

Exam. Code : 210001

Subject Code : 4849

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 do you understand by IS elements ?
(b) Oncogenes.
(c) Tetrad analysis.
(d) Somatic hybridization.
(e) Split genes.
(f) Chemical mutagens.
(g) Define diploidization.
(h) Attenuation.

SECTION—B

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

2. Prove giving evidences from bacteria/viruses that DNA is a genetic material.

3. Discuss in brief about the genetic disorders in human beings.
4. Briefly explain the molecular mechanism of crossing-over.
5. Write a note on DNA repair mechanism.
6. Discuss about the salient features of Darwin's theory of organic evolution.
7. Describe the Watson-Crick Model of double helix DNA.
8. What are transposable elements ? Discuss with reference to *Drosophilla* transposons.
9. Write a note about the biochemical and molecular changes that took place in a cancerous cell.
10. Explain the structure of Lamp brush chromosome.
11. What do you understand by rolling circle replication of DNA in $\phi \times 174$ virus ?

SECTION—C

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

12. Write an illustrated account about the modern concept of gene. Discuss briefly about the classical concepts also.
13. Explain the following :
 - (a) Role of polyploidy in speciation
 - (b) Geological timescale depicting different eras, periods and epochs.

14. Discuss in detail about the DNA recombination mechanism among prokaryotes and eukaryotes.
15. Define point mutations. Discuss in brief the molecular mechanism of mutation.
16. Write about the following :
 - (a) Operon model
 - (b) Pseudogenes
 - (c) Use of study of Polytene chromosomes in understanding concept of structure of chromosomes and in chromosome mapping.