

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.)*

Class: XII

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

Answer all questions.

Part I consists of one question of 20 marks having five subparts.

Part II consists of Sections A, B and C.

Section A consists of seven questions of two marks each.

Section B consists of seven questions of three marks each, and

Section C consists of 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.

The intended marks for questions or parts of questions are given in brackets [].

PART I (20 Marks)

Answer all questions.

Question 1

(a) Answer the following questions briefly and to the point:

[8×1]

(i) What is Founder effect?

(ii) Name the glycoproteins that are released by the infected cells when attacked by a virus

(iii) Name an important enzyme that dissolves the ground substances binding follicle cells of ovum

(iv) Define coacervates

(v) Name the organisms which reproduce asexually by means of (i) Conidia (ii) Zoospores

(vi) State the chromosome number in the endosperm of onion

(vii) Give the use of test cross

(viii) A dithecous anther has 100 microspore mother cells per microsporangium. How many male gametophyte this anther can produce?

(b) Each of the following sub-parts, (i) to (iv) has four choices. Choose the best option in each case: [4x1]

(i) Increase in BOD in water leads to

- (1) increase in the dissolved oxygen concentration
- (2) decrease in the dissolved oxygen concentration
- (3) maintenance of dissolved oxygen concentration at the same level
- (4) no effect on dissolved oxygen concentration

(ii) In commensalism, the relationship of species A and species B is such that

- (1) A and B both are benefitted
- (2) A is benefitted and B is harmed
- (3) A is benefitted and B is not affected
- (4) A and B both are harmed

(iii) A single strand of nucleic acid tagged with a radioactive molecule is called

- (1) Vector
- (2) Selectable marker
- (3) Probe
- (4) Plasmid

(iv) In a dihybrid cross, when a heterozygous pea plant with green inflated pod are self crossed, the offspring plant with green constricted pod are represented by the genotype:

- (1) Ggli, Ggll, GGli
- (2) Ggii, GGii, ggii
- (3) Ggii, GGii
- (4) ggli, ggll

(c) Give one significant contribution of each of the following scientists:

- (i) E. Wilson
- (ii) H. Boyer
- (iii) S. Cohen

(iv) Sutton and Boveri

[4x1/2]

(d) Expand the following

(i) IRR

[4×1/2]

(ii) CPCB

(iii) UTR

(iv) VNTRs

(e) Define the following:

[2×1]

(i) Niche

(ii) Multiple alleles

(f) Give a reason for each of the following:

[2×1]

(i) Bottled fruit juices are clearer as compared to those made at home

(ii) Down syndrome may occur in both sexes.

PART II

SECTION A (14 Marks)

(Answer all questions)

Question 2

[2]

Give any four reasons for Mendel's success

Question 3

[2]

What are the contrivances to prevent self pollination?

Question 4

[2]

(a) What is the importance of species diversity to the ecosystem?

OR

(b) Explain latitudinal gradient in the distribution of species.

Question 5

[2]

Give two significant differences between benign and malignant tumours

Question 6

(a) Population is increasing in an alarming rate in India. How does the government act to control population explosion?

OR

(b) What measures should be adopted to prevent STDs?

Question 7

Write two features of Australopithecus.

Question 8

Write the adaptations shown by animals to resist and survive in extreme colds.

SECTION B (21 Marks)

(Answer all questions)

Question 9

(a) Explain the principle of inheritance involved in flower colour of snapdragon with the help of Punnett square

OR

(b) Explain the steps involved in downstream processing

Question 10

Draw a well labelled diagram of L.S of anatropous ovule

Question 11

Define species area relationship. What is the significance of slope of regression? Show with the help of a graph.

Question 12

Describe the development of an anther till the formation of pollen grains.

Question 13

What measures do you suggest to control radioactive pollution?

OR

Write a note on scrubber.

Question 14

What are the salient features of Darwinism?

[3]

Question 15

Explain sex linked inheritance with reference to *Drosophila* wings.

[3]

SECTION C (15 Marks)

(Answer all questions)

Question 16

[5]

- (a) (i) Explain gene therapy with reference to SCID
(ii) Give any four causes of loss of biodiversity.

OR

- (b) (i) Give an account of primary and secondary sewage treatment
(ii) Briefly explain the steps in decomposition.

Question 17

[5]

- (a) (i) Draw pyramids of energy, biomass, and number of an aquatic ecosystem
(ii) Construct a pyramid of energy showing four trophic levels, when 1000000 J of sunlight is available
(iii) Name two insect resistant varieties of okra.

OR

- (b) (i) Describe the various phases and hormone action of the menstrual cycle.
(ii) What is artificial insemination? Mention two ways in which it is useful in breeding of dairy animals?

Question 18

[5]

- (a) (i) What is semi conservative replication? How did Meselson and Stahl prove it experimentally?
(ii) Write any two features of genetic code.

OR

- (b) (i) Describe the process of transcription in prokaryotes.
(ii) State any two goals of the Human Genome Project.