**PG Odd Semester (CBCS) Exam., December—2018**

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 multiple alleles. Discuss the characteristics of multiple alleles. Describe the phenotypes of ABO blood group system in human showing the genotypes. 3+5+6=14

**OR**

**2.** What is dominance? Discuss different types of dominance citing examples. 4+10=14





**3.** What is mutagenic agent? Describe the mechanism of action of base analogues, nitrous acid and alkylating agents on DNA with examples. 2+4+4+4=14

**OR**

**4.** Describe the genes present in mitochondria with their functions. 14

**5.** What is an operon? Describe the positive and negative regulations of genes in lac operon system. 2+12=14

**OR**

**6.** Write a note on lambda genetic control with suitable example. 14

**7.** Define dispersion. Discuss the measures of dispersion with formulae. Write a note on degrees of freedom. 2+8+4=14

**OR**

**8.** What is correlation coefficient? Discuss different types of correlation between two variables with suitable diagrams. Describe the properties of correlation coefficient. Write the formula of correlation coefficient and its test of significance by *t*-test. 2+3+5+4=14

**9.** Discuss paired and unpaired *t*-tests with formulae. Write a brief note on the application of *t*-test in biological science. 10+4=14

**OR**

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

*(a)* Chi-square test

*(b)* Regression analysis

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