

Exam. Code : 210001

Subject Code : 5373

M.Sc. (Botany) Ist Semester
GENETICS & EVOLUTION
Paper—BOT-C-517

Time Allowed—3 Hours] [Maximum Marks—50

SECTION—A

Note :— Attempt ALL parts. Answer to any part should not exceed 4 lines. $8 \times 1 = 8$

1. (a) What are transposons ?
- (b) Split genes.
- (c) Crossing-over.
- (d) Define allele. Explain cis- trans complementation.
- (e) Replication apparatus in prokaryotes.
- (f) T4 II locus
- (g) Define autopolyploidy.
- (h) Mutagens.

SECTION—B

Note :— Attempt any SEVEN parts. Answer to any part should not exceed 2 pages. $7 \times 3 = 21$

2. Define mutation. Explain briefly about DNA repair mechanism.

3. Write a note on genetic disorders.
4. Hardy-Weinberg law.
5. Chromosome and chromatid separation.
6. Discuss the significance of transposable elements.
7. Explain about Lac Operon model.
8. What do you understand by somatic hybridization ? Discuss its significance.
9. Give the concept of gene through classical and molecular evidences.
10. Polytene and Lamp brush chromosomes.
11. Write an account on cell cycle in eukaryotes.

SECTION—C

Note :— Attempt any **THREE** parts. Answer to any part should not exceed 4 pages. $3 \times 7 = 21$

12. Write an illustrated account on the geological time scale and origin of major groups of plants in different eras.
13. Explain the following :
 - (a) Role of polyploidy in evolution
 - (b) Watson and Crick double helix model of DNA.
14. Define replication. Discuss in detail about the various steps and enzymes involved in DNA replication among eukaryotes.

15. Enlist the theories of organic evolution. Discuss the Darwin's theory of Natural Selection. Also briefly explain Neo-Darwinism.
16. Write about the following :
 - (a) Overlapping genes
 - (b) Pseudogenes
 - (c) What are oncogenes ? Discuss about the biochemical and molecular changes that took place in cancerous cell.