



JAL-161100010303

Seat No. _____

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

November - 2019

Statistics

(Business Statistics)

(New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- 1 (a) Write short note on Spearman's Rank Correlation. 7
(b) Find the correlation coefficient from the following data : 7
 $\Sigma x = 200$, $\Sigma x^2 = 4360$, $\Sigma y = 250$, $\Sigma y^2 = 6810$,
 $\Sigma xy = 5384$, $n = 10$.
Also calculate its probable error.

OR

- (a) Write short note on Scatter Diagram method. 7
(b) Find Karl Pearson's coefficient of correlation between x and y from the following data : 7

x	0.21	0.20	0.24	0.23	0.25	0.26	0.28	0.30
y	1200	1500	1600	1900	1700	1800	2000	2100

- 2 (a) Differentiate between correlation analysis and regression analysis. 7
(b) The information regarding the market price of shares of a limited company is given. Obtain two regression lines and estimate the market price in Bombay Stock Exchange when the market price in Delhi Stock Exchange prevail at Rs. 22. 7

	Delhi Stock Exchange	Bombay Stock Exchange
Average Market Price	16	20
Standard Deviation	4	5

Correlation coefficient = 0.8

OR

- 2 (a) State the properties of correlation coefficient and regression coefficient. 7
- (b) Two regression equations are $65x + 100y = 165$ and $10x + 13y = 23$ and standard deviation of y is 2. Find regression coefficients, correlation coefficient and standard deviations of x . 7
- 3 (a) Define the following terms : 7
- (1) Mutually exclusive events
- (2) Independent events
- (3) Exhaustive events
- (b) A husband and wife appear in an interview for two vacancies in the same post. The probability of husband's selection is $\frac{2}{5}$ and that of wife's selection is $\frac{4}{5}$. What is probability that only one of them will be selected in vacant post? 7

OR

- 3 (a) State and prove the addition theorem of probability. 7
- (b) In an examination 30% of the student failed in accountancy, 20% failed in economics and 10% have failed in both. A student is selected at random. (i) What is the probability that the student has failed in atleast one subject? (ii) What is the probability that the student has failed in accountancy if it is known that he has failed in economics? 7
- 4 (a) Define probability density function of a normal variable x and state its properties. 7
- (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. Also calculate $E(3x - 2)$ and $V(2x + 3)$. 7

OR

- 4 (a) 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
 [Given $P(-\infty < Z < 0) = 0.5$, $P(0 < Z < 1.035) = 0.35$,
 $P(0 < Z < 0.525) = 0.20$]
- (b) Suppose an insurance company offers a 45 years old man a Rs. 1000 one year term insurance policy for an annual premium of Rs. 12. Assume that the number of death per one thousand is five for person in this age group. What is the expected gain for the insurance company on a policy of this type? 7
- 5 (a) State the properties of Binomial distribution. 7
- (b) From past experience in a certain manufacturing plant, there are on the average 4 industrial accidents occurs per month. Find the probability that in a given year there will be less than 4 accidents. 7
 [Given $e^{-4} = 0.0183$]

OR

- 5 (a) The incidence of Malaria in India was such that person had 25% chance of suffering from it. What is the probability that out of 5 persons, 3 or more will contract the disease? 7
- (b) If 1.5 percent of items produced by a manufacturing company are known to be defective. What is the probability that a sample of 200 items would contain atleast one defective item? 7
 [Given $e^{-1.5} = 0.2231$, $e^{-3} = 0.04979$]