Printed Page:- **Subject Code:- AMIBA0102**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MBA (Integrated)

SEM: I - THEORY EXAMINATION (2022 - 2023)

Subject: Business Mathematics

Time: 2.5 Hours **Max. Marks: 60**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* **three Sections -A, B, & C.** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION A **15**

1. Attempt all parts:-

1-a. If 50% of students are good at science out of 20 students. Then the number of students good at science is (CO1) 1

(a) 15

(b) 10

(c) 5

(d) 11

1-b. If n(A) = 43, n(B) = 51 and n(A ∪ B)= 75, then n(A∩B) is (CO2) 1

(a) 17

(b) 75

(c) 19

(d) None of these.

1-c. Harmonic progression is reciprocal of (CO3) 1

(a) G.P.

(b) A.P.

(c) A.P. and G.P.

(d) None of above

1-d. Which of the following is identity matrix of order 2? (CO4) 1

(a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$

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

(d) $\begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$

1-e. What is the derivative of function e^x . (CO5) 1

(a) e^x

(b) e

(c) $2e^x$

(d) $2xe^x$

2. Attempt all parts:-

2.a. What will be the compound interest on a sum of Rs. 25,000 after 3 years at the rate of 12% per annum? (CO1) 2

2.b. Write a short note on finite set and Infinite set. (CO2) 2

2.c. How many terms in A.P. Series : 7, 13, 19, ..., 205? (CO3) 2

2.d. State commutative law of matrix addition. (CO4) 2

2.e. Evaluate $\int \log x \, dx$ (CO5) 2

SECTION B **15**

3. Answer any <u>three</u> of the following:-

3-a. A bag contain one rupee , 50 paise and 10 paise coins. 1 rupee and 50 paise coins are in the ratio of 2:5 and 50 paise and 10 paise coins are in the ratio of 4:9. If the total amount is 1125 Rs., find the no. of coins of each type. (CO1) 5

3-b. How many words with or without meaning can be formed by using all the letters of the word, 'DELHI', using each letter exactly once? (CO2) 5

3.c. Which term of GP. 5, 10, 20, 40, ...is 5120? (CO3) 5

3.d. Prove that by multiplying all the elements of a row (or column) by a scalar (a 5

real number) is equivalent to multiplying the determinant by that scalar. (CO4)

3.e. $y = 2x^3 + 5x^2 - 7x + 4$, find $\frac{dy}{dx}$ (CO5) 5

SECTION C **30**

4. Answer any <u>one</u> of the following:-

4-a. The sum of the salaries of A and B is 2100. A spends 80% of his salary and B spends 70% of his salary. If their savings are in the proportion of 4 : 3, then what is the salary of A? (CO1) 5

4-b. The difference between CI and SI on a certain sum of money for 3 years at 5% per annum is 122. Find the sum invested. (CO1) 5

5. Answer any <u>one</u> of the following:-

5-a. If M = {2, 4, 6, 8, 10, 12} and N = {3, 4, 5, 6, 7, 8, 10} and R ={5,6,7,8,11,12}, then Find: (i) $(M \cup N) \cap R$ (ii) $(M \cap N) \cup R$ (iii) $(M \cup N) \cup R$. (CO2) 6

5-b. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be selected, if the team has (CO2) 6

(i) no girls.

(ii) at least one boy and one girl.

(iii) at least three girls.

6. Answer any <u>one</u> of the following:-

6-a. For the elements 4 and 6, verify that A.M ≥ G.M. ≥ H.M. (CO3) 6

6-b. Give the application of exponential function. Check whether the given table of values are for exponential function. Justify your answer. (CO3) 6

x	0	1	2	3	4	5	6
y	5	10	20	40	80	160	320

7. Answer any <u>one</u> of the following:-

7-a. Find the minors and cofactors of the elements of given determinant (CO4) 6

$$\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$$

7-b. 6

Find X and Y, if X+ Y = $\begin{bmatrix} 7 & 0 \\ 2 & 5 \end{bmatrix}$ and X- Y = $\begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$ (CO4)

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8. Answer any <u>one</u> of the following:-

8-a. Find the values of x for which the function $f(x) = x^5 - 5x^4 + 5x^3 - 1$ is maximum or minimum. (CO5) 6

8-b. Evaluate $\int \frac{(1+x)^3}{x^2} dx$ (CO5) 6