

(FOR THE CANDIDATES ADMITTED

SUBJECT CODE **24 UEC 4A1**

DURING THE ACADEMIC YEAR 2024-25 ONLY)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY– 2026

B.Com. -E.COMMERCE

MAXIMUM MARKS: 75

IV SEMESTER

TIME : 3 HOURS

PART – III

BUSINESS MATHEMATICS AND STATISTICS

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

MULTIPLE CHOICE QUESTIONS

1. “ I ” stands for _____
(a) Simple Interest (b) Compound Interest
(c) Rate of interest (d) No.of. years
2. Cramer's Rule is also known as _____.
(a) Inverse Matrix Method (b) Matrix Method
(c) Determinant Method (d) Inverse Method
3. _____ is not a measure of central tendency.
(a) Mode (b) Mean (c) Range (d) Median
4. Which of the following are types of correlation?
(a) Positive and Negative (b) Simple, Partial and Multiple
(c) Linear and Nonlinear (d) All of the above
5. The index number for base year is always _____.
(a) 1000 (b) 200 (c) 100 (d) 1

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES.

(K2)

6. Define Depreciation
7. What is Scalar Matrix.
8. Define Mode.
9. What is simple linear correlation?
10. What is an Index number?

(CONTD 2)

SECTION – B**(5 X 5 = 25 MARKS)**

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.
(K3)

11. a) Calculate the return for the amount of Rs.20,000 at the simple interest rate of 8 percent for a period of 16 Months.

(OR)

- b) Approximately at what duration a sum of Rs.25,000 will be get doubled with a compound rate of interest of 8 %.

12. a) Find the Rank of matrix

$$A = \begin{bmatrix} -3 & 6 & 2 \\ 1 & 5 & 4 \\ 4 & -8 & 2 \end{bmatrix}$$

(OR)

- b) Find a and b if $\begin{bmatrix} a+b & a-b \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 7 & 3 \\ 1 & 2 \end{bmatrix}$

13. a) Calculate the Geometric mean for the given data:

X	5	12	20	50	90
f	16	11	7	4	2

(OR)

- b) Find the Quartile Deviation for the following.

391	384	591	407	672	522	777	733	1490	2488
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14. a) Find the coefficient of correlation for the data given below:

X	10	12	18	24	23	27
Y	13	18	12	25	30	10

(OR)

- b) Calculate Spearman's rank correlation coefficient.

X	24	27	31	32	20	25	33	30	28	22
Y	11	8	5	3	13	10	2	7	9	2

15. a) Calculate Price Index numbers by (i) Simple G.M method and (ii) Weighted G.M method

Item	A	B	C	D	E
Weight	40	25	15	10	10
Price in 2011 (Rs)	25	50	40	10	20
Price in 2021 (Rs)	40	80	60	20	40

(OR)**(CONTD 3)**

- b) Construct Cost of Living Index number from the following data:

Item	Base Year Price	Current Year Price	Weight
Food	39	47	4
Fuel	8	12	1
Clothing	14	18	3
House Rent	12	15	2
Miscellaneous	25	30	1

SECTION – C

(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) Explain the application of Mathematics in Business Finance.

(OR)

- b) (i) Calculate the difference in amount between the simple and Compound Interest for a sum of Rs.1,00,000 at the interest rate of 12% of a tenure of 5 Years.
(ii) Calculate the value of money after 5 Years for a sum of Rs.50,000 at a discounted rate of 10 percent per annum.

17. a) Solve the equations using inverse of matrix:

$$\begin{aligned} 2x - y + 3z &= 1 \\ x + 2y - z &= 2 \\ 5y - 5z &= 3 \end{aligned}$$

(OR)

- b) Use determinants and solve:

$$\frac{1}{a} + \frac{2}{b} = 4$$

$$\frac{3}{a} - \frac{1}{b} = 5$$

18. a) Calculate mean, median and mode from the following frequency distribution.

Variable	10-13	13-16	16-19	19-22	22-25	25-28	28-31	31-34	34-37	37-40
Frequency	8	15	27	51	75	54	36	18	9	7

(OR)

- b) Calculate the standard deviation of the following frequency distribution.

Annual Profit (in Crores)	20-40	40-60	60-80	80-100	100-120	120-140	140-160
No. of. banks	10	14	25	48	33	24	16

(CONTD 4)

19. a) From the following data on marks in Statistics and Accountancy, Calculate Pearson's correlation coefficient:

Marks in Statistics	90	80	70	65	50	40	30	20	10
Marks in Accountancy	75	80	70	65	55	60	50	40	45

(OR)

- b) Ten Competitors in a musical test were ranked by three judges A, B and C in the following order.

Ranks by A	1	6	5	10	3	2	4	9	7	8
Ranks by B	3	5	8	4	7	10	2	1	6	9
Ranks by C	6	4	9	8	1	2	3	10	5	7

Using Rank correlation method, discuss which pair of judges has the nearest approach to common likings in music.

20. a) Compute (i) Laspeyre's (ii) Paasche's and (iii) Fishers index numbers.

Item	Price		Quantity	
	Base Year	Current Year	Base Year	Current Year
A	6	10	50	50
B	2	2	100	120
C	4	6	60	60
D	10	12	30	25

(OR)

- b) Calculate Fisher's Ideal Index number.

Commodity	2015		2020	
	Price (Rs)	Qty	Price (Rs)	Qty
A	2	74	3	82
B	5	125	4	140
C	7	40	6	33
