Year	Debenture Price	Share Price
1	97.8	73.2
2	99.2	85.8
3	98.8	78.9
4	98.3	75.8
5	98.4	77.2
6	96.7	87.2
7	97.1	83.8

Using the rank correlation method, determine the relationship between debenture prices and share prices.

(c) Write the three broad types of correlations. Show graphs in support of all types. (CO5)

H Roll No. .....

BCH–201

B. COM. (H) (SECOND SEMESTER)
END SEMESTER
EXAMINATION, June, 2023

BUSINESS STATISTICS

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any *two* sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are **twenty**.

(iv) Each sub-question carries 10 marks.

1. (a) What is index number and discuss types of index numbers. (CO1)

(b) What is Fisher's ideal price index ? How can it be derived ? (CO1)

(c) What is sampling ? Discuss the various methods of sampling. (CO1)

P. T. O.

2. (a) Calculate the mean for the following frequency distribution : (CO2)

Marks	Number of students
0–10	6
10–20	5
20–30	8
30–40	15
40–50	7
50–60	6
60–70	3

(i) By the direct formula

(ii) By the step deviation method

(b) Discuss the regression analysis with suitable example. (CO2)

(c) Discuss Harmonic mean and solve the given problem :

A man travels from Jaipur to Agra by a car and takes 4 hours to cover the whole distance. In the first hour, he travels at a

speed of 50 km/hr, in the second hour his speed is 64 km/hr, in third hour his speed is 80 km/hr and in the fourth hour, he travels at the speed of 55 km/hr. Find the average speed of the motorist. (CO2)

3. (a) The following table gives indices of industrial production and number of registered unemployed people (in lakh). Calculate the value of correlation coefficient : (CO3)

Year	Index of Production	Number of Unemployed
2007	100	15
2008	102	12
2009	104	13
2010	107	11
2011	105	12
2012	112	12
2013	103	19
2014	99	26

(b) The weighted geometric mean of four numbers 8, 25, 17 and 30 is 15.3. If the weights of the first three numbers are 5, 3 and 4 respectively, find the weight of fourth number. (CO3)

(c) Show $(G.M.)^2 = (A. M.) \times (H. M.)$ by taking two variables x_1 and x_2. (CO3)

4. (a) Distinguish Karl Pearson's Correlation and Spearman's Correlation. (CO4)

(b) Distinguish skewness and kurtosis. Also, discuss their types. (CO4)

(c) Distinguish Linear and Nonlinear regression models. (CO4)

5. (a) In 500 small scale industrial units, the return on investment ranged from 0 to 30 for per cent; no unit sustaining loss. Five per cent of the units had returns ranging from zero per cent to (and including) 5 per cent, and 15 per cent of

the units earned returns exceeding 5 per cent but not exceeding 10 per cent. The median rate of return was 15 per cent and upper quartile 2 per cent. The uppermost layer of returns exceeding 25 per cent was earned by 50 units. (CO5)

(i) Present the information in the form of a frequency table as follows :

Exceeding 0 per cent but not exceeding 5 per cent

Exceeding 5 per cent but exceeding 10 per cent

Exceeding 10 per cent but not exceeding 15 per cent, and so on.

(ii) Find the rate of return around which there is maximum concentration of units.

(b) Quotations of index numbers of security prices of a certain joint stock company are given below : (CO5)