SARDAR VALLABHBHAI PATEL EDUCATION SOCIETY'S
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Program Name: **Integrated M. Sc. (IT)**

Level: **Post Graduate Program**

Branch: **Integrated M. Sc. (IT)**

Course / Subject Code: **1BS401**

Course / Subject Name: **Probability and Statistical Methods**

Course Content:

Unit No.	Content	CO	Concern Question	Marks Weightage
1.	**Probability:** Experiment, definition of probability, Conditional probability, Independent events, Total probability, Bayes' theorem.	CO1	Q.1 (A), Q.1 (B)	7 Marks
2.	**Random Variables:** Random variables, Discrete random variable, Probability mass function, Continuous random variable, Probability density function, Cumulative distribution function, Properties of cumulative distribution function, Mathematical Expectation, Two dimensional random variables and their distribution functions, Marginal probability function, Independent random variables, Expected value of two dimensional random variable.	CO2	Q.2 (A), Q.2 (B), Q.2 (C)	14 Marks
3.	**Special Probability Distributions:** Binomial distribution, Poisson distribution, Poisson approximation to the binomial distribution, Normal distribution.	CO3	Q.3 (A), Q.3 (B), Q.3 (C)	14 Marks
4.	**Measure of central Tendency and Dispersion:** Mean, Mode, Median, Quartile, Decile and Percentile, Quartile Deviation, Mean Deviation, Standard Deviation, coefficient of variation.	CO4	Q.4 (A), Q.4 (B)	7 Marks
5.	**Statistical Measures of Distribution and Relationship:** Moments, Skewness, Kurtosis, Linear Correlation, Correlation coefficient, Rank correlation coefficient, Regression lines.	CO5	Q.5 (A), Q.5 (B), Q.5 (C)	14 Marks
6.	**Applied Statistics:** Formation of Hypothesis, Test of significance: Large sample test: for single proportion, Difference of proportions, Single mean, Difference of means, and Difference of standard deviations. Test of significance for Small samples: t- Test for single mean, difference of means, t-test for correlation coefficients, F- test for ratio of variances, Chi-square test.	CO6	Q.6 (A), Q.6 (B), Q.6 (C)	14 Marks

Suggested Specification Table with Marks (Theory):

Distribution of Marks (%)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**25**	**35**	**0**	**0**	**0**

Course Outcome:

No	Course Outcomes
CO1	Understand the terminologies of basic probability
CO2	Understand two types of random variables and their probability functions
CO3	Observe the behavior of various discrete and continuous probability distributions.
CO4	Understand the central tendency and dispersion.
CO5	Understand the correlation and correlation coefficient and regression.
CO6	Apply the statistics for testing the significance of the given large and small sample data by using t-test, F- test and Chi-square test

Instructions :

1. Kindly follow the course outcome distribution as mentioned in QP format while setting Question Paper.
2. While Setting Question Paper maintain Bloom's level consistency for options.

   Example : Que. 2 (A) OR Que. 2 (A), for both question 2 (A), Bloom's level must be same.
3. Question Paper difficulty should be set as follow :

   Easy – 30%

   Medium – 50%

   Difficult – 20%

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