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

25 UCC2A1

REG.NO. :

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

END-OF-SEMESTER EXAMINATIONS : MAY-2026

B.Com.-C.A **MAXIMUM MARKS: 75**

SEMESTER: II **TIME : 3 HOURS**

PART - III

BUSINESS MATHEMATICS AND STATISTICS

SECTION – A (10 X 1 = 10 MARKS)

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

1. $n =$ _____

(a) $P(1+i)^n$ (b) $\dfrac{A}{\left(1+\frac{r}{100}\right)^n}$ (c) $\dfrac{\log A - \log P}{\log\left(1+\frac{r}{100}\right)}$ (d) $P\left[(1+i)^n - 1\right]$

2. A square matrix A is said to be non-singular if _____.

a. $|A| = 0$ b. $|A| \neq 0$ c. $AA' = I$ d. $A^2 = A$

3. $\begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix} X \begin{bmatrix} 2 & 4 \\ 3 & 1 \end{bmatrix} =$ _____

(a) 50 (b) -50 (c) 10 (d) 5

4. _____ formula is used to find arithmetic mean by short-cut method

(a) $\bar{x} = \dfrac{\sum fx}{n}$ (b) $\bar{x} = \dfrac{n_1x_1 + n_2x_2}{n_1 + n_2}$ (c) $\bar{x} = \dfrac{\sum f_i w_i}{n}$ (d) $\bar{x} = A + \dfrac{\sum fd}{N}$

5. _____ is defined as the value of the variable which occurs most frequently in a distribution.

(a) Mean (b) median (c) mode (d) Geometric mean

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

6. What is called nominal rate and effective rate?
7. Define diagonal matrix.
8. Define consistent.
9. Write any four characteristics of statistics.
10. Write any 4 demerits of Harmonic mean.

(CONTD …. 2)

SECTION – B (5 X 5 = 25 MARKS)

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

11. a) Mr. Ramesh deposited Rs 25,000 on 1.1.94. At the end of 5 months, he withdrew Rs 5,000. Find the interest due to him on 31.12.94. Rate of interest=12% per annum.

(OR)

b) Find the compound interest on Rs 20,0000 for 5years at 20% per annum. What will be the simple interest in the above case?

12.a) If $A=\begin{bmatrix}2 & 3 & 5\\ 4 & 7 & 9\\ 1 & 6 & 4\end{bmatrix}$ and $B=\begin{bmatrix}3 & 1 & 2\\ 4 & 2 & 5\\ 6 & -2 & 7\end{bmatrix}$ Prove that $5(A+B)=5A+5B$

(OR)

b) Write any 5 properties of Matrices.

13. a) Find the Rank of the matrix, A= $\begin{bmatrix}3 & 2 & -1\\ 7 & 8 & 5\\ 3 & 5 & 6\end{bmatrix}$

(OR)

b) Examine whether the following equations are consistent and if so solve x=2y+3z=14; 3x+y-z=2; 8x+6y+4z=32

14. a) Explain the scope and uses of statistical methods.

(OR)

b) The expenditure of 10 families in Rupees are given below :

Family	A	B	C	D	E	F	G	H	I	J
Expenditure	30	70	10	75	500	8	42	250	40	36

Calculate the arithmetic mean by short cut method .

15.a) Calculate the median from the following data:

Marks	10-25	25-40	40-45	55-70	70-85	85-100
Frequency	6	20	44	26	3	1

(OR)

b) Calculate Weighted G.M

Commodity	A	B	C	D
Weight	1	6	3	2
Price (Rs)	5	17	30	42

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4 (Or) K5)

16. a) Calculate the compound interest for the followings

(i) For Rs2500 for 4 years at 8% per annum.

(*ii*) in the above case when interest is compounded (*a*) half yearly (*b*) quarterly

(CONTD …. 3)

(OR)

16 b) (i) Mr. Puthianayagam has two daughters A and B aged 10.5 and 16 years . He has 1,80,000 with him now but wants that both of them should get an equal amount when they are 18 years old. How he should divide the money if it were to be deposited with his friend who gives only 5% simple interest per annum.

(ii) Find the effective rate of interest equivalent to a nominal rate of 12% p.a compounded monthly and the effective rate when interest is compounded continuously .

17.a) Use determinants and solve $\frac{1}{a}+\frac{2}{b}=4$; $\frac{3}{a}-\frac{1}{b}=5$;

(OR)

b) (i) If $P=\begin{bmatrix}2 & 5\\ 2 & a\end{bmatrix}$, $Q=\begin{bmatrix}4 & b\\ 2 & 9\end{bmatrix}$ and $R=\begin{bmatrix}26 & a\\ 14 & 45\end{bmatrix}$

Determine a and b when 2P+5Q=R

(ii) If $A=\begin{bmatrix}9 & 1\\ 4 & 3\end{bmatrix}$, $B=\begin{bmatrix}1 & 5\\ 7 & 12\end{bmatrix}$

Determine the matrix X such that when 3A+5B+2X=0.

18. a) Determine the inverse of the matrix $A=\begin{bmatrix}1 & 0 & -1\\ 3 & 4 & 5\\ 0 & -6 & -7\end{bmatrix}$

(OR)

b) Solve the following simultaneous equations by matrix inversion method
x+2y-5z+9=0; 3x-y+2z-5=0; 2x+3y-z-3=0; 4x-5y+z+3=0

19.a) Calculate the arithmetic mean by (i) Direct (ii) short cut (c) step deviation methods and compare the result.

Middle income (Rs. 000)	6	8	10	12	14	16	18
No of employees	21	55	124	180	136	73	11

(OR)

b) Briefly explain the functions of statistics .

20.a) Calculate the mean, median and mode.

Marks	11-20	21-30	31-40	41-50	51-60	61-70	71-80
No of students	42	38	120	84	48	36	31

(OR)

b) Calculate (i) Arithmetic mean (ii) Geometric mean (iii) Harmonic mean.

Marks	20	21	22	23	24	25
No of students	4	2	7	1	3	1

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ETHICAL PAPER