

**B.Com. II Year Annual Mode
Business Mathematics and Statistics
Code : B-101**

पूर्णांक : 100
M.M. : 100

*Attempt any two questions in all.
All questions carry equal marks.*

किन्हीं दो प्रश्नों के उत्तर दो।
सभी प्रश्नों के अंक समान हैं।

(Write your Name and Roll No. on each page of your answer sheet.)
(अपनी उत्तर पुस्तिका के प्रत्येक पृष्ठ पर अपना नाम और रोल नंबर लिखें।)

- 1(a) To control a crop disease it is necessary to use 8 units of chemical A, 14 units of chemical B and 13 units of chemical C. One barrel of spray P contains 1 unit of A, 2 units of B and 3 units of C. One barrel of spray Q contains 2 units of A, 3 units of B and 2 units of C. One barrel of spray R contains 1 unit of A, 2 units of B and 2 units of C. Find how many barrels of each spray be used to just meet the requirements using Matrix Algebra.
- 1(b) Explain with the help of suitable examples as to how would you calculate price elasticity of demand and price elasticity of supply using differentiation.
- 1(c) You have two investment options, i.e., 9% per year compounded quarterly or 9.2% per year simple interest. Which investment option would you select and why?
- 2(a) “Each average has its own special features and it is difficult to say which one is the best”. Explain this statement.
- 2(b) The mean age of the combined group of men and women is 30.5 years. If the mean age of the sub-group of men is 35 years and that of the sub-group of women is 25 years, find out percentage of men and women in the group.
- 2(c) Calculate the mean price of shoes for a moderately skewed distribution, if the median price of men’s shoes is Rs. 380 and modal price is Rs. 350.
- 3(a) Calculate the Karl Pearson’s coefficient of correlation from the following pairs of values and interpret the result:

Values of X	12	9	8	10	11	13	7
Values of Y	14	8	6	9	11	12	3

Assignment

- 3(b) State the properties of regression coefficients. Also, calculate the Spearman's rank correlation coefficient from the following ranking of ten competitors by two judges in a beauty contest in the following order:

Judge I	1	6	5	10	3	2	4	9	7	8
Judge II	6	4	9	8	1	2	3	10	5	7

Is there any association between the rankings?

- 4(a) What do you mean by "Time Reversal Test" and "Factor Reversal Test" for index numbers? Explain with suitable example that Laspeyres' and Paasche's index numbers do not satisfy these tests and that Fischer's Ideal index does satisfy these tests.

- 4(b) Fit a straight line trend to the following data and estimate the expected profit for the year 2020. What is the average annual change in profit?

Year	2014	2015	2016	2017	2018	2019
Sales (in '000 of Rs.)	15	17	20	21	23	24