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

Time Allowed : 2½ Hours]

[Maximum Marks : 100

SECTION - A

BOTANY

(Marks : 50)

I. Choose and write the correct answer :

5 × 1 = 5

- The triplet code for the amino acid phenyl alanine is
 - UUU
 - UCU
 - UAU
 - UGU
- An example for Hesperidium is
 - apple
 - orange
 - tomato
 - watermelon.
- Velamen tissue is the characteristic feature of
 - terrestrial plants
 - hydrophytes
 - xerophytes
 - epiphytes.
- The gas that is released due to incomplete combustion of fossil fuels is
 - carbon monoxide
 - sulphur dioxide
 - nitrogen dioxide
 - methane.
- The genetic material of a virus is
 - RNA
 - DNA
 - RNA or DNA
 - Plasmid.

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II. Fill in the blanks with suitable terms : 5 × 1 = 5

6. The infoldings of the cell membrane of bacteria are called
7. The term mutation was first used by
8. The pungent principle of ginger is
9. An example for a disease resistant variety of rice is
10. The chemical compound used in seeding clouds is

III. Answer any *five* of the following questions in *one* or *two* sentences each :

5 × 2 = 10

11. What are tropic movements ?
12. Draw a neat labelled diagram of an aggregate fruit.
13. What is ozone ? Mention its significance.
14. Mention the types of transpiration.
15. Define somatic hybridization.
16. Write the overall equation of photosynthesis.
17. Give any two traditional uses of *Catharanthus roseus*.
18. Why do we call drupe as stone fruits ?
19. Define Ascent of Sap.
20. What is Tikka disease ?

IV. Write short answers for any *four* of the following questions each in 100 words. Draw diagrams wherever necessary. Question No. **22** is compulsory.

4 × 5 = 20

21. Enumerate the applications of Genetic Engineering.
22. Draw a neat labelled diagram of Ultra-structure of chloroplast.
23. Write a note on Zoochory.
24. List the effects of acid rain.
25. Explain the special types of chromosomes.
26. Describe asexual reproduction in penicillium.
27. List the advantages of bio-fertilizers.

V. Write a detailed answer for any *one* of the following questions in 200 words. Draw diagrams wherever necessary.

1 × 10 = 10

28. Explain the mechanism of aerobic respiration.
29. Describe the types of simple fleshy fruits.

SECTION - B**ZOOLOGY**

(Marks : 50)

- I. Choose and write the correct answer : $5 \times 1 = 5$
1. The blood collected from the anterior and posterior parts of the body of a frog by the pre- and post-caval veins is emptied into the
 - a) auricle
 - b) ventricle
 - c) sinus venosus
 - d) conus arteriosus.
 2. The endocrine gland which is attached to the hypothalamus of the brain is called
 - a) adrenal
 - b) pituitary
 - c) islets of Langerhans
 - d) thyroid.
 3. A series of mitotic cell divisions that transform the fertilized egg into a multicellular body is called
 - a) oogenesis
 - b) cleavage
 - c) gastrulation
 - d) organogenesis.
 4. The potentiality of the embryonic stem cells to develop into different types of cells is called
 - a) totipotency
 - b) *in vitro* culture
 - c) pluripotency
 - d) differentiation.
 5. Communicable diseases are caused by
 - a) antigens
 - b) antibodies
 - c) pathogens
 - d) vaccines.
- II. Fill in the blanks with suitable terms : $5 \times 1 = 5$
6. Tonsils, thymus and spleen are the examples of
 7. Snow leopards, which are on the verge of extinction are found in the
 8. Identical twins are a type of natural
 9. Unauthorised and impropotionate chemicals which are injurious to health are called
 10. A good example for organic manure is

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III. Answer any *five* of the following questions in one or two sentences each :

5 × 2 = 10

11. Explain the term 'diphyodont'.
12. Write a note on the process of digestion that occurs in the buccal cavity of man.
13. Draw the position of the thyroid gland and label the parts.
14. Mention the stages of spermatogenesis.
15. What are microlecithal and macrolecithal eggs ? Give examples.
16. Name any four important sanctuaries located in Tamil Nadu.
17. What are the consequences of man's interference in the biosphere ?
18. What is hypertension ? Mention any two risk factors for hypertension.
19. What is active acquired immunity ?
20. What are the factors to be considered before culturing the fish ?

IV. Write short answers for any *four* of the following questions in 100 words each. Draw diagrams wherever necessary. Question No. **24** is a compulsory question.

4 × 5 = 20

21. Describe the pulmonary respiration in frog.
22. Explain the structure of the forebrain of frog. (Diagram not necessary)
23. Explain how exchange of gases takes place in human lungs.
24. Draw a neat, labelled diagram of a hen's egg.
25. Mention any 5 government and non-government organizations (NGOs) which are actively involved in Wildlife Conservation.
26. What is alcoholism ? What are the reasons for people to become addicted to alcohol ? Mention any two social problems caused due to alcoholism.
27. What is dialysis ? What are its main functions ?

V. Write detailed answer for any *one* of the following in 200 words. Draw diagrams wherever necessary.

1 × 10 = 10

28. Enumerate the functions of blood.
 29. What are the characteristic features of stem cells ? Mention some important applications of stem cell technology.
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