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MASTER OF COMPUTER APPLICATIONS
(Specialization in Data Science)
EXAMINATION : JANUARY - 2025
SEMESTER - I
Sub: Probability & Statistics (MCDS 23-101)

Date : 07/01/2025

Total Marks : 60

Time: 2.00 pm to 4.30 pm

Instruction:

1. All questions are compulsory unless and otherwise stated.
2. Bold figures to the right of every question are the maximum marks for that question.
3. Candidates are advised to attempt questions in order.
4. Answers written illegibly are likely to be marked zero.
5. Use of scientific calculators, Log tables, Mollier Charts is allowed.
6. Draw neat and labelled diagram wherever necessary.

Q.1. Answer the following in 2-3lines. (Any 5) (10)

1. If a coin is tossed 3 times, what is probability exactly 2 tails ?
Find the arithmetic mean for the following data : 70 cm, 73 cm, 51 cm, 48 cm, 30
2. cm, 84 cm, 25 cm, 45 cm, 29 cm, 80 cm.
3. Define Sampling Confidence level .
4. Define continuous random variable with example.
5. Define regression with example.
Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ be the universal set, $A = \{1, 3, 5, 6, 7\}$, $B = \{2, 3, 4, 5, 7\}$
6. Find 1) B' 2) $(A \cap B)$.
7. Write the Formula for 1) Mean Deviation from Mean 2) Harmonic Mean .

Q. 2. Answer the following in short. (Any 4) (20)

Find standard deviation, variance and coefficient of deviation.

x	12	13	14	17	18	24
f	3	11	18	15	10	8

2. Discuss Operations on Sets in detail with examples .
3. Explain types of Sets in detail with examples.
If A and B are independent events such that $P(A) = 2/5$, $P(B) = 2/3$. Find 1) $P(A \cap B)$
4. 2) $P(A \cup B)$ 3) $P(A \cup B)'$ 4) $P(A)'$ 5) $P(B)'$.
5. Explain concept of hypothesis and characteristics of hypothesis in details .
6. The probability distribution of random variable x is ,

X	-2	-1	1
P(X)	1/3	1/2	1/6

Find 1) $E(X)$ 2) $E(X^2)$ 3) Variance of X.

Q. 3. Answer the following in detail. (Any 3)

(30)

Find Mean ,Median and Mode for the following data :

1.	Classes	0-10	10-20	20-30	30-40	40-50
	Frequency	4	16	14	14	2

Calculate correlation coefficient from the following data :

2.	X	104	111	104	114	118	117	105	108	106	100
	Y	57	55	47	45	45	50	64	63	66	62

Assume 100 and 50 as the mean values of X and Y.

The scores of two batsmen in 10 innings during a certain series are given. Find which batsman is more consistent in scoring.

3.	A	31	27	46	64	70	38	10	60	95	15
	B	18	30	47	52	63	90	10	61	40	80

- Two dice are roll at random .Obtain the probability distribution and probability distribution function of sum of the numbers on them.
- 4.

5. An Economist believes that during periods of high economic growth, the Indian Rupee appreciates with probability 0.60; in periods of moderate economic growth, it appreciates with probability 0.50; and during periods of low economic growth, the Rupee appreciates with probability 0.10.During any period of time the probability of high economic growth is 0.40; the probability of moderate economic growth is 0.40 and the probability of low economic growth is 0.10. Suppose the Rupee value has been appreciating during the present period. What is the probability that we are experiencing the period of (a) high, (b) moderate, and (c) low, economic growth?
