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.

(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	**Column B**
(i) Patella	(a) Maize flowers
(ii) Adult man	(b) Plasmodium
(iii) e-waste	(c) Knee joint

(iv) Anemophilous

(v) Malaria

(d) Plastic

(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) Carbolic acid, Boric acid, DDT, Benzoic acid

(ii) Hepatitis, Cholera, Chicken pox, AIDS.

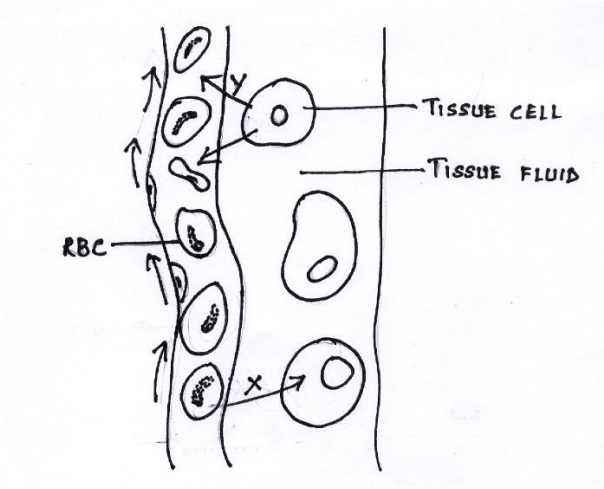
(iii)Vegetable peel, Syringes, CDs, Styrofoam.

(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.

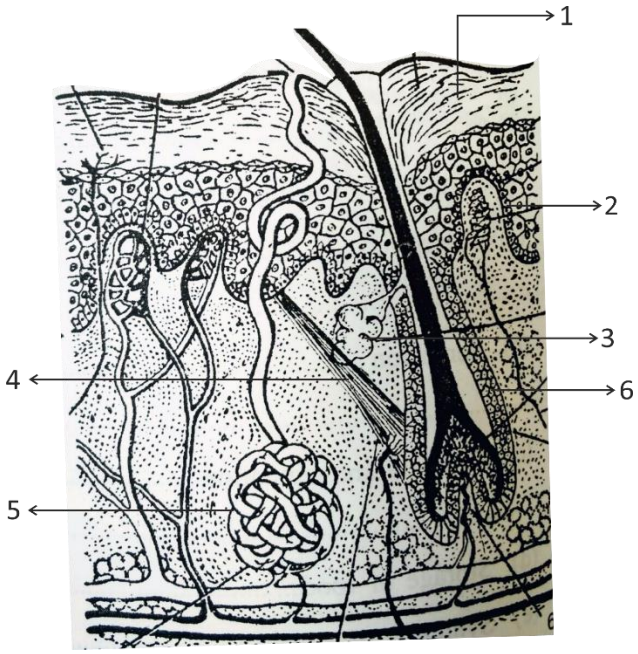
(v) Name the organelle where cellular respiration takes place.

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]

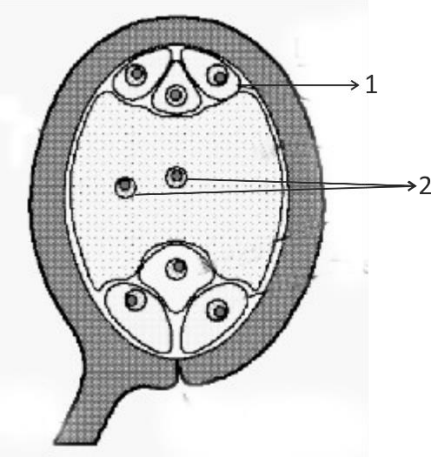
The hind limb consists of a long bone (i) _____ in the thigh, two long bones, the inner (ii) _____ and the outer (iii) _____ in the shank, seven (iv) _____ bones in the ankle, five long (v) _____ bones in the middle of the foot and fourteen (vi) _____ in the toes. The forelimb consists of a long bone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

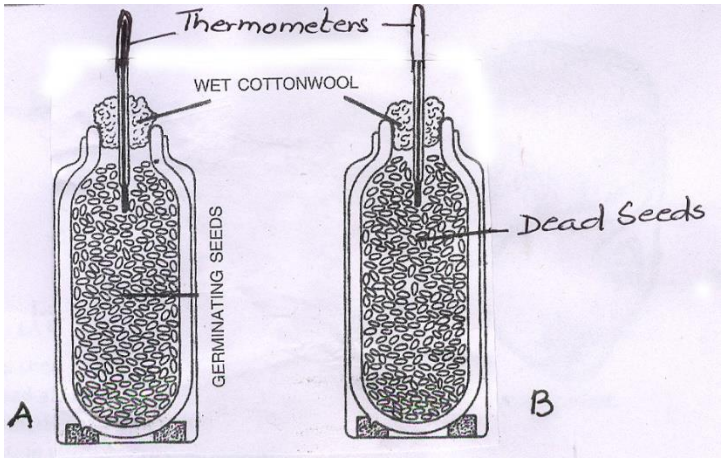
(viii) A fat soluble vitamin

(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) _____ $\xrightarrow{Renin}$ (2) _____

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

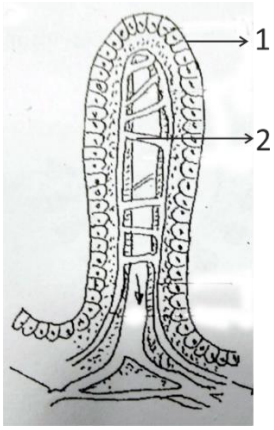
(iii) Emulsified fat $\xrightarrow{Lipase}$ (5) _____ + (6) _____

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

(v) (9) _____ $\xrightarrow{Pepsin}$ (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.

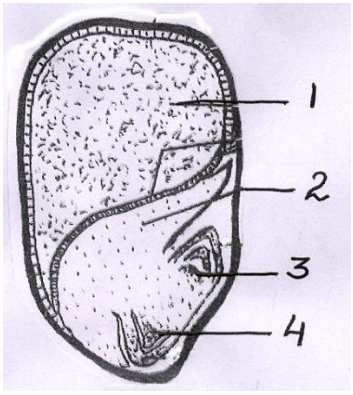
(viii) The membrane that encloses the lungs.

(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?

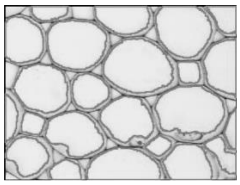
(b) (i) Draw a neat and labelled diagram of a plant cell. [5]

(ii) Based on the diagram drawn above in (i) give a suitable term for each of the following descriptions:

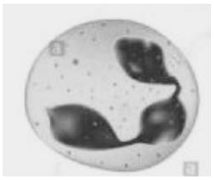
1. The sites of protein synthesis.
2. A cell organelle that is absent in a plant cell.
3. The supporting frame work of the cell.
4. The plastids that contain DNA and have the capacity to divide.
5. The structures that carry the hereditary units.
6. The cell organelle that regulates all the metabolic 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.