Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF INFORMATION SCIENCE
END TERM EXAMINATION - JUN 2023

Semester : Semester II - 2022
Course Code : MAT1006
Course Name : Sem II - MAT1006 - Statistical Methods and Techniques
Program : BCA&BCG

Date : 7-JUN-2023
Time : 1.00PM - 4.00PM
Max Marks : 100
Weightage : 50%

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 QUESTIONS **(10 X 2 = 20M)**

1. If the mean for a data set is 50 and its standard deviation is 3 recognise the coefficient of variation.
(CO1) [Knowledge]

2. Find the coefficient of range of 43, 24, 38, 56, 22, 39, 45.
(CO1) [Knowledge]

3. From past experience, a stockbroker believes that under present economic conditions a customer will invest in tax-free bonds with a probability of 0.6, will invest in mutual funds with a probability of 0.3, and will invest in both tax-free bonds and mutual funds with a probability of 0.15. At this time, find the probability that a customer will invest in either tax-free bonds or mutual funds.
(CO4) [Knowledge]

4. The mean age of a group of 40 students is 16 years and the mean age of another group of 60 students is 20 years. Find the mean age of the combined group.
(CO1) [Knowledge]

5. Identify the first quartile for the following data set: 10, 12, 5, 9, 8, 4, 8, 6, 7.
(CO1) [Knowledge]

6. What is the probability of getting a total of less than ‘12’ in the throw of two dice?
(CO4) [Knowledge]

7. Consider the following data set: 1,2,3,4,5,6,7,8,8,9,9. Identify Mode .
(CO1) [Knowledge]

8. Outline the measure of absolute skewness when mean and mode are 50 and 30 respectively.
(CO2) [Knowledge]

9. If the sample correlation coefficient is 0.9 and the probable error is 0.055, identify a suitable interval estimate of the population correlation coefficient.

(CO3) [Knowledge]

10. List the sample space for an experiment of tossing 3 coins simultaneously.

(CO4) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(5 X 10 = 50M)**

11. In a school 25% of the students failed in the first language, 15% of the students failed in second language and 10% of the students failed in both. If a student is selected at random find the probability that:

i) He failed in first language if he had failed in the second language.

ii) He failed in second language if he had failed in the first language.

(CO4) [Comprehension]

12. Consider the marks scored in 2 courses History and Sociology for 10 students on a scale of 0 - 10:

History	9	4	7	8	5	6	7	9	8	2
Sociology	8	5	7	7	6	2	3	5	6	2

Identify the nature of the correlation prevalent between the scores in the two courses.

(CO3) [Comprehension]

13. Classify the standard deviation and co-efficient of variation for the following distribution:

Classes	110 - 120	120 - 130	130 - 140	140 - 150	150 - 160	160 - 170	170 - 180
Frequencies	25	30	40	45	80	110	70

(CO1) [Comprehension]

14. In a bolt factory there are four machines A, B, C and D, manufacturing 20%, 15%, 25% and 40% of the total production. Out of these 5%, 4%, 3% and 2% are defective. If a bolt drawn at random was found defective what is the probability that it was manufactured by A or D ?

(CO4) [Comprehension]

15. Express Bowley's coefficient of skewness for the following data.

Profit(lakhs Rs)	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24
No. of Firms	4	10	15	8	3

(CO2) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **(2 X 15 = 30M)**

16. In a bivariate data given below,

a)Calculate the two regression equations.

b) Solve the value of Y when X = 10.

X	3	5	1	2	3	1	1	7
Y	5	1	6	0	0	1	2	1

(CO3) [Application]

17. The first four moments of a distribution about the value 5 of the variable are 2, 20, 40, and 50. Show that the mean is 7. Also find the other moments, β_1 and β_2, and comment upon the nature of the distribution and kurtosis.

(CO2) [Application]