University of Sargodha

BS 2nd Term Examination 2019

Subject: Computer Science **Paper: Probability and Statistics (MATH-2110)**

Time Allowed: 2:30 Hours **Maximum Marks: 80**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (16*2)

i. Define coefficient of variation.
ii. Explain the test statistics.
iii. What is probability function?
iv. How many parameters are of beta distribution?
v. Describe exponential distribution.
vi. How many parameters of Gama distribution?
vii. Two coins are tossed. Find the probability of at least on head?
viii. Define the coefficient of correlation.
ix. Explain the negative binomial distribution.
x. Define dispersion.
xi. What are different approaches of probability?
xii. What is the distribution function?
xiii. Write any two properties of correlation.
xiv. Define normal distribution.
xv. What is test of statistic?
xvi. Define median.

Subjective Part (3*16)

Q.2. The following data were collected to determine the relationship between pressure and corresponding scale reading for the purpose of calibration

Pressure x	10	10	10	10	10	50	50	50	50	50
Scale Reading y	13	18	16	15	20	86	90	88	88	92

a. Find the equation of regression line
b. Calculate the coefficient of correlation

Q.3. A tire manufacturer wants to determine the inner diameter of a certain grade of tire. Ideally, the diameter would be 570mm. The data are as follows: 572, 572, 573, 568, 569, 575, 570

a. Find the sample Mean and Median
b. Find the sample Variance, Standard Deviation, and coefficient of variation.

Q.4. The weekly demand for a drinking water production, in thousands of litters, from a local chain of efficiency store in continuous random variable X having the probability density function

$$f(x)=\begin{cases} 2k(x-1) & 1<x<2 \\ 0 & elsewhere \end{cases}$$

Find the value of k, mean and variance of x.

Q.5.

a. The probability that a certain kind of component will survive a shock is ¾. Find the probability that exactly 2 of the next 4 component test survive.
b. A homeowner plants 6 bulbs selected at random from box containing 4 tulip bulbs and 4 daffodil bulbs. What is the probability that he planted 2 daffodil bulbs and 4 tulips bulbs.

Q.6.

a. The weight of large number of miniature poodles are approximately normally distributed with a mean of 8 kilograms and standard deviation of 0.9 kilogram. If measures are recorded to nearest tenth of kilogram, find the fraction of these poodles with weights
   i. Over 9.5 kilograms
   ii. Of at most 8.6 kilograms
b. A manufacturer suspects a difference in the equality of spare parts he receive from two suppliers. He obtains the following data on the service life of random sample of parts from two suppliers

Supplier	No. of samples	Mean	Standard Deviation
A	50	150	10
B	100	153	5

Test whether the difference between the two samples mean is statistically significant at the 1% level of significance.
Table value is 2.57.