

BIOLOGY

PAPER – 1

(THEORY)

(Maximum Marks: 70)

(Time allowed: Three hours)

(Candidates are allowed additional 15 minutes for only reading the paper.

They must NOT start writing during this time)

*This paper comprises **TWO PARTS** – Part I and Part II.*

*Answer **all** questions.*

*Part I contains **one** question of 20 marks having four subparts.*

Part II consists of Sections A, B and C.

*Section A contains **seven** questions of **two** marks each*

*Section B contains **seven** questions of **three** marks each, and*

*Section C contains **three** questions of **five** marks each.*

Internal choices have been provided in two questions in Section A, two questions in Section B and in all three questions of Section C.

PART I (20 Marks)

*Answer **all** questions.*

Question 1

(a) Answer the following questions briefly and to the point: [8×1]

- (i) Give a significant point of difference between *Oestrous* and *Menstrual cycle*.
- (ii) Give the biological name of the organism causing typhoid.
- (iii) If the haploid number of chromosomes in a plant species is 20, how many chromosomes will be present in the cells of the shoot tip?
- (iv) Name a plant which flowers every twelve years.
- (v) Name the diagnostic test for AIDS.
- (vi) Name the terminal stage of ageing in the life cycle of plants.
- (vii) Which organisms constitute the last trophic level?
- (viii) What is *emasculatation*?

- (b) Each of the following questions has four choices. Choose the best option in each case: **[4×1]**
- (i) Length of the DNA with 23 base pairs is:
- (1) 78.4 Å
 - (2) 78.2 Å
 - (3) 78 Å
 - (4) 74.8 Å
- (ii) Opium is obtained from:
- (1) *Papaver somniferum*
 - (2) *Cannabis sativa*
 - (3) *Erythroxylum coca*
 - (4) *Datura metel*
- (iii) According to Abiogenesis, life originated from:
- (1) Non-living matter
 - (2) Pre-existing life
 - (3) Oxygen
 - (4) Extra-terrestrial matter
- (iv) The largest unit in which gene flow is possible is:
- (1) Organism
 - (2) Population
 - (3) Species
 - (4) Genes
- (c) Give *one* significant contribution of each of the following scientists: **[4×1]**
- (i) P. Maheshwari
 - (ii) E. Wilson
 - (iii) M. S. Swaminathan
 - (iv) H. Boyer
- (d) Define the following: **[2×1]**
- (i) Biopatent
 - (ii) Parthenocarpy
- (e) Give a reason for each of the following: **[2×1]**
- (i) Pollen grains of wind pollinated flowers are produced in large quantities.
 - (ii) Equilibrium of a forest ecosystem can be disturbed by uncontrolled hunting of big predators.

PART II
SECTION A (14 Marks)
(Answer *all* questions)

Question 2 [2]

- (a) A woman with blood group O married a man with blood group AB. Show the possible blood groups of the progeny. List the alleles involved in this inheritance.

OR

- (b) If the mother is a carrier of colour blindness and the father is normal, show the possible genotype and phenotype of the offspring of the next generation, with the help of a punnet square.

Question 3 [2]

Define *life span*. Give the life span of an elephant.

Question 4 [2]

Give *two* characteristic features of each of the following:

- (a) *Ramapithecus*
(b) Cro-Magnon man

Question 5 [2]

- (a) List *any four* effects of global warming.

OR

- (b) State *any four* measures to control noise pollution.

Question 6 [2]

Define BOD. What is its significance in an aquatic ecosystem?

Question 7 [2]

Give *one* significant difference between each of the following pairs:

- (a) *Humoral immunity* and *cell mediated immunity*.
(b) *Benign tumour* and *malignant tumour*

Question 8 [2]

Give *four* causes of infertility in males.

SECTION B (21 Marks)

(Answer *all* questions)

Question 9

[3]

(a) Draw a labelled diagram of L.S. of human testis.

OR

(b) Draw a labelled diagram of the mature embryo sac of angiosperms.

Question 10

[3]

Explain *gene therapy*, with reference to treatment of SCID.

Question 11

[3]

Study the table given below. Do not copy the table, but write the answers in the correct order.

Scientific Name	Commercial Product	Use
(a) _____	Streptokinase	(b) _____
<i>Monascus purpureus</i>	(c) _____	(d) _____
(e) _____	Lactic acid	(f) _____

Question 12

[3]

Explain *industrial melanism*.

Question 13

[3]

Describe the tissue culture technique in plants.

Question 14

[3]

Define the following:

- (a) Spermiogenesis
- (b) Reproductive health
- (c) Amenorrhea

Question 15

[3]

(a) Define the following:

- (i) Hotspots
- (ii) Ramsar Sites
- (iii) Red data book

OR

- (b) Define the following:
- (i) Biodiversity
 - (ii) Eutrophication
 - (iii) PAR

SECTION C (15 Marks)

(Answer all questions)

Question 16

[5]

- (a) Describe post transcriptional processing of RNA in eukaryotes.

OR

- (b) Describe Avery, McLeod and McCarty's experiment. State its significance.

Question 17

[5]

- (a) Write a short note on Chipko Movement.

OR

- (b) Write a short note on Joint forest management.

Question 18

[5]

- (a) What does PCR stand for? Describe the different steps of PCR.

OR

- (b) Give an account of the Blue-White Method of selection of recombinants.