PG Odd Semester (CBCS) Exam., December—2016

BIOTECHNOLOGY

(1st Semester)

Course No. : BTYCC–103

(Genetics and Quantitative Methods)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Define sex-linked inheritance. Write the characteristics of sex-linked inheritance. Show using diagrams the ratios in F_1 and F_2 generations when a white-eyed female *Drosophila* is mated to a red-eyed male. 2+6+6=14

OR

2. What is Hardy-Weinberg law? Discuss the factors that change gene frequency in a Mendelian population with examples. Write the applications of Hardy-Weinberg equilibrium. 2+8+4=14

3. What do you mean by mutagenesis? Write the mechanism of action of chemical mutagens to generate point mutations. 2+12=14

OR

4. Write short notes on the following : 7+7=14

(a) Suppressor mutation

(b) Gene mapping in phages

5. What is gene regulation? Describe the process of gene regulation with the help of operon concept. 2+12=14

OR

6. What is transposon? Write the different types of transposons available in prokaryotes and their mechanism of action. 2+12=14

7. What is dispersion? Discuss the measures of dispersion that are widely used in biotechnology with formulae. Write the applications of measures of dispersion in biotechnology with examples. 2+8+4=14

OR

8. Define linear regression. Write the linear regression equations of two variables *X* and *Y*. Discuss the applications of regression analysis in biotechnology. 2+8+4=14

9. Define level of significance. Discuss paired and unpaired *t*-tests with formulae. Write a note on the applications of *t*-test in biotechnology. 2+8+4=14

OR

10. Write short notes on the following : 7+7=14

(a) Statistical errors and residuals along with their properties

(b) Analysis of variance and its applications

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