Seat No. _____

HAP-161100010303

B. B. A. (Sem. III) Examination

June – 2023

Statistics

(Business Statistics)

Time : $2\frac{1}{2}$ Hours / Total Marks : **70**

1 (a) State the uses and properties of coefficient of Correlation. **7**

(b) From the following data find Spearman's rank correlation coefficient : **7**

x :	74	47	20	83	29	38	56	65	92	98
y :	53	38	29	62	40	18	51	42	71	45

OR

1 (a) Explain Spearman's Rank Correlation with its merits and limitation. **7**

(b) From the following data find Karl Pearson's coefficient correlation : **7**

x :	15	14	13	12	11	10
y :	10	20	30	30	50	80

2 (a) Explain the meaning of regression coefficient. State its properties. **7**

(b) From the following information obtain 2 regression lines. **7**

x :	21	19	17	15	13
y :	12	9	10	8	6

OR

2 (a) Differentiate between correlation analysis and regression analysis. **7**

(b) Two regression equations are $4x - 5y + 33 = 0$ and $20x - 9y = 107$ and variance of x is 36. Find **7**
(i) mean of x and y (ii) correlation coefficient.

3 (a) Define the following terms : 7
(1) Mutually exclusive events (2) Independent events
(3) Exhaustive events.

(b) Three persons A, B, C appear in an interview for three vacancies in the same post. The probability of A's selection is 1/6, that of B's selection is 1/5, that of C's selection is 1/4. What is the probability that at least one of them will be selected ? 7

OR

3 (a) State and prove the multiplication theorem of probability. 7

(b) If $P(A) = 0.2, P(B) = 0.4, P(A \cup B) = 0.52,$ then find $P(A \cap B)$ and $P(A' \cup B')$. 7

4 (a) Define probability density function of a normal variable X and state its properties. 7

(b) Of a large group of men, 15% are less than 60 inches in height and 30% are greater than 75 inches. Assuming a normal distribution, find the mean height and standard deviation. 7

OR

4 (a) Find the Mean and Variance from the following probability distribution. Also find $E(5x+2)$ and $V(2x-6)$: 7

X	1	2	3	4
$P(X)$	0.22	0.37	0.18	0.23

(b) If a random variable X assumes the values 0, 1 and 2 with its respective probabilities 0.30, 0.50 and 0.20, then find its mean and variance. 7

5 (a) State the properties of Binomial distribution. 7

(b) Find the number of trials of a binomial distribution having mean and standard deviation as 3 and 1.5 respectively. Also write the probability distribution function of a binomial variable X. 7

OR

5 (a) State the properties and uses of Poisson distribution. 7

(b) From the past experience in a certain highway, there are on the average 3 road accidents occurring per month. Find the probability that in a given year there will be less than 2 accidents using Poisson distribution. (Given $e^{-3} = 0.0498$) 7