

1079

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 Unit.*

x-x-x

- I. Write briefly:-
- What is MTOC?
  - Which cytoskeletal filament positions membrane bound organelles inside cells?
  - Give example of non-Mendelian inheritance.
  - What is the significance of chromosome banding?
  - Color blindness is a ———linked inheritance pattern.
  - Ban" bodies are generated due to ———.
  - Turner syndrome is caused by ——— in human beings.
  - Recombination frequency is ———in absence of linkage.
  - What are important amino acids in collagen protein?
  - Differentiate between facilitated diffusion and active transport. (10x1)

### UNIT – I

- II.
  - Which factors are important for membrane fluidity?
  - How lipid composition is different in different cell membrane?
  - ATP driven pumps have important role in transport processes. Justify the statement. (2,5,3)
- III.
  - What are different stages of cell division? Discuss with proper diagram.
  - Write briefly on:-
    - Nucleosome
    - Cyclin & CDK (4,3,3)
- IV.
  - Explain the importance of cytoskeletal filaments in cell.
  - Explain structural dynamicity in cytoskeletal filaments.
  - Cytoskeletal inhibitor drugs are used as anti cancer drugs. Explain with example. (4,4,2)

P.T.O.

(2)

UNIT - II

- V. Give experimental evidences in detail linking the inheritance of genes to chromosomes. (10)
- VI. a) Experimentally prove maternal inheritance theory.  
b) Explain briefly:-  
i) Linkage and recombination frequency  
ii) Coefficient of coincidence and interference (5,5)
- VII. a) What is epistasis? What are the characteristics features of transposable elements? (5)  
b) Write short notes on:-  
i) Incomplete dominance and codominance  
ii) Penetrance and expressivity (2x2½)

x-x-x