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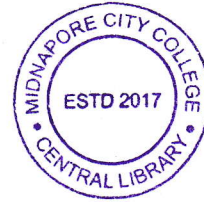
M.Sc. Semester-I Examination, 2022
(AGRICULTURE) IN GENETICS AND PLANT BREEDING
PAPER: GPB 501
(PRINCIPLES OF GENETICS)

Full Marks: 50

Time: 2 Hours

GROUP-A**1. Answer any FIVE questions from the following:****2X5 = 10**

- a) Define gene.
- b) Explain Germplasm theory.
- c) What are the types of bonds found in DNA molecules?
- d) Define linkage.
- e) What is Okazaki Fragments?
- f) What is jumping genes?
- g) Distinguish between euchromatin and heterochromatin.
- h) Define central dogma.

**GROUP-B****2. Answer any FOUR questions from the following:****5X4 = 20**

- a) Describe briefly ultrastructure, functions of mitochondria.
- b) Differentiate between mitosis and meiosis. Explain briefly the significance of meiosis. 2+3
- c) "The DNA replication is semi-conservative". Give evidences in support of this statement.
- d) Explain the main features of B form of DNA.
- e) What is polygenic inheritance? Explain multifactor hypothesis. 1+4
- f) What is chromosome? Briefly explain the nucleosome solenoid model of chromosome. 1+4
- g) What is chromosomal aberration? How translocation differs from crossing over? 1+4
- h) Define trisomic. Discuss various types of trisomics and their origin in crop plants. 1+4

(P.T.O.)

(2)

GROUP-C**3. Answer any TWO questions from the following:****10X2 = 20**

- a) Define genetic material. Give evidence for DNA as genetic material. 1+9
- b) Explain the mechanism of DNA replication. Describe the role of different enzymes in DNA replication of prokaryotes and list the different enzymes responsible for replication of eukaryotes. 5+4+1
- c) What is extranuclear inheritance? Explain maternal effect with suitable example. 2+8
- d) What is genetic code? Briefly explain the properties of genetic code. 2+8
