Exam.Code:0435
Sub. Code: 3469

2122

M. Sc. (Biotechnology) First Semester

MBIO-105: Bio-Statistics

Time allowed: 3 Hours

Max. Marks: 80

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

x-x-x

1 Briefly explain the following terms:

(i) Cumulative frequency
(ii) Standard Deviation
(iii) Conditional probability
(iv) Additive Law of Probability
(v) Write down underlying assumptions of RBD
(vi) t-distribution
(vii) Central limit theorem
(viii) Expectation of a random variable

(8×2)

Unit-I

2 (a) Define and compare the characteristics of mean, median and mode

(b) Find the median of the following distribution

Age (in Years.)	30-39	40-49	50-59	60-69	70-79
No. of Patients:	29	73	113	85	15

(8, 8)

3. Define

(i) Sample Space
(ii) Equally Likely Events
(iii) Subjective Probability
(iv) Independent Events

(4 each)

Unit-II

4. (a) State and Prove Bayes theorem

(b) Let A and B be two independent events such that $P(A \cup B) = .64$ and $P(A \cap B) = .16$. Determine P (A) and P (B).

(9, 7)

5. (a) In a group of 500 patients, it has been found that the distribution of blood group is as follows:

Blood groups	:	O	A	B	AB
No. of Patients	:	250	150	60	40

If a person is chosen at random, what is the probability that he or she will have blood group A?

(b) Discuss uniform distribution and its important properties.

(8, 8)

P.T.O.

Unit-III

6. (a) Distinguish between
(i) Discrete and Continuous random variables
(ii) Probability mass function and probability density function.

(b) Discuss Normal distribution and state its chief characteristics. Aptitude scores of a large number of students are normally distributed with a mean of 75 and variance 100. Write down the probability statement for proportions of students scoring less than 80?

(8, 8)

7. (a) Define Poisson distribution and its usefulness. Write down the mean and variance of this distribution.

(b) Define binomial distribution with parameters 'n' and 'p'. State conditions for which it can be approximated by a normal distribution?

(8, 8)

Unit-IV

8. (a) Define
(i) Type I error
(ii) Type II error
(iii) Critical Region

(b) Discuss the assumptions of Latin Square Design (LSD).

(8, 8)

9. (a) Define One-way ANOVA Model? State its underlying assumptions.

(b) Discuss different methods of data collection in Biological experiments. Distinguish between primary and secondary data.

(8, 8)

x-x-x