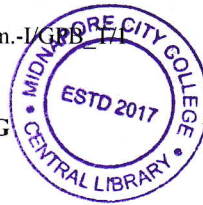


M.Sc. Semester-I Examination, 2023
(AGRICULTURE) IN GENETICS AND PLANT BREEDING
 PAPER: GPB 505
(PRINCIPLES OF CYTOGENETICS)



Full Marks: 50

Time: 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP-A**1. Answer any FIVE:****2 X 5 = 10**

- a) Define bridge species.
- b) Define checkpoints in cell cycle.
- c) What is in-situ hybridisation?
- d) Define apomixis.
- e) What is NOR.
- f) Define euploidy.
- g) Mention the importance of amphidiploids.
- h) What is alien addition and substitution line?

GROUP-B**2. Answer any FOUR:****5 X 4 = 20**

- a) Mention the importance of karyotyping. Briefly explain about Karyogram and Ideogram. 1+4
- b) Discuss different types of duplication in chromosomal aberration. Enumerate the origin of duplication. 1+4
- c) What is nullisomy? How it is originated? 2+3
- d) Explain briefly the segmental allopolyploidy.
- e) Discuss the factors affecting crossing over and chiasma formation.
- f) Discuss the different types of haploids.
- g) Give a short note on lampbrush Chromosome.

GROUP-C**3. Answer any TWO:****10 X 2 = 20**

- a) What is structural chromosomal aberration? Discuss briefly different types of structural chromosomal aberrations with its evolutionary significance. 1+(5+4)
- b) Mention the different check points of cell cycle. Give a short note on 'Cyclin-CDK' interaction. Mention the importance of G₀ phase in cell cycle. Define apoptosis. 2+4+2+2
- c) Describe the different types of chromosome banding techniques. How in-situ hybridization could be utilized in modern agriculture? 6+4

(P.T.O.)



(2)

d) What are the characteristics of autopolyploid species? How the aneuploids are produced and what are their uses? Explain aneuploid analysis in wheat.

2+2+2+4
