

(i) Printed Pages : 3 Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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B.Sc. (Hons.) Biotechnology 3rd Semester
(2123)

GENETICS

Paper : BIOT-302-T

Time Allowed : Three Hours]

[Maximum Marks : 67

Note :—Attempt FIVE questions in all by selecting ONE question from each Unit. Question No. 1 is compulsory.

1. Compulsory Question :—

(i) What is co-dominance ?

(ii) Mention any two hereditary defects and their cause.

(iii) Define recombination frequency.

(iv) What are translocations ? Give one example.

(v) What is pedigree analysis ?

3×5

UNIT—I

2. (a) How does sex determination take place in Drosophila and animals ? 7

(b) What do you understand by extra chromosomal inheritance ? How does mitochondria and chloroplast play role in maternal inheritance ? Give examples.

6

3. (a) What is gene interaction ? Mention the various types of gene interactions and their outcome. 7
- (b) Discuss the Mendel's Law of segregation with examples showing the segregation in F1 and F2 generation. 6

UNIT—II

4. (a) Mention the molecular mechanism of crossing over. 7
- (b) Discuss how linkage distance is determined by two point crosses. 6
5. (a) Discuss how somatic cell hybridization is used for linkage studies. 7
- (b) Genes a and b are linked with 20 percent crossing over. An $a + b + / a + b +$ individual was mated with ab/ab individual. (a) Represent the cross on the chromosomes, illustrate the gametes produced by each parent and illustrate the F1. (b) What gametes can F1 produce and in what proportion ? Is this an example of coupling or repulsion ? 6

UNIT—III

6. (a) Discuss the types of mutations caused by various physical and chemical mutagens. 8
- (b) Discuss the correlation between mutagenicity and carcinogenicity. 5
7. (a) How is numerical aberrations different from base pair mutations ? Describe any four numerical aberrations and abnormalities caused by them in humans. 7
- (b) Discuss the various mechanisms of DNA repair system. 6

UNIT—IV

8. (a) Mention the process of transduction in microbes. How is it different from transformation ? 7
- (b) Explain the gene and genotype frequencies and how are they calculated in a population ? 6
9. (a) How can you analyse mutations in biochemical pathway ? 7
- (b) What are auxotrophs ? Mention the methods of isolating auxotrophs. 6