

Exam.Code:0907  
Sub. Code: 6694

1078

**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 are plasmalogen? Where it is present?
  - What is the difference between facilitated diffusion and active transport?
  - Which filament helps in anaphasic movements?
  - What is Punnett square?
  - What are the components of extracellular matrix?
  - What were the advantages of Mendel for choosing pea plant as experimental model?
  - How recombination frequency is related to linkage?
  - Color blindness is an example of \_\_\_\_\_.
  - What are Barr bodies?
  - Give example of diseases caused by chromosomal deletions or duplications. (10x1)

**UNIT - I**

- II. a) Briefly explain about the diversity of different membrane lipids.  
b) What are different ATP driven pumps present in the membrane?  
c) How carrier proteins are different from channel formers?  
d) Explain various membrane functions. (4,1,2,3)
- III. a) Explain structural similarities and dissimilarities of different cytoskeletal filaments  
b) Explain structural uniqueness and functional importance of collagen and elastin protein present in extracellular matrix.  
c) What are GAGs? (5,3,2)
- IV. a) How mitosis is different from meiosis?  
b) Differentiate between centrosome and centromere.  
c) Explain polytene and lampbrush chromosome. (3,3,4)

P.T.O.

(2)

**UNIT – II**

- V. a) What is genomic imprinting?  
b) Explain the theory of penetrance and expressivity.  
c) Differentiate between homozygous and hemizygous.  
d) Explain epistasis with example of comb shape in chicken. (4x2½)
- VI. a) How can we track X-linked inheritance pattern?  
b) Which genes are pseudoautosomal genes?  
c) What are various ways of sex determination in different animals? (5,1,4)
- VII. a) Give experimental evidence of maternal inheritance theory.  
b) Write short notes on:-  
i) Dosage compensation of X-linked genes.  
ii) Karyotyping (5,2x2½)

x-x-x