

BIOLOGY

**PAPER-1
(THEORY)**

CLASS XII

**(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 five subparts.

Part II consists of Section 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

PART I (20 Marks)

Answer all questions

Questions 1

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

[8x1]

i] What are cleistogamous flowers?

ii] What is a DNA probe?

iii] Name the bacterium which is the source of Ti plasmid. What does Ti stand for?

iv] Mention the two main pre- fertilisation events.

v] Write a significant difference between seasonal and continuous breeders.

vi] Write two significances of linkage

vii]. Find the number of ova and sperms produced by the following

a) 100 secondary oocyte

b) 100 secondary spermatocyte

viii]. Patient suffering from sickle-cell anaemia may have higher risk of heart attack.

Evaluate the statement.

(b) Each of the following questions has four choices. Choose the best option in each case:

[4x1]

1) Fertilizins are emitted by

- a) Immature Egg
- b) Mature Egg
- c) Sperms
- d) Polar bodies

2) Cri-du-chat (cry of the cat) syndrome occurs in human babies due to

- a) Deletion
- b) Duplication
- c) Inversion
- d) Translocation

3) A pure tall and a pure dwarf plant was crossed to produce offsprings.

If the offsprings were self pollinated, find out the ratio between true breeding tall to true breeding dwarf.

- 1] 1:1
- 2] 3:1
- 3] 2:1
- 4] 1:2:1

4) Which of the following is not a means of vegetative propagation:

- 1] offset
- 2] bulbil
- 3] gemmule
- 4] sucker

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

[4x1/2]

- i] F. Griffith
- ii] Benzer
- iii] Alec Jeffrey
- iv] Ernst Haeckel

(ii) Expand the following

- i. IMR
- ii. EST
- iii. HnRNA
- iv. VNTRs

[4x1/2]

(d) Define the following

- i) Heterosis
- ii) Reproductive health

[2x1]

(e) Give a reason for each of the following

- i) Spores of *Bacillus thuringiensis* is used as insecticides.
- ii) *Drosophila* is known as the pea of animal kingdom.

[2x1]

PART II
SECTION A (14 Marks)
Answer all questions

Question 2

What is double fertilisation? Give its significance.

[2]

Question 3

a) Mention the uses of pedigree analysis.

[2]

OR

b) Give the reasons for Mendel's success.

Question 4

Give the economic importance of pollen grains.

[2]

Question 5

1. STDs present a major health concern in both industrialized and developing countries

[2]

i) What do you mean by STDs? Name two STDs.

ii) Suggest two preventive measures.

Question 6

[2]

a) Explain how an XXY individual can arise in human

OR

b) What is genic balance theory?

Question 7

[2]

What type of food requirement is necessary for milk producing cattle?

Question 8

[2]

Why are prostate gland and fallopian tubes said to be secondary sex organs?.

SECTION B (21 Marks)

Answer *all* questions

Question 9

[3]

a) Work out a monohybrid cross upto F₂ generation between two pea plants and two Antirrhinum plants both having contrasting traits with respect to colour of flower. Comment on the pattern of inheritance in the crosses carried above.

OR

b) Discuss pleiotropy with reference to starch synthesis in pea seeds.

Question 10

[3]

Draw a labelled diagram showing pBR322. Explain why it is considered a good cloning vector.

Question 11

[3]

Give an account of development of female gametophyte.

Question 12

[3]

What are bioreactors? Explain downstream processing

Question 13

[3]

Explain oogenesis in detail

Question 14

[3]

How is the sex determined in honey bees?

Question 15

a) Explain MOET

[3]

OR

b) Which are the common diseases of dairy animals? What preventive measures can be taken to control them?

SECTION C (15 Marks)
Answer *all* questions

Question 16

a) How has biotechnology been useful in controlling nematode infection in plants? Explain the technique involved in this.

[5]

OR

b) i] Explain selection of recombinants by insertional inactivation of an enzyme.
ii] Discuss the events between pollination and fertilisation in plants.

Question 17

a) i] Explain how insulin can be produced using rDNA technology.

[5]

ii] Explain how ABO system of blood grouping is an example of multiple alleles and co dominance.

OR

b) Explain sex linked inheritance with reference to *Drosophila* eyes.

Question 18

[5]

(a) Describe the physico-chemical events that take place during fertilization in humans.

OR

(b) Explain the various assisted reproductive technologies.