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II Semester B.Com./LSCM/TandT/IAS and B.B.A. Degree Examination,
September - 2023

SITADEVI RATANCHAND NAHAR
ADARSH COLLEGE

COMMERCE

LIBRARY & INFORMATION CENTRE

Business Mathematics

5th Main, Chamarajpet, Bengaluru-560018

(Semester NEP-Scheme Regular)

Maximum Marks :60

Time : 2½ Hours

Instructions to Candidates:

Answer should be completely written in English Only.

SECTION - A

Answer any FIVE of the following questions. Each question carries 2 marks.

(5×2=10)

- What is a prime number?
 - What is unit Matrix?
 - Find the compound interest on Rs.3,000 for 3 years @ 4% p.a.
 - Find the 15th term of an AP 1,3,5,---
 - LCM and HCF of 2 numbers are 96 and 16 respectively and one of them is 48, find the other number.
 - Find the value of $x: 4x^2 - 9 = 0$
 - If $B = \begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}$, find B^2 .

SECTION - B

Answer any FOUR of the following questions. Each question carries 5 marks.

(4×5=20)

- If $A = \begin{bmatrix} -2 & 1 \\ 0 & 3 \end{bmatrix}$, prove $2A^2 - 3A - 7I = 0$.
- Solve by formula method: $15x^2 + 16x - 15 = 0$.

[P.T.O.]

4. If the 5th term of a G.P is 81 and the 2nd term is 24, find the G.P.
5. Find the compound interest on Rs. 20,000 @ 6% p.a. for 4 years. What is the simple interest on the same amount?
6. A number is divided into 3 parts in the ratio of 2:3:4, if the third part is 20; what are the others?

SECTION - C

Answer any TWO of the following questions. Each question carries 12 marks.

(2×12=24)

7. a) Find the inverse of A if

$$A = \begin{bmatrix} -5 & -4 \\ 6 & 11 \end{bmatrix}$$

- b) Solve by Cramer's rule:

$$6x + 5y = 2$$

$$4x - 3y = 14$$

8. a) The banker's gain on a bill due in 4 months discounted at 15% is Rs. 720. Find TD, BD and Face value of bill.
- b) A sum of money amounts to Rs. 855 in 3½ years @ 4% p.a. SI. Find the sum.
9. a) Solve by Factorisation method:

$$x^2 + 3x - 28 = 0.$$

- b) The sum of 3 numbers in A.P. is - 24 and their product is 288. Find the numbers.

SECTION - D

Answer any ONE of the following question. Each question carries 6 marks.(1×6=6)

10. Demonstrate the application of matrices in solving business problems.
11. Following is the overhead allocation of 3 production departments and 2 Service departments namely X, Y, Z, A and B respectively.

X-Rs. 15,100; Y-Rs. 14,400; Z-Rs.19,300; A - Rs.9,250 and B-Rs. 3,150

Distribute the overheads of service departments to production departments using simultaneous equation method.

| | X | Y | Z | A | B |
|-------------------|-----|-----|-----|-----|-----|
| Service Dept. 'A' | 20% | 30% | 40% | - | 10% |
| Service Dept 'B' | 40% | 20% | 30% | 10% | - |