(6 pages)

S.No. 1166 **P 16 BM 22**

(For candidates admitted from 2016-2017 onwards)

M.Com. DEGREE EXAMINATION, NOVEMBER 2022

Bank Management

QUANTITATIVE TECHNIQUES FOR BANK MANAGERS

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20)

Answer ALL questions.

1. What is Correlation Analysis?
2. Define Poisson distribution.
3. What is dependent Sample?
4. State the conditions under which least cost method is applied.
5. What is Extrapolation?
6. What is Linear Programming?
7. What is life table?
8. State the methods for obtaining vital statistics.
9. What is Interpolation?
10. What is parabolic curve?

PART B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the features of Spearman correlation coefficient.

Or

(b) Calculate the coefficient of correlation from the following data by the Spearman Rank difference method.

Price of Tea (Rs)	Price of Coffee (Rs)	Price of Tea (Rs)	Price of Coffee (Rs)
75	120	60	110
88	134	80	140
95	150	81	142
70	115	50	100

12. (a) Write the importance of Binominal distribution.

Or

(b) A Person is know to hit the target in 3 out of 4 shots, whereas another person is known to hit the target in 2 out of 3 shots. Find the probability of the target being hit at all when they try.

13. (a) Explain the technique of Analysis of Variance.

Or

(b) Weight in kg of 10 students are give below 38, 40,45, 53 47,43,55,48,52,49

Can we say that variance of the distribution of weights of all students from which the above sample of 20 students was drawn is equal to 20 square kg? You are given the following table values.

Degrees of freedom	χ^2 0.05	χ^2 0.01
9	16.92	21.67
10	18.31	23.21

14. (a) Assign workers 1,2,3,4 to jobs A,B,C,D. Time taken by workers for different jobs are given in the matrix.

Workers	Jobs			
	A	B	C	D
1	45	40	51	67
2	55	40	61	53
3	49	52	48	64
4	41	45	60	55

Or

(b) Use the simplex method to solve the following LP Problem.

Maximize $Z = 3x_1 + 5x_2 + 4x_3$

Subject to the constraints,

$2x_1 + 3x_2 \leq 8$

$2x_2 + 5x_3 + \leq 10$

$3x_1 + 2x_2 + 4x_3 \leq 15$

$x_1, x_2, x_3 \leq 0$

15. (a) The following table gives the cube of the values. Find out the cubeior 5 by applying parabolic curve method.

Size if items	3	4	5	6	7
Cube value	27	64	?	216	343

Or

(b) Using an appropriate formula for interpolation estimate the average number of children born per month aged 30-34.

Age of mother in year	Average no of children born		Age of mother in year		Average no of children born
15-19	0.7	y_0	30-34	?	y_3
20-24	2.1	y_1	35-39	5.7	y_4
25-29	3.1	y_2	4.–44	5.8	y_5

PART C — (3 × 10 = 30)

Answer any THREE questions.

16. Calculate coefficient of correlation from the following data.

X:	100	200	300	400	500	600	700
Y:	30	50	60	80	100	110	130

17. A company has two plants to manufacture scooters. Plant I manufacture 80 percent of the scooter and plant 11 manufactures 20 percent. At Plant I, 85 out of 100 scooters are rated standard quality or better, At plant II only 65 out of 100 scooter are rated standard quality or better, At plant II only 65 out of 100 scooter are rated standard quality or better. What is the probability that scooter selected at random came from plant I, if it is known that the scooter is of standard quality? What is the probability that is came from plant II, If it known that scooter is of standard quality?

18. In an experiment on immunization of cattle from tuberculosis, the following result were obtained.

	Affected	Not Affected
Inoculated	12	26
Not inoculated	16	6

Calculate Chi-square and discuss the effect of vaccine in controlling susceptibility to tuberculosis (5% value of Chi-square for one degree of freedom = 3.84).

19. Find the dual problem for the following

Min $Z = 5x_1 - 6x_2 + 4x_3$

Subject to

$3x_1 + 4x_2 + 6x_3 \geq 9$

$x_1 + 3x_2 + 2x_3 \geq 5$

$7x_1 - 2x_2 - x_3 \leq 10$

$x_1 - 2x_2 + 4x_3 \geq 4$

$2x_1 + 5x_2 - 3x_3 \geq 3$

$x_1, x_2, x_3 \geq 0$

20. From the figures calculate the female gross reproduction rate if the ratio of male and female children be 48:52.

Age group	No of children born to 1,000 women	Age group	No of children born to 1,000 women
15-19	50	35-39	80
20-24	180	40-44	40
25-29	200	45-49	10
30-34	150		