3153

B. Tech. 3rd Semester (CSE-AI & ML) Examination – December, 2022

APPLIED COMPUTATIONAL STATISTICS

Paper : BSC-MATH-253-G

Time : Three Hours]   *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. **1** is *compulsory*. All questions carry equal marks.

1. (i) Define measure of skewness and kurtosis.

   (ii) State central limit theorem.

   (iii) What is the probability density function (pdf) of Normal distribution ?

   (iv) Define stochastic process.

   (v) Write full form of MANOVA and ANCOVA.

   (vi) Define Random walk problem.

UNIT – I

2. (a) Define standard normal distribution. Also describe the characteristic of normal probability function.

   (b) What do you mean by hypothesis and its classification. Discuss the procedure for testing of hypothesis.

3. The heights of 10 males of a given locality are found to be 70, 67, 62, 68, 61, 68, 70, 64, 64, 66 inches. Is it reasonable to believe that the average height is greater than 64 inches ? Test at 5% level of significance and $P[t > 1.83] = 0.05$.

UNIT – II

4. Discuss the following in short :

   (i) Multivariate Normal distribution.

   (ii) Correlation and Regression coefficient

   (iii) Wishat Distribution.

5. Explain the meaning of "Analysis of variance". Describe the technique of variance for one way and two way classifications.

UNIT – III

6. Explain the following in details :

   (i) Factor Analysis

   (ii) Discriminate Analysis

7. Describe in details Nonparametric and robust method of multivariate analysis.

UNIT – IV

8. (a) Define Markov chain with stationary transition probabilities. Also discuss the properties of transition function.

(b) Describe the MCMC algorithm along with suitable example.

9. Describe briefly the branching processes and queuing process.

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