COMSATS University Islamabad

Department of Statistics

Midterm Exam- Fall 2022

Course Title:	Statistics and Probability Theory			Course Code:	MTH-262	Credit Hours:	3(3,0)
Course Instructor/s:	Dr. TajammalHussain Dr. Aamir Sana Ullah, Dr. Mian . M. Farooq, Dr. Irfan Aslam			Programme Name:	BCS & BSE		
Semester:		Batch:	BCS & BSE	Section:	[redacted]	Date:	17 / 11 /2022
Time Allowed:	1.5 Hours			Maximum Marks:		25	
Student's Name:	[redacted]			Reg. No.	CI[redacted]		

Important Instructions / Guidelines:

- Attempt all questions.

Question 1: (5)

Processing time of a printer is observed for different type of printing materials as: 5.4,5.9, 6.2,7.3,8.2,7.2,4.1,3.5,6.4,8.3,9.3,4.3,5.3,6.1,4.8,5.3,6.5,8.4,9.3, 8.3,8.7,8.0,4.6,4.8,8.3 and 6.0 seconds.

a) Group the processing time into a frequency distribution using 5 classes of equal interval.
b) Calculate and interpret Mode and Range of processing time.

Question 2: (5)

A car manufacturing company conducted a study to estimate the mileage/liter of their newly developed car model. The following table gives the grouped frequency distribution of the no. of times a specific mileage is achieved

Mileage/Liter	30-39	40-49	50-59	60-69	70-79	80-89
No. of traveling	40	55	60	50	35	30

a) Find the median value of data, also provide its interpretation.
b) Develop a Histogram for the given data.

Question 3: (5)

Three signals are being sent in form of 0 and 1 bit. Develop a sample space for number of possible outcomes of signal processed. Further, identify following events and find their probabilities:

a) Exactly 3, 0 bit are processed
b) At-least1, 0 bit is processed
c) At-most1, 0 bit is processed

Question 4: (5)

The probability that a new power house will be built at location A is 0.60, and the probability that a new power house will be built at location B is 0.70. The probability that such power houses will be built at both locations simultaneously is 0.50. For the provided data,

a) Develop a Venn's Diagram.
b) Find the probability that power house will be built only at Location A.
c) Find the probability that power house will be built at at-least one of the location.

Question 5: (5)

In a certain assembly plant, three machines, B1, B2 and B3, contribute 30%, 45 % and 25% respectively to the total production. If it is known from past experience that 5%, 7% and 8 % of the products made by each machine, respectively, are defective. Then

a) What is the probability that a randomly selected product from a mixed lot is a defective?
b) If a randomly selected product is found to be defective, what is the probability that it is manufactured by machine B2?

Good Luck