

[LL 1017]

OCTOBER 2017

Sub. Code: 2861

M.Sc. BIOSTATISTICS EXAMS
FIRST YEAR
(New Regulation)
PAPER I – PROBABILITY AND DISTRIBUTION THEORY

Q.P. Code: 282861

Time: Three hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) A husband and wife appear in an interview for two vacancies in the same post. The probability of husband's selection is $1/7$ and that wife's selection is $1/5$. What is the probability that?
 - i) Both of them will be selected
 - ii) Only one of them will be selected and
 - iii) None of them will be selected.
- b) Explain the concept of convergence in probability and almost surely convergence.
2. a) Define discrete random variable. Explain with example how it is applied to health professionals.
- b) State central limit theorem and its application.

II. Write notes on:

(10 x 6 = 60)

1. Inverse formula.
2. Expectation and its properties.
3. Jensen's Inequality.
4. Hyper-geometric distribution and its characteristics.
5. Prove the reproductive property of independent poisson random variable.
6. The concept of convergence in probability and almost surely convergence.
7. State and prove the interrelation between t, F and chi-square.
8. Explain memory less property and prove that geometric distribution has this property.
9. Properties of normal distribution.
10. Gamma and beta distribution.
