

Exam. Code : 121602  
Subject Code : 103219

B.Com. (Financial Services) 2<sup>nd</sup> Semester  
(Batch 2023-26) (CBGS)

QUANTITATIVE TECHNIQUES FOR BUSINESS-II

Paper—III

Time Allowed—3 Hours] [Maximum Marks 100

Note :—Attempt FIVE questions in all, selecting at least ONE question from each section. The fifth question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. Find Karl Pearson's Coefficient of Correlation between Sales and Expenses of the following ten firms :

Firms	Sales (in '000 units)	Expenses (in '000 Rs.)
1	50	11
2	50	13
3	55	14
4	60	16
5	60	16
6	65	15
7	65	15
8	60	14
9	60	13
10	50	13

20

(Contd.)

- 2 (a) You are given the following :  
 $X_1$  = Job satisfaction level,  $X_2$  = Salary,  
 $X_3$  = Working conditions  
Co-efficient of correlation between  $X_1$  and  $X_2$  = 0.70  
Co-efficient of correlation between  $X_2$  and  $X_3$  = 0.40  
Co-efficient of correlation between  $X_1$  and  $X_3$  = 0.61  
Calculate the three co-efficients of multiple correlation.

- (b) (i) Define Correlation. Explain the properties of the Co-efficient of Correlation.  
(ii) What is Rank Correlation ? How is it different from Karl Pearson's Correlation ?

10,10

SECTION—B

3. (a) From the following data of the age of husband and the age of wife, form two regression lines :

Husband's age	Wife's age
36	29
23	18
27	20
28	22
28	27
29	21
30	29
31	27
33	29
35	28

500

7215(2524)/IK-1205

2

(Contd.)

Q. What is Regression ? Explain the regression of Y on X and X on Y. At what point do the two regression lines intersect ? Also, derive the relation of two regression coefficients with correlation coefficient. 10,10

Q. Estimate by Newton's method of interpolation, the expectation of life at age of 22 from the following data :

Age	10	15	20	25	30	35
Expectation of life (in years)	35.4	32.2	29.1	26.0	23.1	20.4

Q. What is Interpolation ? Elucidate the methods of Interpolation. 10,10

### SECTION—C

Q. Two sets of candidates are competing for the positions on the Board of Directors of a company. The probabilities that the first and second sets will win are 0.6 and 0.4 respectively. If the first set wins, the probability of introducing a new product is 0.8 and the corresponding probability if the second set wins is 0.3. What is the probability that the product will be introduced ?

(b) What is Regression ? Explain the regression of Y on X and X on Y. At what point do the two regression lines intersect ? Also, derive the relation of two regression coefficients with correlation coefficient. 10,10

4. (a) Estimate by Newton's method of interpolation, the expectation of life at age of 22 from the following data :

Age	10	15	20	25	30	35
Expectation of life (in years)	35.4	32.2	29.1	26.0	23.1	20.4

(b) What is Interpolation ? Elucidate the methods of Interpolation. 10,10

### SECTION—C

5. (a) Two sets of candidates are competing for the positions on the Board of Directors of a company. The probabilities that the first and second sets will win are 0.6 and 0.4 respectively. If the first set wins, the probability of introducing a new product is 0.8 and the corresponding probability if the second set wins is 0.3. What is the probability that the product will be introduced ?

SECTION D

(b) The probability that a person stopping at a petrol pump will get his tyres checked is 0.12. The probability that he will get his oil checked is 0.29 and the probability that he will get both checked is 0.07.

(i) What is the probability that a person stopping at a petrol pump will have neither his tyres nor oil checked?

(ii) Find the probability that a person who has oil checked will also have his tyres checked. <https://www.gnduonline.com> 10,10

6. (a) While conducting a population survey of a city, the enumerator noticed that 40% of the male population were illiterate. If the trend continues, work out the probability that out of a random sample of 2,00,000 males population, the number of illiterates will be (i) less than 75,000 and (ii) more than 82,000.

(b) If 2% of the electric bulbs manufactured by ABC Company are defective, find the probability that in a sample of 200 bulbs, (i) less than 2 bulbs are defective and (ii) more than 3 bulbs are defective. 10,10

7. (a) Define Sample. Discuss the sampling procedure in detail.

(b) What is Sampling? Is sampling always better than complete enumeration? Justify your answer with the help of suitable examples. 10,10

8. What do you understand by Sampling? Elaborate various methods of Probability Sampling. 20

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