647510 **BBA3BsAC307x** **Seat No :_____**

B.B.A. Semester - 3 (*CBCS*) Examination
Oct/Nov - 2025 [New Course]
Business Statistics (Allied)

Time: 2:30 Hours **Marks:70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1 (A) Define: (07)

1) Sample Space
2) Independent event
3) Complement event
4) Mathematical Definition of probability

(B) If $P(A) = \frac{1}{3}$, $P(B) = \frac{3}{4}$ and $P(A \cup B) = \frac{11}{12}$, Find P(A/B), P(B/A), $P(A \cap B')$ and $P(A' \cap B')$ (07)

OR

Que.1 (A) IF events A, B and C are mutually exclusive and exhaustive events. Examine the correctness of the statement with reason:

1) $P(A) = 2/5$, $P(B) = 3/7$, $P(C) = 3/35$
2) $P(A) = 2/3$, $P(B) = 3/5$, $P(C) = 1/9$
3) $P(A) = 0.27$, $P(B) = 0.52$, $P(C) = 0.21$
4) $P(A) = 0.42$, $P(B) = 0.60$, $P(C) = -0.02$

(B) A coin is tossed 3 times, find the chance that (1) head & tail will show alternatively, (2) head & tail will not show alternatively.

Que.2 (A) Give definitions: (07)

1) Random variable.
2) Expected value.
3) Variance of random variable.
4) Probability distribution of random variable.

(B) There are 2 coins. On one face of each coin 1 is written and on the other face 2 is written. The coins are tossed simultaneously. Find the expected value of the total on the coins. (07)

OR

Que.2 (A) Write properties of normal distribution.

(B) A factory turns out an article by a mass production method. From past experience it appears that 20 articles on an average are rejected out a batch of 100.Find the S.D. of number of rejects in a batch, write down the equation of normal curve which represent normal distribution and find probability that the number of rejsects in a batch exceeds 30.

Que.3 (A) Write properties and uses of Binomial Distribution. (07)

(B) For five independent trials of binomial distribution probability of 2 and 3 success are respectively 0.2048 and 0.0512 then find value of p. (07)

OR

Que.3 (A) Write properties and uses of Poisson Distribution.

(B) In one Hospital 3 percent of the patients demanded special rooms. On a Particular Day 3 special rooms were vacant. If 50 patients were admitted in the hospital on that day, find probabilities that (i) no patient demanded special rooms (ii) the demand of special room were not meet.

Que.4 (A) Explain Scatter diagram method with merits and demerits. (07)

(B) The following data are obtained for two variables x and y (07)

$n = 30, \Sigma x = 120, \Sigma xy = 356, \Sigma x^2 = 600, \Sigma y = 90, \Sigma y^2 = 250$

However later on it was observed that two pairs were wrongly taken (8,10) and (12,7) instead of (8,12) and (10,8). Find the correct value of the correlation coefficient.

OR

Que.4 (A) What is Correlation? Explain its types.

(B) Find out Coefficient of Determination and Correlation coefficient from the following data.

X	100	101	103	102	100	99	97	98
Y	98	99	99	97	95	92	95	94

Que.5 (A) Give the properties of Regression coefficient. (07)

(B) The two regression lines are $X + 2y - 5 = 0$ and $2x + 3y - 8 = 0$ and $s_x^2 = 12$ find mean of x, mean of y, s_y^2 and r. (07)

OR

Que.5 Obtain Two regression lines from the following data. (14)

X / Y	90-100	100-110	110-120	120-130
50-55	4	7	5	2
55-60	6	10	7	4
60-65	6	12	10	7
65-70	3	8	6	3

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