PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023

Semester : Semester II - 2022
Course Code : MAT1003
Course Name : Sem II - MAT1003 - Applied Statistics
Program : B.Tech - (All Programs)

Date : 12-APR-2023
Time : 11.30AM - 1.00PM
Max Marks : 50
Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE FIVE QUESTIONS   5 X 2=10M

1. Identify the "k" value if the arithmetic mean of 9, 8, 10, k, 12 is 15.

   (CO1) [Knowledge]

2. Comment on the nature of mode for the following data set :
   1, 1, 1,1, 2, 2, 2, 2, 3, 3, 3, 3, 4, 4, 4. 4, 5, 5, 5, 5, 6, 6, 6, 6.

   (CO1) [Knowledge]

3. Identify the value of the correlation coefficient, if the two regression coefficients are -1.25 and − 0.8?

   (CO1) [Knowledge]

4. Identify the chance of getting a head in the experiment of tossing a coin.

   (CO2) [Knowledge]

5. If $P(A) = 0.37, P(B) = 0.42, P(A \cap B) = 0.09$ then identify $P(A \cup B)$

   (CO2) [Knowledge]

PART B

ANSWER ALL THE FOUR QUESTIONS   4 X 5 = 20M

6. Consider the following data regarding temperatures (in Fahrenheit) of 8 winter days.

23	14	6	-7	-2	11	16	19

   Estimate the variance and standard deviation.

   (CO1) [Comprehension]

7. Estimate Q_1 and Q_2 of the data relating to the marks of 8 students in an examination given below 25, 48, 32, 52, 21, 64, 29, 57 .

(CO1) [Comprehension]

8. Three coins are tossed. Estimate the probability of getting
   (a) at least one head
   (b) at least two tails
   (c) exactly one head or two heads

(CO2) [Comprehension]

9. The probability that a student passes Economics test is 2/3 and the probability that he passes both the Economics and Management test is 14/45. The probability that he passes at least one test is 4/5. Infer the probability that he passes the Management test.

(CO2) [Comprehension]

PART C

ANSWER ALL THE TWO QUESTIONS   2 X 10 = 20M

10. An experiment conducted on 9 different cigarette smoking subjects resulted in the following data

Subject	1	2	3	4	5	6	7	8	9
Cigarettes smoked per week	25	35	10	40	85	75	60	45	50
Number of years lived	63	68	72	62	65	46	51	60	55

Compute the Karl Pearson co-efficient between the number of cigarettes smoked and the longevity of a test subject and interpret the nature of correlation.

(CO1) [Application]

11. A card is drawn at random from a pack of 52 playing cards. Compute the probability that the card drawn is
    (a) it is an honor card.
    (b) It is a face card.
    (c) a king or a queen
    (d) a jack

(CO2) [Application]