

**BIOLOGY**

**SCIENCE Paper-3**

( 1 ½ hours)

*Answer to this paper must be written on the paper provided separately.*

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

*This time must 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 three questions from Section II.*

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

---

**SECTION I (30 Marks)**

Attempt all questions from this Section

**Question 1**

**Choose the correct alternative from the choices given below each statement to complete its meaning.**

**[8]**

- i) The outermost tough fibrous membrane that forms a protective covering of the brain.
  - a) Arachnoid
  - b) Pia mater
  - c) Dura mater
  - d) Corpus callosum
  
- ii) The green pigment found in the leaves of many plants which is essential for the process of photosynthesis.
  - a) Thylakoids
  - b) Chloroplasts
  - c) Chloroform
  - d) Chlorophyll
  
- iii) A condition which results in abnormal decrease in the number of white blood cells.
  - a) Leukemia
  - b) Leukocytes
  - c) Leukopenia
  - d) Leukoplasts

- iv) The condition in which plant sap escapes from the ruptured or cut surfaces of a plant.
- Guttation
  - Bleeding
  - Evaporation
  - Transpiration
- v) Myopia occurs due to:
- Shortening of the eyeball
  - Uneven curvature of the cornea
  - Lens is too curved
  - Lens is too flat
- vi) Number of pairs of spinal nerves.
- Thirty-one
  - Twelve
  - Eight
  - Twenty-one
- vii) Cytokinins are hormones which stimulate:
- Cell elongation for plant growth
  - Longitudinal growth of internodes in dwarf plants
  - Cell division for plant growth
  - Ripening of fruits
- viii) An endocrine gland which is also known as 'Master Gland':
- Pituitary gland
  - Adrenal glands
  - Pancreas
  - Thyroid

## Question 2

**A) Name the following:**

**[6]**

- A thin-walled cup shaped structure present in each kidney tubule.
- Veins which collect oxygenated blood from the lungs and carry it back to the left auricle of the heart.
- The term used for the growth movement of plant parts in response to touch stimulus.
- Special pore bearing structures present on the margins of the leaf to allow exudation of water.

- v) Any agent or an environmental change which initiates a response in the human body.
- vi) A condition in which the cell content is shrunken and the cell is no tighter.

**B) State whether the following statements are true or false. If false, rewrite the correct statement by changing the last word only. [5]**

- i) Gyri and Sulci are the folds of the cerebellum.
- ii) Oxygen combines with haemoglobin present in red blood cells and forms oxyhaemoglobin.
- iii) Deafness is caused by rupturing of the ear pinna.
- iv) Root hairs provide enormous surface area for absorption of water.
- v) Free movement of solutes in and out of the cell takes place across the cell membrane.

**C) Given below is a group of terms. In the group the first pair indicates the relationship between the two terms. Rewrite and complete the second pair on a similar basis. [5]**

Example: Oxygen : Inspiration :: Carbon dioxide : Expiration

- a) Eye : Optic nerve :: Ear : \_\_\_\_\_
- b) Brain : Meninges :: Heart : \_\_\_\_\_
- c) Growth-retarding hormone : Abscisic acid :: Emergency hormone : \_\_\_\_\_
- d) Light reaction : Thylakoids :: Dark reaction : \_\_\_\_\_
- e) Induces flowering in mango : Ethylene :: Regulates basal metabolism : \_\_\_\_\_

**D) Differentiate between the following terms using the key points given in the brackets. [3]**

- a) Vein and Artery (size of the lumen)
- b) Active Transport and Diffusion (expenditure of energy for absorption of water and minerals)
- c) Bicuspid valve and Tricuspid valve (Function)

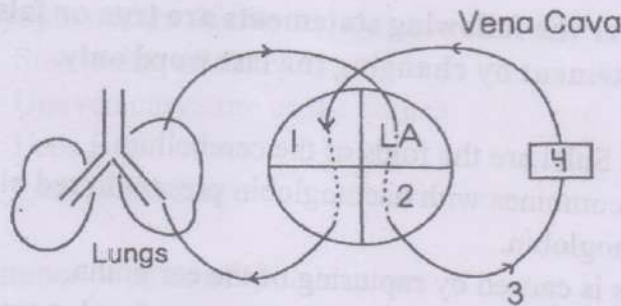
**E) Define the following. [3]**

- a) Receptor
- b) Excretion
- c) Exosmosis

**SECTION II ( 30 Marks)**

Attempt any three questions from this Section.

**Q3 A) Given below is a schematic representation of the Circulatory System in man. Study the same and answer the questions that follow: [5]**

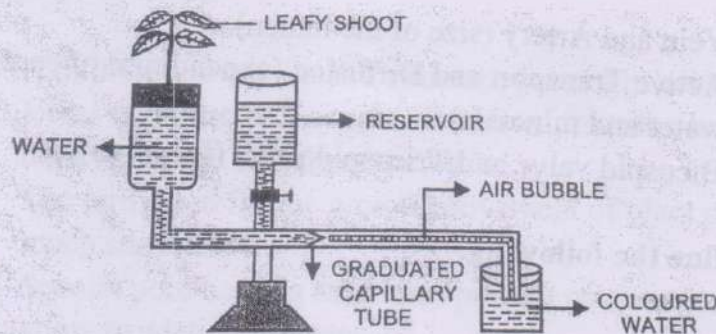


- i) Label parts 1, 2, 3 and 4.
- ii) Give one difference between parts 1 and 2 based on:
  - a) the structure of their walls . (b) the nature of the blood flowing through them.
- iii) What is specific name of the type of blood circulation that takes place between the heart and the lungs.
- iv) Name the valve found at the beginning of the part labelled 3.

**Q3 B) Choose the odd one out from the following terms given and name the category to which the remaining three belong: [5]**

- i) Chlorophyll , Glucose, Thylakoids, Stroma
- ii) Cortex, Pelvis, Retina, Medulla
- iii) Malleus, Incus, Pinna, Stapes
- iv) Aqueous Humour, Vitreous Humour, Iris, Central canal
- v) Blinking, Shivering, Breathing, Eating

**Q4 A) Given below is an apparatus used to study a certain process in plants. Study the same and answer the questions that follow: [5]**



- i) Name the apparatus.
- ii) Mention one limitation of this apparatus.
- iii) Which phenomenon is studied with the help of this apparatus?
- iv) What is the function of the part marked 'reservoir'?
- v) What is the role of the air bubble in the experiment?

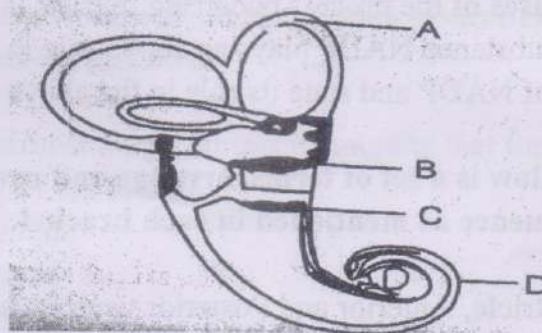
**Q4 B) Mention the exact location of the following:**

[5]

- i) Adrenal Gland
- ii) Yellow Spot
- iii) Stomata
- iv) Monocytes
- v) Nephron

**Q5 A) Given below is the diagram of a part of the human ear. Study the same and answer the questions that follow:**

[5]



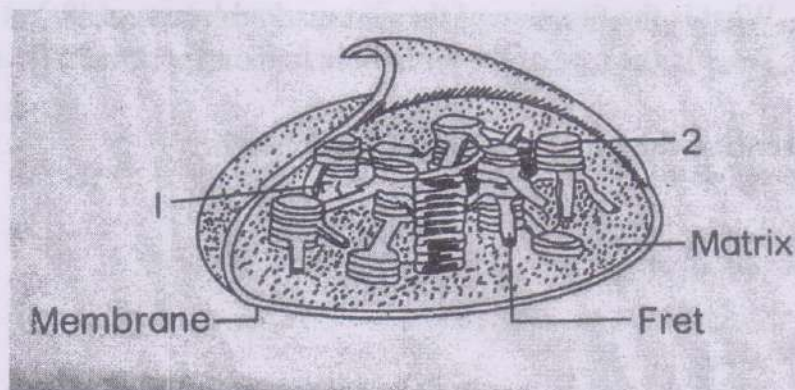
- i) Name the parts labelled A, B, C and D.
- ii) Name the part of the ear responsible for transmitting impulses to the brain.
- iii) Name the part labelled above which is responsible for:
  - a) Static equilibrium
  - b) Dynamic equilibrium
  - c) Hearing
- iv) Name the audio receptor cells which pick up vibrations.
- v) Name the fluid present in the inner ear.

**Q5 B) State one function of the following:**

[5]

- i) Lenticels
- ii) Lymphocytes
- iii) Kidneys
- iv) Cerebrospinal fluid
- v) Iris

**Q6 A) Given below is a diagrammatic representation of the internal structure of an organelle found in a plant cell. Study the same and then answer the questions that follow:** [5]



- i) Identify the cell organelle.
- ii) Name the physiological process occurring in this organelle.
- iii) Mention one way in which this process is beneficial to man.
- iv) Name the phases of the process occurring in parts labelled 1 and 2.
- v) A chemical substance NADP plays an active role in one of the phases. Give the expanded form of NADP and state its role in the above process.

**Q6 B) Given below is a set of terms, arrange and rewrite the terms so as to be in a logical sequence as mentioned in each bracket.** [5]

- i) Right ventricle, Anterior and Posterior vena cava, Pulmonary artery, Right auricle, lungs. (direction of flow of deoxygenated blood)
- ii) Pupil, Yellow Spot, Cornea, Lens, Aqueous humour, (correct path of entry of light entering the eye from an object)
- iii) Renal vein, Renal artery, Afferent arteriole, Efferent arteriole, Glomerulus. (pathway of blood through glomerulus)
- iv) Destarched plant, Iodine added, Washed in water, Leaf boiled in alcohol, Placed in sunlight. (testing the presence of starch)
- v) Motor neuron, Receptor, Sensory neuron, Effector, Association neuron. (pathway of a nerve impulse)