(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2023 ONLY)

23UCC2A1

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI
END-OF-SEMESTER EXAMINATIONS : MAY-2024
COURSE NAME:B.Com.-C.A **MAXIMUM MARKS: 75**
SEMESTER: II **TIME : 3 HOURS**

PART – III
BUSINESS MATHEMATICS

SECTION – A (10 X 1 = 10 MARKS)

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

1. Shanthi borrows Rs. 10,000 for 5 years a 10 % p.a simple interest .How much interest does she pay?
   a) 500 b) 5555 c) 5000 d) 1000.
2. Period fixed sum paid under certain stated conditions is called _____.
   a) Annuity b) Perpetuity c) Deferred perpetuity d) Annuity due.
3. How many subsets can be formed from the set {5,7,3}?
   a) 6 b) 8 c) 10 d) 12.
4. Which of the following is not an elementary transformation?
   a) Interchanging of nay two rows (or) columns
   b) Interchanging of rows and columns
   c) Addition to the elements of a row the corresponding elements of another row
   d) Multiplication of each element of a row (or column by any non-zero scalar)
5. Rank of matrix for $\begin{bmatrix} 2 & 2 \\ 3 & 5 \end{bmatrix}$ is _____.
   a) 2 b) 3 c) 0 d) 1.

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

6. Distinguish between ‘Simple interest ‘ and ‘Compound interest’.
7. Define Annuity.
8. Explain on union sets**.**
9. Explain the Laws and properties of sets .
10. Define Inverse of a matrix

SECTION – B (5 X 5 = 25 MARKS)

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

11. a) A sum amounted to Rs. 1,071 in 6 months and Rs. 1,106 in 16 months . Calculate the rate of simple interest

(OR)

b) Calculate the total amount that will be received from debtors when the principal Rs. 10,000 is lent to him on interest for 4 years at 9 % p.a

12.a) At the end of each year , the value of a machine depreciates by 10 % of is value at the commencement of the year. If the value of the machine at the commencement was Rs 58,750 , find the value of the machine after 3 years

(OR)

b) Mr .X borrows Rs. 20,000 at 4 % compound interest and agrees to pay both principal and the interest in 10 equal installments at the end of each year . Find the amount of these instalment

(CONTD……..2)

13. a) Discover the kinds of sets.

(OR)

b) A={1,2,3,4,} B={2,4,5,6}and C={3,4,6,8} find (**A** ∩ B) ∩ C

14. a) Solve the following equations by applying Cramer rule.

3x+2y=8

5x-3y=7

(OR)

b) Let A $\begin{pmatrix} 2 & -3 & 1 \\ 4 & 2 & 3 \end{pmatrix}$ B $\begin{pmatrix} 3 & -2 & 4 \\ 1 & 3 & -5 \end{pmatrix}$ Find $A^T + B^{T.}$

15. a) Find the inverse of $\begin{bmatrix} 2 & 2 \\ 3 & 5 \end{bmatrix}$ if exists

(OR)

b) Examine the consistency of the following equation system of linear equations and solve if consistent

2x+5y-27=0

-10x-25y-135=0

SECTION – C (5 X 8 = 40 MARKS)

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

(K4 (Or) K5)

16. a) Mr Somasundaram deposits a total of Rs. 45,000 in two different banks which offers 10 % And 15 % interest respectively. If the amounts repayable by the two banks at the end of 10 Years are to be equal , determine the individual amount of deposit.

(OR)

b) Show the effective rate of interest percent per annum equivalent to a nominal rate 12 % per annum the interest being payable half yearly.

17.a) Show the rate of interest of a bill of Rs. 12,937.50 whose true discount for the unexpired period of 4 months is Rs.437.50

(OR)

b) At the end of the year the value of a machine depreciates by 10 % of its value at the commencement of the year. If the value of the machine at the commencement was Rs. 58,750, show the value of the machine after 3 years.

18. a) if U={0,1,2,3,4,5} .A ={0,1,2}and B ={2,4}, Prove that

i) (AUB)' =A' ∩ B'

ii) (A ∩ B)'=A'UB'

(OR)

b) Out of group of 60 students , 25 play cricket, 30 play Football , 24 play Hockey , 10 play Cricket and football 9 play cricket and hockey , 12 play Hockey and football and 5 play all three . Use venn –diagram to show how many play only one game.

(CONTD……..3)

19. a) Solve the following system of simultaneous equations by applying Cramer's Rules

2X +3Y+3Z=22

X-Y+Z=4

4X+2Y-Z=9

(OR)

b) If a=$\begin{bmatrix}17 & 5\\14 & 6\end{bmatrix}$ and B $\begin{bmatrix}1 & 0\\2 & -2\end{bmatrix}$ then find the value of X if 5x + 2B=A

20. a) Solve that A =$\begin{pmatrix}1 & 2 & 2\\2 & 1 & 2\\2 & 2 & 1\end{pmatrix}$ satisfy the equation A^2-4A-5I=0 where I is the identify matrix and 0 denotes the zero matrix .Hence find the inverse of A

(OR)

b) Examine whether the following equations are consistent ,and if so, solve:

$X_1+2X_2+3X_3=14$

$3X_1+X_2 - X_3=2$

$8X_1+6X_2+4X_3=32$

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