M. SC. (MICROBIOLOGY) SEM-II (C.B.C.S.) (2012 COURSE) : WINTER - 2017

SUBJECT : QUANTITATIVE BIOLOGY

Day : Friday
Date : 27/10/2017

Time : 03.00 PM TO 06.00 PM
Max. Marks : 60

W-2017-0808

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labeled diagrams **WHEREVER** necessary.

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a) The table given below shows the data obtained during the epidemic of cholera: [10]

	Attacked	Not attacked	Total
Inoculated	24	32	56
Not inoculated	50	14	64
Total	74	46	120

Test the effectiveness of inoculation in preventing the susceptibility or attack of cholera.

b) Explain the concept of sample and population. [05]

OR

What is epistasis? Explain different types of epistasis with suitable examples. [15]

Q.2 a) With the help of suitable example calculate genotypic and phenotypic ratios in a dihybrid cross with the help of a branch diagram. [08]

b) State the assumptions and predictions of Hardy-Weinberg law and describe the evolutionary forces which cause changes in allelic frequencies. [07]

Q.3 Attempt **ANY THREE** of the following: [15]

a) With the help of a suitable pedigree explain the behavior of an autosomal dominant trait.

b) Give the importance of polymorphic genes in DNA typing.

c) In cucumbers orange fruit colour (R) is dominant over cream fruit (r). A homozygous dominant plant was crossed with a homozygous recessive plant. The F_1 obtained were intercrossed to obtain F_2. Give the genotypes and phenotypes of the parents. F_1 and F_2 generation fruits. Work out the test cross and back cross.

d) Calculate standard deviation of the following data services:
12.6, 9.2, 9.6, 9.7, 9.8, 10, 10.2, 11.6, 10.6, 12.7.

Q.4 Write short notes on **ANY THREE** of the following: [15]

a) X – linked recessive trait

b) Poison distribution

c) Genotypic frequencies

d) Genetic drift

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