

2122

B.E. (Biotechnology) Third Semester  
BIO-314: Cell Biology and Genetics

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1. a. Give an example of any one membrane protein.
- b. What is a microfilament?
- c. What is the role of collagen in the extracellular matrix (ECM)?
- d. What do you understand by telomere?
- e. What is repetitive DNA?
- f. What is the role of histone molecules in DNA.
- ~~g.~~ What is a homologous gene?
- h. Give an example of codominance.
- i. What is mitochondrial inheritance?
- j. Define ploidy.

(1 each)

SECTION-A

2. a. Explain briefly the functions of membrane. (3)
- b. Give the structure and function of microfilaments in eukaryotic cell. (3)
- c. Explain the structure and function of fibronectin present in extracellular matrix (ECM). (4)
3. a. Explain the chemical composition of DNA. (3)
- b. Explain the regulation of cell cycle. (3)
- c. Describe the different stages that occur during Meiosis-II. (4)
4. a. What are lampbrush chromosomes? Explain briefly. (5)
- b. Write a short note on hetero chromatin. (5)

SECTION-B

5. a. Explain the chromosome theory of heredity. (3)
- b. Illustrate the phenomena phenocopy. (3)
- c. Write a short note on any one of the eukaryotic transposon? (4)
6. a. Write a short note on inheritance of chloroplast genes. (5)
- b. Explain the term incomplete dominance by taking some suitable example. (5)
7. a. Explain chromosome banding. (5)
- b. Write a short note on C value paradox. (5)

x-x-x