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(FOR THE CANDIDATES ADMITTED **SUB CODE 23UBI2A1**

DURING THE ACADEMIC YEAR 2023 ONLY) **REG.NO. :**

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

END-OF-SEMESTER EXAMINATIONS : MAY 2024

B.COM B&I **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.(K1)

1. Simple interest = _____
   (a) Pnr
   (b) $\frac{Pnr}{100}$
   (c) Pn
   (d) Nr
2. The first term and common difference of the AP 1/2, 5/6, 7/6, 3/2,….17/6 _____
   (a) 1/2, 17/6 (b) 1/2 ,1/3 (c)1/3,1/2 (d)17/6,1/2
3. $\begin{bmatrix} 2 & 3 \\ 9 & 8 \end{bmatrix}$ is a _____ matrix.
   (a) Identity
   (b) Square
   (c) Diagonal
   (d) Scalar
4. Find the inverse of the matrix A = $\begin{bmatrix} 1 & 3 \\ 2 & 7 \end{bmatrix}$ _____
   (a) $\begin{bmatrix} 7 & -3 \\ -2 & 1 \end{bmatrix}$
   (b) $\begin{bmatrix} 5 & -3 \\ -2 & 1 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & -3 \\ -2 & 1 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & -3 \\ 2 & 1 \end{bmatrix}$

5. $A \cup (B \cap C)$ is equal to _____

(a) $(A \cup B) \cap (A \cup C)$ (b)$(A \cup B) \cap C$ (c)0 (d)$(A \cup B) \cup C$

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

6. Define : Arithmetic progression.
7. Explain : square Matrix.
8. Define : Set
9. Explain: Mode
10. Define Simple correlation:

SECTION B (5 x5 =25)

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

11. (a) Find the simple interest on the sum of Rs. 6000 at 10 % p.a. for 3 years .

(or)

(b) In an arithmetic series , the seventh and the nineth terms are Respectively 16 and 20 . Find the n^{th} term.

12. (a) If A= $\begin{bmatrix} 4 & -1 & 0 \\ -3 & 5 & -6 \\ 2 & -7 & 8 \end{bmatrix}$ and B = $\begin{bmatrix} -1 & 0 & 1 \\ 5 & -2 & 2 \\ 3 & 4 & 3 \end{bmatrix}$ Find A +B and A- B.

(or)

(b) Find the rank of $\begin{bmatrix} 3 & 2 & -1 \\ 7 & 8 & 0 \\ 4 & 6 & 1 \end{bmatrix}$

13. (a) If A = { 1,3,4,5} and B ={ 1,7,8,10} find $A \cup B$ and $A \cap B$.

(or)

(b) If U = { 1,2,3,4,5,6,7,8,9} ; A = { 1,2,3,4} and B = {3,4,5,9} find out $(A \cup B)'$ and $(A \cap B)'$.

14 . (a) Describe the characteristics of statistics ? **23UBI2A1**

(or)

(b) If $\bar{X}$ = 40.5 ; M = 36 find out the value of mode.

15. (a) Explain the various types of correlation .

(or)

(b) From the given information , obtain the regression equation of *Y* on *X*:

	X	**Y**
Mean	40	60
Standard Deviation	10	15
Correlation Coefficient	0.7	

SECTION C (5 X 8 = 40)

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

16. (a) Mr . A . borrows Rs . 1,600 for 3years at 12 % p.a. C .I , calculate how much he has to pay ?

(or)

(b) If the sum of three numbers in GP is 14 and their product is 64 . find Find the numbers .

17. (a) If $A = \begin{bmatrix} 1 & 0 & -4 \\ -2 & 2 & 5 \\ 3 & -1 & 2 \end{bmatrix}$ show that $AA^{-1} = \mathbf{I}$

(or)

(b) If $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 3 & -1 \\ -3 & 1 & 2 \end{bmatrix}$ Find A^{-1}.

18. (a) Verify Demorgan law's by venn – diagrams .

(or)

(b) If U = { 0,1,2,3,4,5} , A= {0, 1, 2} and B ={2,4} prove that

(i) $(A \cup B)' = A' \cap B'$

(ii) $(A \cap B)' = A' \cup B'$

19. (a) Compute mean , median and mode :

χ:	10	30	50	70	90
f :	7	12	21	10	15

(or)

(b) Find M .D from mean and its co -efficient .

χ:	50	80	120	160	180	200
f :	4	8	16	20	28	24

20. (a) The following table gives aptitude test scores and productivity

Indices of 8 randomly selected workers :

Aptitude Score :	57	58	59	59	60	61	62	64
Productivity index :	67	68	65	68	72	72	69	71

Calculate the correlation coefficient between aptitude test score and productivity index.

(or)

(b) Calculate the two regression equations from the following Data .

X :	10	12	13	12	16	15
Y :	40	38	43	45	37	43

Also estimate Y when X = 20.