(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2025 ONLY)

25UBM1A1

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI
END-OF-SEMESTER EXAMINATIONS :NOVEMBER-2025

B.B.A. **MAXIMUM MARKS: 75**
SEMESTER: I **TIME : 3 HOURS**

PART - III

MATHEMATICAL TECHNIQUES - I

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.
MULTIPLE CHOICE QUESTIONS. **(K1)**

1. If A is a square matrix, then $A + A^T$ is a _____ .
   a) Symmetric matrix b) Skew-symmetric matrix
   c) Diagonal matrix d) Identity matrix
2. _____ of the following is a method of data collection.
   a) Questionnaire b) Interview c) Observation d) All of the above
3. The mode of a data set is the _____ .
   a) Average value b) Middle value c) Most frequent value d) Highest value
4. _____ of the following is a measure of dispersion.
   a) Mean b) Median c) Mode d) Range
5. The correlation coefficient is always between _____ .
   a) 0 and 1 b) -1 and 1 c) 0 and ∞ d) -∞ and ∞

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. **(K2)**

6. What is the formula for calculating compound interest?
7. What is a primary data?
8. Define Geometric mean.
9. What is range?
10. What is the use of two regression lines?

SECTION – B (5 X 5 = 25 MARKS)

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

11. a) If $A = \begin{bmatrix} 3 & 5 \\ 2 & a \end{bmatrix}$, $B = \begin{bmatrix} 4 & b \\ 2 & 9 \end{bmatrix}$ and $C = \begin{bmatrix} 26 & a \\ 14 & 45 \end{bmatrix}$ find a and b when $2A + 5B = C$.

(OR)

b) If a term deposit of Rs. 4,000 earns an interest of Rs. 2,500 in 50 months, find the rate of interest.

12. a) Describe Primary and Secondary data.

(OR)

b) The following data indicates the rice (in Kgs.) consumption of 30 families. Frame the frequency table with this data:

30	20	14	52	24	33	56	45	24	37
21	43	25	11	33	19	26	31	42	34
37	41	15	47	21	38	26	44	28	12

13. a) The mean of 20 marks is found to be 40. Later on, it was discovered that a mark 53 was misread as 83. Find the correct mean.

(OR)

(CONTD…….2)

13. b) Calculate the median from the following data:

Marks	10-25	25-40	40-55	55-70	70-85	85-100
Frequency	6	20	44	26	3	1

14. a) Calculate the mean deviation about median for the items,

7 4 10 9 15 12 7 9 7

(OR)

b) Calculate the coefficient of variation of the following:

40 41 45 49 50 51 55 59 60 60

15. a) Define a scatter diagram. Draw the scatter diagram when
(i) r=+1 (ii) r=-1 (iii) r=0.

(OR)

b) Compute rank correlation coefficient between X and Y where,

X:	8	7	6	3	2	1	5	4
Y:	7	5	4	1	3	2	6	8

SECTION – C (5 X 8 = 40 MARKS)

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

(K4 (Or) K5)

16. a) If $A=\begin{vmatrix} 4 & 1 & 3 \\ 2 & 0 & -6 \\ 5 & -7 & 9 \end{vmatrix}$, $B=\begin{vmatrix} 5 & -2 & 0 \\ 1 & 6 & 8 \\ 3 & 4 & 7 \end{vmatrix}$ find A x B.

(OR)

b) The difference between the compound interest and the simple interestfor 3 years at 5% p.a. on a certain sum of money was Rs. 610. Find the sum.

17. a) Describe the various sources of secondary data.

(OR)

b) Explain four types of classification.

18. a) Find the missing frequency from the following frequency distribution if mean is 38.

Marks	: 10	20	30	40	50	60	70
No. of Students	: 8	11	20	25		10	3

(OR)

b) Calculate the mean, median and mode.

Central Value	: 45	55	65	75	85	95	105
Frequency	: 32	65	128	167	136	79	43

19. a) For the data given here, give the quartile deviation.

X : 351-500	501-650	651-800	801-950	951-1100
f : 48	189	88	47	28

(OR)

b) The weekly salaries of a group of employees are given in the following table. Find the mean and standard deviation of the salaries.

Salary (in Rs.) : 75	80	85	90	95	100
No.of. Persons : 3	7	18	12	6	4

20. a) Compute the coefficient of correlation between X-Advertisement Expenditure and Y-Sales.

X:	10	12	18	8	13	20	22	15	5	17
Y:	88	90	94	86	87	92	96	94	88	85

(OR)

b). Obtain the two regression lines from the following:

X:	6	2	10	4	8
Y:	9	11	5	8	7

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