5]
- (i) Tendon and Ligament (function)
 - (ii) Parotid gland and Sublingual gland (location)
 - (iii) Tidal volume and Residual volume (volume of air)
 - (iv) Leucoderma and Albinism (type of disorder)
 - (v) Epidemic disease and Endemic disease (Example)
- (d) Mention the exact location of the following: [5]
- (i) Pancreas
 - (ii) Ovules
 - (iii) Centrosome
 - (iv) Sternum
 - (v) Ceruminous glands
- (e) Choose the correct answer from each of the four options given below: [5]
- (i) The barrier between the protoplasm and the outer environment in a plant cell is:
 - A. Nuclear membrane
 - B. Plasma membrane
 - C. Tonoplast
 - D. Cell Wall

(ii) The term neuter is given to a flower in which both:

- A. Calyx and corolla are present
- B. Calyx and corolla are absent
- C. Androecium and Gynoecium are present
- D. Androecium and Gynoecium are absent

(iii) In Vallisneria pollination takes place by the agency of:

- A. Water
- B. Wind
- C. Birds
- D. Insects

(iv) The group of plants having naked seeds:

- A. Angiosperms
- B. Bryophyta
- C. Pteridophyta
- D. Gymnosperms

(v) Mammary glands are modified:

- A. Sweat glands
- B. Gastric glands
- C. Tear glands
- D. Sebaceous glands

(f) Match the items given in **Column A** with the most appropriate ones in **Column B** and rewrite the correct matching pairs. [5]

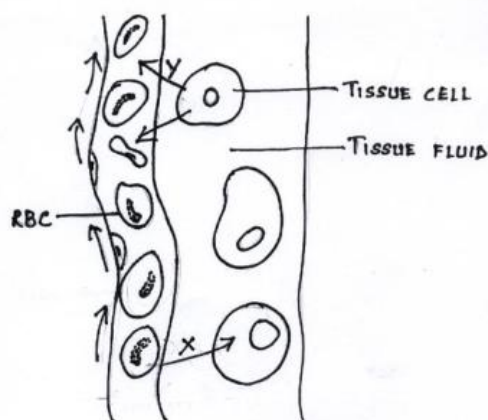
Column A

- (i) Patella
- (ii) Adult man
- (iii) e-waste

Column B

- (a) Maize flowers
- (b) Plasmodium
- (c) Knee joint

- (iv) Anemophilous (d) Plastic
- (v) Malaria (e) 16 teeth in each jaw
- (f) Mobile batteries
- (g) Elbow joint
- (h) 14 teeth in each jaw
- (g) Choose the **ODD** one out from the following terms given and name the **CATEGORY** to which the others belong: [5]
- (i) Carbollic acid, Boric acid, DDT, Benzoic acid
- (ii) Hepatitis, Cholera, Chicken pox, AIDS.
- (iii)Vegetable peel, Syringes, CDs, Styrofoam.
- (iv) Shark, Dogfish, Starfish, Trout
- (v) Gram seed, Pea seed, Rice, Bean Seed
- (h) Given below is a diagram depicting a physiological process in man. [5]
- Study the same and answer the following questions:



- (i) Name the process occurring in the diagram.
- (ii) Explain the process mentioned in part (i).
- (iii) Label the gases 'X' and 'Y'.
- (iv) Write a balanced chemical equation for the process shown.
- (v) Name the organelle where cellular respiration takes place.

SECTION II (40 Marks)

Attempt any **four** questions from this Section

Question 2

(a) Study the diagram and answer the questions that follow:

[5]



- (i) Label the parts 1 – 4.
- (ii) Give the function of parts labeled 3, 4 & 6.
- (iii) Name the protein present in the part labeled '1'.
- (iv) Name the pigment that gives colour to the skin.
- (v) Name the fluid secreted by the part labeled '5'.
- (b) Complete the following paragraph by filling in the blanks (i) to (x) with appropriate words: [5]

The hind limb consists of a long bone (i) _____ in the thigh, two long bones, the inner (ii) _____ and the outer (iii) _____ in the shank, seven (iv) _____ bones in the ankle, five long (v) _____ bones in the middle of the foot and fourteen (vi) _____ in the toes.

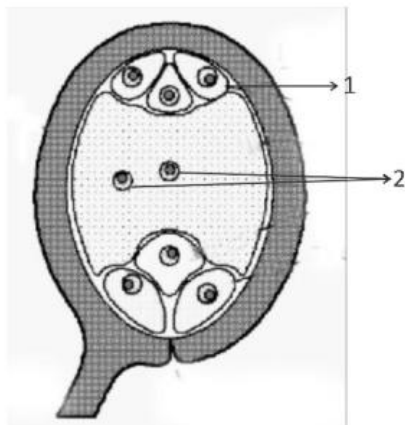
The forelimb consists of a long bone (vii) _____ in the upper arm and

two long bones (viii) _____ and (ix) _____ in the lower arm.

The wrist has eight bones called (x) _____.

Question 3

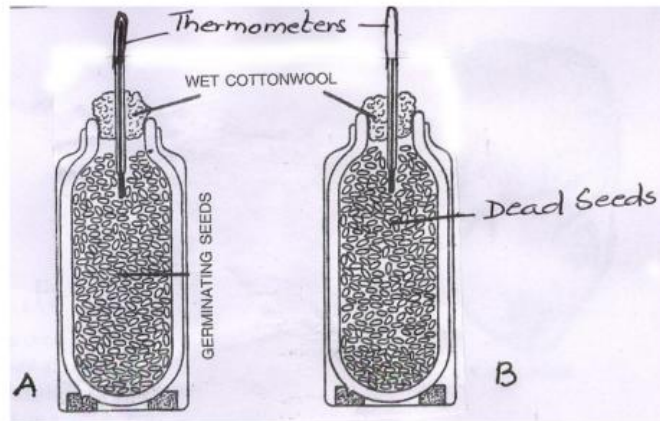
- (a) Study the diagram given below and answer the questions that follow: [5]



- (i) Identify the above structure and mention its location in a flower.
 - (ii) Label the parts numbered 1 and 2.
 - (iii) Explain the term 'Double Fertilisation'.
 - (iv) What is the fate of the calyx and corolla after fertilisation?
 - (v) Draw a neat, labelled diagram of a pollen grain.
- (b) Give an example for each of the following: [5]
- (i) A poriferan
 - (ii) An antibiotic
 - (iii) A coelenterate
 - (iv) A deficiency disease
 - (v) A mammal
 - (vi) An annelid worm
 - (vii) A reptilian
 - (viii) A fat soluble vitamin
 - (ix) An amphibian
 - (x) A protein deficiency disease.

Question 4

- (a) Study the experimental set given below and answer the following questions: [5]



- (i) What is the aim of the experiment shown above?
- (ii) What is your observation after a few hours for flask 'A' and 'B'?
- (iii) Name the chemical used to prevent bacterial growth.
Explain how the bacteria would interfere with the experiment.
- (iv) Why do we use thermos flasks specifically for the experiment?
- (v) Which is the control set-up and why?
- (b) Fill in the blanks with suitable words: [5]

(i) (1) _____ $\xrightarrow{\text{Renin}}$ (2) _____

(ii) (3) _____ $\xrightarrow{\text{Maltase}}$ (4) _____

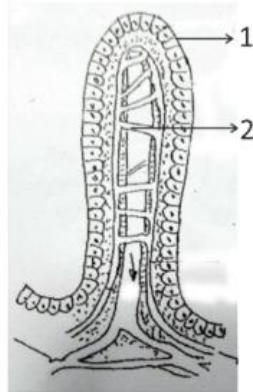
(iii) Emulsified fat $\xrightarrow{\text{Lipase}}$ (5) _____ + (6) _____

(iv) (7) _____ $\xrightarrow{\text{Erepsin}}$ (8) _____

(v) (9) _____ $\xrightarrow{\text{Pepsin}}$ (10) _____

Question 5

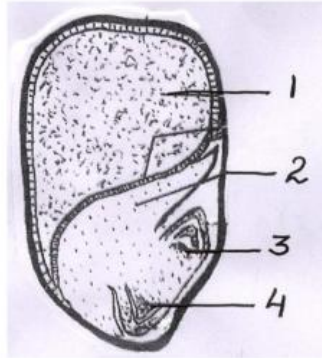
- (a) Study the diagram given below and answer the questions that follow: [5]



- (i) Name the structure shown in the diagram.
State in which part of small intestine, it is present.
- (ii) How is this structure well adapted for absorption of digested food?
- (iii) Label the parts numbered 1 and 2.
- (iv) Name the lymph vessel present inside the structure.
- (v) Name the digestive juice secreted by the liver.
What are the two pigments present in it?
- (b) Give appropriate biological / technical terms for the following: [5]
- (i) The mode of arrangement of flowers on the axis of the plant.
- (ii) The type of waste generated in hospitals and pathological laboratories.
- (iii) Different timings of maturation of androecium and gynoecium.
- (iv) The process of formation of a seedling from the embryo.
- (v) The energy currency of the cell.
- (vi) The category of immunity required in the treatment of a snake bite.
- (vii) The outermost covering of a vacuole.
- (viii) The membrane that encloses the lungs.
- (ix) The tissue which stores fat.
- (x) The device used to remove gaseous and particulate air pollutants.

Question 6

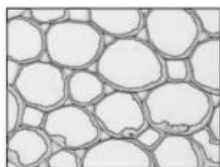
- (a) Study the diagram given below and answer the questions that follow: [5]



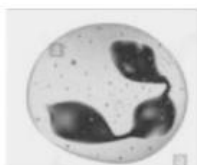
- (i) Name the structure shown and label its parts 1 and 2.
 - (ii) Is the given structure albuminous or non-albuminous?
Give reason for your answer.
 - (iii) Name the protective coverings of part labelled 3 & 4.
 - (iv) Name the protein rich layer of endosperm.
 - (v) Why is the given structure called a grain?
- (b) (i) Draw a neat and labelled diagram of a plant cell. [5]
- (ii) Based on the diagram drawn above in (i) give a suitable term for each of the following descriptions:
- 1. The sites of protein synthesis.
 - 2. A cell organelle that is absent in a plant cell.
 - 3. The supporting frame work of the cell.
 - 4. The plastids that contain DNA and have the capacity to divide.
 - 5. The structures that carry the hereditary units.
 - 6. The cell organelle that regulates all the metabolic functions.
 - 7. The structure that is semipermeable in nature.

Question 7

- (a) Given below are four living structures. Study the same and answer the questions given below: [5]



A



B



C



D

- (i) Name the structure A, B, C and D.
 - (ii) State the living cells in the structure 'D'.
 - (iii) Name the fluid in which the structure 'B' is found.
 - (iv) What is the function of the structure 'C'?
 - (v) Draw a neat, labelled diagram of a Neuron.
- (b) Answer the following questions briefly:
- (i) State two activities of the Red Cross.
 - (ii) State any two ways by which food can be preserved.
 - (iii) One should breathe through the nose and not through the mouth. Explain.
 - (iv) The wall of the trachea is supported by 'C' shaped cartilaginous rings.
Give a suitable reason.
 - (v) State two activities of WHO.