

3rd.5

Exam.Code:0907

Sub. Code: 6694

1128

**B.E. (Bio-Technology) 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:

- a) Which cytoskeletal filament is important for producing contractile ring during cytokinesis?
- b) What is the difference between a glycoprotein and a proteoglycan?
- c) Give example of an ATP driven pump present in cell membrane.
- d) What is the difference between a centrosome and a centromere?
- e) Hemophilia is a \_\_\_\_\_ linked inheritance pattern.
- f) What is the difference between homozygous and hemizygous?
- g) Down syndrome is caused by \_\_\_\_\_ in human beings.
- h) In absence of linkage recombination frequency is \_\_\_\_\_.
- i) What is chiasmata and in which stage of cell division it is visible?
- j) What is centiMorgan? (10x1)

**UNIT - I**

- II. a) What are main lipid constituents present in cell membrane? Discuss with proper structures and diagrams.
- b) What is active transport? How it is important for transport of molecules across cell membrane?
- c) Cell membrane has versatile function. Justify your answer with proper diagram. (4,3,3)

- III. a) How microtubules are assembled and what is dynamic instability of microtubules?
- b) Write briefly on:-
- i) Elastin
  - ii) Glycosamioglycans. (4,3,3)

P.T.O.

- IV. a) Discuss diagrammatically solenoid model of chromatin fiber.  
b) What are polytene and lampbrush chromosomes?  
c) What are satellite DNAs? (4,4,2)
- V. Give experimental evidences in detail linking the inheritance of genes to chromosomes. (10)
- VI. a) What is the significance of transposition in biological system?  
b) Explain briefly:-  
i) C value paradox  
ii) Cot curve (5,5)
- VII. a) Organelle heredity is characterized by unequal parental contribution. Justify the statement with experimental evidences.  
b) Write short notes on:-  
i) Incomplete dominance and codominance  
ii) Penetrance and expressivity (5,5)

x-x-x