Daffodil International University

Department of Computer Science and Engineering
Faculty of Science and Information Technology
Final Examination, Semester: Fall'2019
Course Code: STA 133 Course Title: Statistics and Probability
Section: All Course Teacher: All

Time: 2 hours **Full Marks: 40**

Answer the following questions:

1. a. A random sample of 8 people was asked to record the number of kilometers traveled by a minibus in a given week. The distances, to the nearest kilometer, are shown below: 68,77,86,43,94,49,73 and 78. [5]

   Is there any symmetry in the given data set? Evaluate your finding by calculating.

   b. The success of a shopping center can be represented as a function of the distance (in miles) from the center of the population and the number of clients (in hundreds of people) who will visit. The data is given in the table below: [5+5]

No. Customer (x)	8	7	6	4	1
Distance (y)	15	19	25	23	40

   i. Calculate the correlation coefficient. Interpret the coefficient of determination.

   ii. If the mall is located 2 miles from the center of the population, how many customers should the shopping center expect?

   c. A student is applying to Harvard and Dartmouth. He estimates that he has a probability of .5 of being accepted at Dartmouth and .3 of being accepted at Harvard. He further estimates the probability that he will be accepted by both is .2. What is the probability that he is accepted by Dartmouth if he is accepted by Harvard? Is the event "accepted at Harvard" independent of the event "accepted at Dartmouth"? [5]

2. a. If 2 events (say A and B) are mutually exclusive, how will you find the probability of happening at least 1 event? Discuss different kinds of regression analysis with examples. [6]

   b. In Tim's office, there are 25 employees. Each employee travels to work every morning in his or her own car. The distribution of the driving times (in minutes) from home to work for the employees is shown in the table below. [4]

Driving Times (minutes)	Number of Employees
0-10	3
10-20	10
20-30	6
30-40	4
40-50	2

Calculate the 80^{th} percentile and 2^{nd} quartile of the driving time with explanation.

3. What are the importances of correlation and regression analysis? [3+7]
The grades of five students in mathematics and chemistry classes are:

Mathematics	6	4	8	5	3
Chemistry	6	5	7	5	4

Find the standard error of the estimates of the regression coefficients.