BIOLOGY

PAPER - 1

(THEORY)

(Botany and Zoology)

(Three hours)

(*Candidates are allowed additional 15 minutes for **only** reading the paper.*
They must NOT start writing during this time.)

Answer **all** *questions in Part I and* **six** *questions in Part II, choosing* **two** *questions*
from each of the three sections A, B and C.
All working including rough work, should be done on the same sheet as,
and adjacent to, the rest of the answer.
The intended marks for questions or parts of questions are given in brackets [ ].

PART I (20 Marks)

Answer **all** *questions.*

Question 1

(a) Give a brief answer for each of the following: **[4]**

(i) What will happen if transpiration exceeds the amount of water absorbed?

(ii) Why are the annual rings absent in plants growing along the coastal areas?

(iii) What is a *test cross*?

(iv) AIDS virus is called as *retrovirus*. Explain why?

(b) Each of the following questions/ statements has four suggested answers. Choose the correct option in each case: **[4]**

1. Which of the following shows heterozygous condition?

(i) Rr

(ii) RR

(iii) Rr

(iv) None of these

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2. The dark coloured dead wood present in the central region of old trees is called:
   (i) Spring wood
   (ii) Sap wood
   (iii) Duramen
   (iv) Alburnum
3. Leydig cells secrete:
   (i) Oestrogen
   (ii) Testosterone
   (iii) Progesterone
   (iv) Corticosterone
4. The Hardy Weinberg's equilibrium is associated with:
   (i) Ionic equilibrium
   (ii) Population genetics
   (iii) Osmotic balance
   (iv) None of these

(c) Give a scientific term for each of the following: **[4]**
   (i) Pollination by insects.
   (ii) The process of mRNA synthesis on a DNA template.
   (iii) A plant part excised from its original location and used for initiating a culture.
   (iv) Fixation of blastocyst to the endometrium.

(d) Expand the following abbreviations: **[4]**
   (i) YAC
   (ii) RUBISCO
   (iii) SCP
   (iv) DDT

(e) Name the scientists who have contributed to the following: **[4]**
   (i) Mutation
   (ii) Proposed Lac Operon
   (iii) Discovered the fossil of *Archaeopteryx.*
   (iv) Rh factor.

PART II (50 Marks)

SECTION A

*Answer any **two** questions.*

Question 2

(a) Explain *DDT resistance in mosquitoes* in natural selection. **[3]**

(b) Give *two* chromosomal similarities between man and apes. **[1]**

(c) Give *two* differences between Homologous and Analogous organs. **[1]**

Question 3

(a) Give an account of the Oparin Haldane Theory of Origin of life. **[3]**

(b) Give *one* significant difference between continuous and discontinuous distribution. **[1]**

(c) What is a *vestigial organ*? Give *one* example. **[1]**

Question 4

(a) What are the basic postulates of Darwinism? What is the objection against Darwinism? **[3]**

(b) Write *two* distinctive features of *Homoerectus.* **[1]**

(c) Define *Coacervates.* **[1]**

SECTION B

*Answer any **two** questions.*

Question 5

(a) Give *four* differences between C_3 and C_4 cycles. **[4]**

(b) Write short notes on the following: **[4]**

(i) Kranz anatomy

(ii) Double fertilization

(c) Give *four* contrivances for prevention of self pollination. **[2]**

Question 6

(a) Briefly describe the mechanism of development of a dicot embryo. **[4]**

(b) Give *two* significant differences between each of the following: **[4]**

(i) Epigynous and hypogynous ovary

(ii) Menarche and menopause

(c) Write a brief note on MTP. **[2]**

Question 7

(a) Draw a neat labelled diagram of the internal structure of the testes. **[4]**

(b) Differentiate between: **[4]**

(i) Monadelphous and diadelphous stamens

(ii) Fertilisation and Parturition

(c) Define: **[2]**

(i) Root pressure

(ii) Guttation

SECTION C

*Answer any **two** questions.*

Question 8

(a) Explain the process of DNA fingerprinting. Give two applications of the same. **[4]**

(b) Explain the role of bacteria in improving soil fertility. **[4]**

(c) Define: **[2]**

(i) Pisciculture

(ii) Patents

Question 9

(a) Define *succession*. State and explain the different kinds of succession. **[4]**

(b) Give the causes of population growth. **[4]**

(c) Give *one* significant difference between: **[2]**

(i) B cells and T cells

(ii) Antibodies and interferons

Question 10

(a) Explain incomplete linkage in Drosophila. **[4]**

(b) Give the causative agent and symptoms of the following diseases: **[4]**

(i) Typhoid (ii) Amoebiasis (iii) Ringworm

(iv) Swine flu

(c) Give *four* reasons for Mendel's success. **[2]**