

SECOND YEAR TDC SCIENCE, 2018-19

ZOOLOGY

PAPER-II : GENETICS AND BIOTECHNOLOGY

Duration : 3 hours

M.M.: 50

UNIT-I

- 1 Light and electron microscope structure of chromosome (from nucleosome to organization of chromatids. Morphological classification of chromosome).
- 2 Extra-chromosomal inheritance.
- 3 Chromosomal theory of sex determination, hormonal theory of sex determination, X and Y chromosomes, gynandromorphs.

UNIT-II

- 4 Brief history of genetics, mendelian laws and their significance.
- 5 Linkage and crossing over : kinds of linkage – complete and incomplete linkage, linkage groups, significance of linkage.
- 6 Genetic interaction: Complimentary gene, duplicate genes, supplementary gene and epistasis.
- 7 Multiple-gene inheritance, ABO blood group, Rh factor.

UNIT-III

- 8 Concept of gene, mucon, recon, cistron, gene expression -lac-operon and trip-operon.
- 9 Genetic engineering: Restriction enzymes, Palindrome sequences, cloning vehicle, C-DNA.
- 10 Applications of genetic engineering. Hybridoma technology.

UNIT-IV

- 11 Mutations: Definition, gene mutation, chromosomal mutation, chromosomal aberrations, somatic and germ mutations, numerical alterations of chromosomes, molecular basis of mutation, mutagenic agents
- 12 Polytene and lamp-brush chromosomes.
- 13 Eugenics and genetic counselling.

UNIT-V

- 14 Medicines and biotechnology: Microbes in medicine, antibiotics, vaccines, enzymes and antigens.
- 15 Food and dairy microbiology: Fermented food production, dairy products, food preservation, microbial spoilage, alcoholic beverages, and vinegar.
- 16 Role of Biotechnology in health care.