B.Sc 5th Semester (General) Examination, 2020 (CBCS)

Subject: Statistics
Course: SEC-3

Time: 2 Hours **Full Marks: 40**

The figures in the right handside indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

Monte Carlo Method

Answer any ***eight*** of the following questions **8X5=40**

1) Describe the procedure for Monte Carlo Simulation briefly.
2) How can we categorize the simulation model?
3) How can you find probabilities & moments of any distribution using simulation?
4) How to find the value of π using Monte-Carlo simulation?
5) Explain why you would agree or disagree with the following statement:

   "Most discrete event simulation models can be viewed in some form or another as queuing systems consisting of sources from which customers are generated, queues where customers may wait & facilities where customers are served."

6) Suppose that the cells of a particular item per day is Poisson with a certain mean 5. Simulate the sales for 20 days.
7) Suppose that the demand for a particular item is normally distributed with certain mean & standard deviation per day. Describe the simulation method to find the demand for the next 10 days.
8) Indicate some shortcomings of taking a simulation approach to solve an O.R. problem.
9) A player tosses a fair coin repeatedly until a head occurs. The associated payoff is 2^n where n is the number of tosses until a head comes up.
   Devise the sampling procedure of the game.
10) Define time-based variable and observation-based variable. Check whether variables areobservation-based or time-based:

    a) Time-to-failure of an electronic component
    b) Number of defective items in a lot.
    c) Time needed to grade test papers.

OR

Statistical Data Analysis using R

Answer any ***eight*** of the following questions **8X5=40**

1) How can we import the xls files in R?
2) How do we export R data files to excel?
3) How can we index vectors & matrices using R?
4) How to handle missing value in R?
5) Describe the procedure for combining data frames?
6) Give some examples of Built-in Constants & Statistical Functions?
7) What is the difference between graphs and charts? Give the uses of both separately.
8) How to compute frequencies in R?
9) Give the procedure of summarization of the given data through R? (command only)
10) Data entry as vectors using the command c().

    z= c(7.3,2.8,6, 4.2, -9.4, 6.8, -5.3, 5.7,3.3, -2.6, 6.7,2.7,-8.1, -5.6, 4.5, 7.5, -.9).

    Try descriptive statistics like mean(z), var(z), sd(z), min(z), sort(z) etc.

    Try summary(z). How can we sort in descending order?