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**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.)*

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*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 [ ].*

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**PART I (20 Marks)**

*Answer **all** questions.*

**Question 1**

- (a) Mention *one* significant difference between each of the following: [5]
- (i) *Open vascular bundle* and *closed vascular bundle*.
  - (ii) *Sertoli cells* and *spermatids*.
  - (iii) *Incomplete dominance* and *co-dominance*.
  - (iv) *Autosomes* and *sex chromosomes*.
  - (v) *Osmosis* and *diffusion*.
- (b) Give reasons for the following: [5]
- (i) Wooden doors and windows get jammed during monsoon season.
  - (ii) Some people can move their pinna.
  - (iii) Seedlings should be transplanted early in the morning or late in the evening.
  - (iv) The sex of the child depends upon the father.
  - (v) Mother's blood does not circulate through the foetus.

- (c) Each of the following questions / statements has four suggested answers. Rewrite the correct answer in each case: [5]
- (i) A custard apple fruit is classified as:
- (A) Simple and dry.
  - (B) Simple and fleshy.
  - (C) Aggregate.
  - (D) Multiple.
- (ii) Which one of the following would not be a limiting factor in photosynthesis?
- (A) Oxygen
  - (B) Carbon dioxide
  - (C) Chlorophyll
  - (D) Light
- (iii) The base sequence known as the anticodon is a part of a:
- (A) Ribosomal RNA.
  - (B) Transfer RNA
  - (C) Messenger RNA
  - (D) D.N.A.
- (iv) The function of a restriction enzyme in recombinant technology is to:
- (A) Separate fragments of DNA by their length and electrical charge.
  - (B) Cut DNA into many fragments.
  - (C) Link together newly formed fragments of DNA.
  - (D) Make millions of copies of a specific segment of DNA.
- (v) Red data book contains a list of:
- (A) Extinct plants.
  - (B) Endangered animals.
  - (C) Extinct plants and animals.
  - (D) Endangered plants and animals.
- (d) State the best known contribution of the following scientists: [3]
- (i) Oparin
  - (ii) Dixon and Jolly

- (iii) Lamarck
- (e) Expand the following : [2]
- (i) E C G
- (ii) RuBP

## PART II (50 Marks)

### SECTION A

*Answer any two questions.*

#### Question 2

- (a) Give an account of Darwin's finches. [3]
- (b) Write two similarities between chromosomes of man and apes. [2]

#### Question 3

- (a) Write three distinctive features of Australopithecus. [3]
- (b) What are analogous organs? Give one example each from plants and animals. [2]

#### Question 4

- (a) Enumerate the differences between natural and artificial selection. [3]
- (b) Define: [2]
- (i) Mutation
- (ii) Gene pool.

### SECTION B

*Answer any two questions.*

#### Question 5

- (a) Explain the changes that occur in the ovule and ovary when they mature after fertilization. [4]
- (b) Write three anatomical differences between monocotyledonous and dicotyledonous leaves. [3]
- (c) Give three reasons for medical termination of pregnancy. [3]

**Question 6**

- (a) Draw a neat fully labelled diagram of a T.S. of human testis. [4]  
(b) Explain the significance of transpiration in the plants. [3]  
(c) State the structure and function of different types of simple permanent tissues in plants. [3]

**Question 7**

- (a) Give an account of the different types of soil water. [4]  
(b) Give a schematic representation of cyclic photophosphorylation. [3]  
(c) Mention *three* advantages of cross-pollination in plants. [3]

**SECTION C**

*Answer any two questions.*

**Question 8**

- (a) Write the important applications of tissue culture. [4]  
(b) Mention the chromosomal abnormalities associated with the following conditions in humans: [3]  
(i) Turner's syndrome.  
(ii) Down's syndrome.  
(iii) Klinefelter's syndrome.  
(c) What is green manure? Why is it preferred over chemical fertilizers? [3]

**Question 9**

- (a) Give an account of the importance of biodiversity in our lives. [4]  
(b) Mention three effects of drug addiction. [3]  
(c) What are the main causes of increase in population in our country? [3]

**Question 10**

- (a) What steps can be taken to manage a poultry farm properly? [4]  
(b) What is mono-hybrid cross? Explain with an example. [3]  
(c) State one application of each of the following: [3]  
(i) C T Scan  
(ii) Human genome project  
(iii) Bio-pesticides.

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