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SCIENCE (Theory) — Paper II
(Botany and Zoology)

Time Allowed : $2\frac{1}{2}$ Hours]

[Maximum Marks : 100

Instruction : Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

PART - I

(BOTANY)

(Marks : 50)

SECTION - A

Answer *all* the questions.

I. A) Choose and write the correct answers :

5 × 1 = 5

1. In Dicot root, Epidermis bears
 - a) Unicellular hairs
 - b) Multicellular hairs
 - c) Cuticle
 - d) no hairs.
2. The energy rich molecule produced during respiration is
 - a) FAD
 - b) ATP
 - c) Alcohol
 - d) NADPH₂.
3. The rosette form of growth is seen in
 - a) short-day plant
 - b) day-neutral plant
 - c) long-day plant
 - d) annuals.
4. The stomatal movement is greatly influenced by
 - a) temperature
 - b) wind
 - c) humidity
 - d) light.
5. The light producing enzyme in *Vibrio fischeri* is
 - a) Luciferase
 - b) Enolase
 - c) Zymase
 - d) Lactase.

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B) Match the following :

5 × 1 = 5

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|--------------------|-----------------------|
| i) Photosynthesis | a) Seedless fruits |
| ii) Bundle sheath | b) Respiration |
| iii) Parthenocarpy | c) Gooseberry |
| iv) PAN | d) Photochemical smog |
| v) Scurvy | e) Starch |
| | f) Border Parenchyma |
| | g) Eugenia. |

SECTION - B

II. Answer any *ten* of the following :

10 × 2 = 20

A) Differentiate between the following pairs (any *two* points only) :

1. Exarch xylem and Endarch xylem
2. DNA and RNA
3. Food chain and food web.

B) Give reasons for the following :

4. Transpiration is a necessary evil
5. Anaerobic respiration takes place only for limited period
6. Tobacco smoke causes lung cancer.

C) Give any *two* practical applications of the following :

7. Osmosis
8. Endoplasmic reticulum
9. Raw silk

D) Answer the following briefly :

10. Define : Osmosis.
11. Write the important features of the cell theory.
12. What is sericulture ?

SECTION - C

III. Answer any *four* of the following :

4 × 5 = 20

13. Draw a neat labelled sketch of T.S. of dicot stem.
14. Draw a neat labelled diagram of Mitochondria.
15. Explain the experiment to prove aerobic respiration by Respiroscope.
16. Explain the mechanism of opening and closing of the stomata.
17. List the role played by ethylene as a phytohormone.
18. What are the methods to control air pollution ?
19. Explain the traditional method of prawn culture.

PART - II

(ZOOLOGY)

(Marks : 50)

SECTION - A

Answer *all* the questions.I. A) Choose and write the correct answers : 5 × 1 = 5

1. The respiratory organ of cockroach is

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|---------------|-----------------------------|
| a) Trachea | b) Laryngo-tracheal chamber |
| c) Book Lungs | d) Lungs. |

2. Water from undigested food is absorbed by

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|--------------------|------------|
| a) small intestine | b) colon |
| c) duodenum | d) caecum. |

3. The non-threshold material is

- | | |
|------------|--------------------|
| a) Glucose | b) Sodium chloride |
| c) Urea | d) Amino acids. |

4. The hormone secreted by the Leydig cells is

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|-----------------|-----------------|
| a) Progesterone | b) Testosterone |
| c) Relaxin | d) Insulin. |

5. BCG is a vaccine administered to prevent

- | | |
|-----------------|---------------|
| a) Tuberculosis | b) Diphtheria |
| c) Mumps | d) Pertussis. |

B) Match the following : 5 × 1 = 5

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|----------------------|----------------|
| i) Tocopherol | a) Tetany |
| ii) Parathyroids | b) Nupital pad |
| iii) Fenestra ovalis | c) Vitamin K |
| iv) Male frog | d) AIDS |
| v) ELISA | e) Vitamin E |
| | f) Oval Window |
| | g) Retina. |

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SECTION - B

II. Answer any *ten* of the following :

10 × 2 = 20

A) Differentiate between the following pairs (any *two* points only) :

1. Male and female cockroach
2. Systole and diastole
3. DPT and MMR.

B) Give reasons for the following :

4. The toes of frog is webbed
5. Blinking of the eyes
6. Vitamin *K* is known as anti-haemorrhagic vitamin.

C) Give the importance of the following (any *two* points only) :

7. Fenestrae
8. Kidney
9. T-Helper cells.

D) Answer the following briefly :

10. What is cutaneous respiration ?
11. Name the ossicles in the middle ear.
12. What is a hermaphrodite ?

SECTION - C

III. Answer any *four* of the following :

4 × 5 = 20

13. Draw and label the L.S. of the human kidney.
 14. Draw a neat labelled sketch of the digestive system of cockroach.
 15. Describe the working of the heart of frog.
 16. Describe the mode of hearing in human.
 17. Write short notes about coagulation of blood.
 18. Explain the structure and functions of cerebrum.
 19. Give an account of water soluble vitamins.
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