

(i) Printed Pages: 4 Roll No.

(ii) Questions : 14 Sub. Code :

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Bachelor of Commerce 4th Semester

(2055)

QUANTITATIVE TECHNIQUES & METHODS

Paper : BCM-406

Time Allowed : Three Hours] [Maximum Marks : 80

SECTION—A

Note :— Attempt any **FOUR** questions. Each question carries
5 marks. 5×4=20

1. How quantitative techniques are useful in business ?
2. If the covariance between X and Y variables is 10 and the variances of X and Y are respectively 16 and 9, find the coefficient of correlation.
3. A card is drawn from a pack of 52 cards. What is its probability of being either black or a queen ?
4. Find the missing figures in the following table :

X	0	5	10	15	20	25
Y	7	11	?	18	?	32

5. Solve graphically the LPP :

$$\text{Maximise } Z = 2X + 4Y$$

$$\text{subject to : } X + 3Y \leq 42$$

$$2X + Y \leq 21$$

$$\text{where } X, Y \geq 0$$

6. Discuss the relationship between correlation and regression coefficients.

SECTION—B

Note :— Attempt any **TWO** questions. Each question carries
15 marks. 15×2=30

7. Write notes on the following :

(i) Discuss the classification of Quantitative Techniques. 10

(ii) Properties of Normal distribution. 5

8. There are 3 economists, 4 engineers, 2 statisticians and 1 doctor. A committee of 4 is to be formed from among them. Find the probability that the committee :

(i) consists of 1 of each member

(ii) has at least one economist

(iii) has a doctor as its member and 3 others.

9. The standard weight of a special purpose brick is 5 kg and it contains two basic ingredients B1 and B2. B1 costs Rs. 5 per kg and B2 costs Rs. 8 per kg. Strength considerations dictate that the brick contains not more than 4 kg of B1 and minimum

2 kg of B2. Since the demand for the product is likely to be related to the price of the brick, formulate LPP and find out graphically the minimum cost of the brick satisfying the above conditions.

10. (a) What are the assumptions of Binomial Distribution ? 5
(b) A set of 5 unbiased coins are tossed 3200 times and the number of heads observed at each throw is given below. Assuming the binomial distribution, calculate the expected frequencies.

No. of heads	0	1	2	3	4	5
Observed frequencies	90	560	1100	900	490	60

10

SECTION—C

Note :— Attempt any **TWO** questions. Each question carries **15 marks.** 15×2=30

11. Write notes on the following :—

- (i) Regression equations and regression coefficients
 - (ii) Explain the usage of interpolation and extrapolation in business.
 - (iii) Discuss the types of correlation. (5 marks each)
12. The coefficient of rank correlation of the marks obtained by 10 students in statistics and accountancy was found to be 0.8. It was later discovered that the difference in ranks in the two subjects obtained by one of the students was wrongly taken as 5 instead of 9. Find the correct coefficient of rank correlation.

13. With the help of the given data where $r = 0.66$:

	X	Y
Arithmetic Mean	36	85
Standard Deviation	11	8

Find two regression equations and estimate the value of X when $Y = 75$.

14. From the following table, find the number of workers falling in the earning group of Rs. 25 to Rs. 35 :

Earning in Rupees upto	10	20	30	40	50	60
No. of Workers	50	150	300	500	700	800