COMSATS UNIVERSITY ISLAMABAD
LAHORE CAMPUS
Midterm, SP2023

Course Title:	Statistics and Probability Theory		Course Code:	MTH-262	Credit Hours:
Course Instructor/s:	Dr. Tajammal Hussain, Dr. M. Bilal, Dr. Tanveer Akhlaq, Dr. Saima Khan, & Mr. Nasir Anayat		Programme Name:	BCS/BSE	
Semester:	[redacted]	Batch: [redacted]	Section: [redacted]	Date:	April 27, 2023
Time Allowed:	1.5 Hours		Maximum Marks:		50
Student's Name:	[redacted]		Reg. No.	CIIT/ [redacted]	

Important Instructions / Guidelines:

- Attempt all questions.

Question 1: (2.5x4)

Define and explain the following with an example for each:

i) Statistics
ii) Qualitative and Quantitative Variables
iii) Mutually Exclusive events
iv) Independence of Events

Question 2: (2x5)

A car manufacturing company conducted a study to estimate the mileage/litter 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 travelling	40	55	60	50	35	30

a) Find the median mileage and interpret it.
b) Find the mode mileage and interpret it.

Question 3: (10)

The probability that a regularly scheduled flight departs on time is 0.83; the probability that it arrives on time is 0.81; and the probability that it departs and arrives on time is 0.70.

a) Develop a Venn diagram for the provided information.
b) Find the probability that a plane either departs or arrives on time.
c) Find the probability that a plane arrives on time but not departed on time.

Question 4: (10)

If there are 0, 1, 2, 3, 4, 5 and 6 integers, then find, by assuming non-repetition of any integer; then find how many;

i) Three digits numbers can be generated?
ii) Three digits even numbers can be generated?
iii) Three digits numbers greater than 345 can be generated?

Question 5: (10)

Suppose the four inspectors at a film factory are supposed to stamp the expiration date on each film package at the end of the assembly line. John who stamps 20 % of the packages fails to stamp the expiration date on 2 % of packages. Jeff who stamps 15 % of the packages fails to stamp the expiration date on 9% of packages. Pat who stamps 5 % of the packages fails to stamp the expiration date on 5 % of packages. Tom who stamps 60 % of the packages fails to stamp the expiration date on 1% of packages.

i) What is the probability that a randomly selected package will not show an expiration date?
ii) If a customer complains that his package does not show the expiration date, what is the probability that John inspected it?

Good Luck