(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022 ONLY)

22UCC2A2

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI
END-OF-SEMESTER EXAMINATIONS : MAY-2023
COURSE NAME: B.Com.-C.A **MAXIMUM MARKS: 50**
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. Write the formula to find amount in CI_____.
   a) $A=P(1+\frac{r}{100})^n$ b) A=P(1+r) c) A=CI-P d) None

2. Annuties are divided into _____ kinds.
   a) 2 b)3 c)1 d)4

3. If U={1,2,3,4,5,6,7,8} , A={1,2,3},B={4,5,6} and C={6,7,8} find A∪(B∩C)_____.
   a) {1,2,3} b) {1,2,3,6} c) {1,4,5} d) {1,2,6}

4. If A=(3 5 6) and B= $\begin{pmatrix}4\\1\\2\end{pmatrix}$ find AB_____.
   a) 29 b) 34 c) 56 d) 45

5. Find the determinant values of $\begin{bmatrix}a & b\\c & d\end{bmatrix}$_____.
   a) ac-ad b) ab-cd c) bd-ac d) ad-bc

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

6. Define Nominal rate.
7. Define Face Value.
8. Define Disjoint set.
9. Define Minor of an element.
10. Define Rank 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 certain sum amounts to Rs.4,000 at the end of 5 years at 12% p.a interest. Find the sum.

(OR)

b) Find the effective rate of interest equivalent to a nominal rate of 12% p.a compounded monthly.

12.a) A person deposits Rs.5,000 every year with a company which pays him interest at 12% p.a . He allows his deposits to accumulate with the company at compound interest.What would be the amount standing to his credit one year after he has made his deoposit for 15th time?

(OR)

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

(CONTD……2)

13.a) Write any 5 types of sets with an example.

(OR)

b) Verify Associative laws using venn diagram.

14.a) Define the following matrix with an example
Row matrix, Square matrix, Equivalent matrix, Unit matrix, Diagonal Matrix.

(OR)

b) Find the value of the determinant A=$\begin{vmatrix} 3 & 4 \\ 2 & 1 \end{vmatrix}$.

15.a) Find the inverse of A=$\begin{pmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & 1 \end{pmatrix}$.

(OR)

b) Find the Rank of A =$\begin{pmatrix} 4 & 1 & 2 \\ 2 & 3 & -1 \\ 1 & -2 & 2 \end{pmatrix}$

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. K4 & k5

16.a) Calculate the compound interest for Rs.2,500 for 4 years at 8% p.a. **(K3)**

(OR)

b) Find the effective rate of interest percent per annum equivalent to a nominal rate 12% p.a, the interest being payable half yearly. **(K3)**

17.a) A sum of Rs.1,000 is to be paid at the end of every year for a period of 5 years at the rate of 10% p.a, compound interest. If the first instalment is paid at the end of the first year, how much amount will be accured to the credit of the depositor? What is its present worth? **(K4)**

(OR)

b) A person wishes to collect Rs.1,20,000 for a house at the time of retirement due after 18 years. If the rate of compound interest is 6% p.a, how much should he deposit annually to receive this amount? **(K4)**

18.a) If A={1,2,3,4}; B={2,4,5,6} C={1,3,5,6} then find **(K4)**
1. AU(B∩C) = (AUB) ∩ (AUC) 2.A∩(BUC) = (A∩B) U (A∩C)
3. AU(BUC) = (AUB) UC 4.A∩ (B∩C) = (A∩B) ∩C

(OR)

b) Verify De Morgan's Laws using venn diagram . **(K4)**
1. (AUB)′=(A'∩B') 2. (A ∩ B)′=(A'UB′)

19. a) Find A+B,A-B,AB for the following

A =$\begin{pmatrix} 4 & 1 & 2 \\ 2 & 3 & -1 \\ 1 & -2 & 2 \end{pmatrix}$ B=$\begin{pmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{pmatrix}$ **(K4)**

(OR)

b) Solve the following system of simultaneous equations by Cramer's Rule: **(K5)**
2x+3y+3z=22, x-y+z=4, 4x+2y-z=9

20. a) Solve the equations by matrix method. **(K5)**
2x-y+3z=1, x+y+z=2, x-y+z=4

(OR)

b) Examine whether the following equations are consistent and if so; solve: **(K5)**
$x_1 + 2x_2 + 3x_3 = 14$,$3x_1 + x_2 - x_3 = 2$, $8x_1 + 6x_2 + 4x_3 = 3$

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