

**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.
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- (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.