

(FOR THE CANDIDATES ADMITTED

21UCC2A2

DURING THE ACADEMIC YEAR 2021 ONLY)

REG.NO. :

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

END-OF-SEMESTER EXAMINATIONS: JULY 2022

B.COM.-CA

MAXIMUM MARKS: 70

II SEMESTER

TIME: 3 HOURS

PART – III

BUSINESS MATHEMATICS

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. If P denotes the principle, n is the number of years and r is the rate of interest then the amount A is _____.

a) $P \left(1 + \frac{nr}{100}\right)$

b) $\frac{Pnr}{100}$

c) $P + \frac{nr}{100}$

d) $P - \frac{nr}{100}$

2. The present value of an Immediate Annuity is defined as _____.

a) $\frac{A}{i} [1 + (1 + i)^{-n}]$

b) $\frac{A}{i} [1 + (1 - i)^{-n}]$

c) $\frac{A}{i} [1 - (1 - i)^{-n}]$

d) $\frac{A}{i} [1 - (1 + i)^{-n}]$

3. The set which contains only one element is called _____.

a) Finite set

b) Singleton set

c) Null set

d) Power set

4. Two matrices A and B of same order are said to be _____.

a) equal

b) symmetric

c) Orthogonal

d) Equivalent

5. The inverse of $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ is _____.

a) $\frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

b) $\frac{1}{ad-bc} \begin{bmatrix} a & b \\ c & d \end{bmatrix}$

c) $\frac{1}{ad-bc} \begin{bmatrix} d & b \\ c & a \end{bmatrix}$

d) $\frac{1}{ad-bc} \begin{bmatrix} -d & b \\ c & -a \end{bmatrix}$

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

6. State the formula to find the compound interest

7. What are the two types of Annuity?

8. Write the set S = {1,2,3,4,5} in a set builder form

9. Define symmetric matrix with an example.

10. Define rank of a matrix.

SECTION – B

(5 X 4 = 20 MARKS)

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

11. a) A certain sum amounts to Rs 4000 at the end of 5 years at 12% per annum interest.

Find the sum.

(OR)

b) Find the compound interest on Rs. 20000 for 5 years at 20% per annum. What will be the simple interest in the above case?

12. a) A person deposits Rs 5000 every year with a company which pays him interest at 12% per annum. 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 deposit for 15th time?

(OR)

(CONTD....2)

- b) The bankers gain on a sum due to 10 months hence at 6% per annum is Rs 25. Find the sum due.
13. a) If $A = \{1,2,4,6,8\}$, $B = \{2,3,4,5,6\}$, $C = \{3,6,9,12,15\}$. Find $(A-B) \cup C$
(OR)
b) Define complement of a set with an example
14. a) State any four difference between Matrix and determinants
(OR)
b) Find $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 2 & 0 \\ 7 & 2 & 1 \end{bmatrix} \begin{bmatrix} 8 \\ 6 \\ 4 \end{bmatrix}$
15. a) Find the minors and cofactors of all the elements of $\begin{bmatrix} 5 & 6 & 7 \\ 0 & 1 & -3 \\ -2 & 4 & 9 \end{bmatrix}$
(OR)
b) Find the rank of $\begin{bmatrix} -2 & 1 & 3 & 4 \\ 0 & 1 & 1 & 2 \\ 1 & 3 & 4 & 7 \end{bmatrix}$

SECTION - C

(4X10= 40 MARKS)

ANSWER ANY FOUR OUT OF SIX QUESTIONS. (K4/K5)**(16thQUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS)**

16. If $A = \{0,1,3,4,6,7,9,10\}$, $B = \{2,3,4,5,6\}$ and $C = \{4,5,6,7,8,9\}$ prove that
(i) $A - (B \cup C) = (A - B) \cap (A - C)$
(ii) $A - (B \cap C) = (A - B) \cup (A - C)$
17. A certain amount of money was invested at 8% simple interest and after 9 months an equal amount was invested at 10% simple interest. Find the period in which the amount the amount in each case becomes Rs. 2600. How much money was invested in each case?
18. A bill for Rs. 1825 was drawn on 22nd January at 6 months date and discounted on 16th April at the rate of 10% per annum. Find the sum for which the bill was discounted and the bankers gain.
19. State and prove distributive laws using Venn diagram
20. Solve the system of simultaneous equations by cramer's rule

$$2x + 3y + 3z = 22$$

$$x - y + z = 4$$

$$4x + 2y - z = 9$$
21. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{bmatrix}$.
