(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2024 ONLY)

24PBY207

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY-2025

COURSE NAME: M.Sc.-BOTANY **MAXIMUM MARKS: 75**

SEMESTER: II **TIME : 3 HOURS**

CYTOLOGY, GENETICS AND PLANT BREEDING

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. The membrane around the vacuole is known as _____

   a. Tonoplast b. Elaioplast c. Cytoplast d. Amyloplast

2. The crossing of F1 to either of the parents is known as_____

   a. Test cross b. Back cross c. Di hybrid cross d. F1 cross

3. Mutations that cause loss of a chromosome would be termed_____

   a. Structural mutations. b. Chromosome mutations.

   c. Genome mutations. d. Single-gene mutations.

4. Picking up plants with superior phenotype for further propagation is called_____

   a. pure line selection b. mass selection c. hybrid vigour d. introduction

5. The process of crossing organisms from different genera to create hybrids with new traits is called_____

   a. Intervarietal b. interspecific c. intergeneric d. Intraspecific

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Mention any two functions of plasma membrane
7. Define epistasis.
8. What is deletion and duplication?
9. What is pure line selection?
10. Define heterosis.

SECTION – B (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Analyze the ultra-structure and functions of mitochondria.?

(OR)

b) Illustrate the structure and functions of endoplasmic reticulum..

12. a) Write a note on the Chromosomal theory of linkage. Add a note on the factors affecting it.

(OR)

b) Apply the protocol to construct genetic map.

(CONTD……2)

13. a) List out the properties of genetic code.

(OR)

b) Add a note on evidences of DNA as genetic material.

14. a) List out the objectives of Plant Breeding.

(OR)

b) What are the merits and demerits of clonal selection?

15. a) What are the main features of heterosis?

(OR)

b) What is Marker-Assisted Breeding? Enlist any three different types of molecular markers used in MAS.

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) Describe structure of DNA with a neat sketch.

(OR)

b) Explain the structure of a eukaryotic cell with suitable diagram.

17. a) Discuss on the sex linked inheritance with an example.

(OR)

b) Explain the Dominant and recessive epistasis with example.

18. a) Explain mutation and its type in detail?

(OR)

b) Explain the prokaryotic gene regulatory mechanism in detail.

19. a) Explain the process of pureline selection and its merits and demerits.

(OR)

b) Discuss the significance of polyploidy in plant breeding.

20. a) Explain the procedure followed in a hybridization method. Mention the advantages of interspecific and intergeneric hybridization..

(OR)

b) Discuss the role of IBPGR and NBPGR in gemplasm conservation of Rice and Sugarcane.

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