University of Sargodha

BS 2nd Term Examination 2018

Subject: Computer Sc./ I.T **Paper: Probability & Statistics (MATH-2110)**

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

Note: Objective part is compulsory. Attempt any four 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. What is Difference between sample and population
ii. Define Sample mean and sample median with examples
iii. Define the Categorical Data with example.
iv. Define Sample Point , also give an example.
v. What are Disjoint Events.
vi. How many distinct permutations can be made from the letters of the word COLUMNS?
vii. A pair of fair dice is tossed. Find the probability of getting a total of 9.
viii. What is difference between probability mass function and cumulative distribution function.
ix. What is difference between continuous and discrete sample space.
x. What are statistical independent variables.
xi. A coin is biased such that a head is three times as likely to occur as a tail. Find the expected number of tails when this coin is tossed twice.
xii. How many maximum outcomes are possible in a single Bernoulli trial ? Two
xiii. Differentiate binomial distribution and multinomial distribution?
xiv. What do mean by Chi-Squared distribution ?
xv. What are Axioms of probability?
xvi. Define linear regression.

Subjective Part (4*12)

Q.2. A study of the effects of smoking on sleep patterns is conducted. The measure observed is the time in minutes, that it takes to fall asleep. These data are obtained: 1.0, 3.0, 6.0, 4.0, 0.3, 6.0, 0.3, 5.5, 5.9, 1.5, 5.6, 3.3, 6.5,
Compute the sample variance and sample standard deviation.

Q.3. In testing a certain kind of truck tire over rugged terrain, it is found that 25% of the trucks fail to complete the test run without a blowout. Of the next 15 trucks tested, find the probability that
(a) from 3 to 6 have blowouts; (b) fewer than 4 have blowouts; (c) more than 5 have blowouts.

Q.4. On average, 3 traffic accidents per month occur at a certain intersection. What is the probability that in any given month at this intersection
(a) exactly 5 accidents will occur? (b) fewer than 3 accidents will occur?
(c) at least 2 accidents will occur?

Q.5. For married couples living in a certain suburb, the probability that the husband will vote on a bond referendum is 0.21, the probability that the wife will vote on the referendum is 0.28, and the probability that both the husband and the wife will vote is 0.15. What is the probability that
(a) at least one member of a married couple will vote? (b) a wife will vote, given that her husband will vote? (c) a husband will vote, given that his wife will not vote?

Q.6. The probability that a person will install a black telephone in a residence is estimated to be 0.4 Find the probability that the 12^{th} phone installed in a new sub-division is the 7^{th} black phone.

Q.7. If the marks X of college students are normally with mean 65 and variance 9. Find the probability that
a) $x < 74$ b) $53 \leq X \leq 77$