Roll No. .....

56503

MBA 5 Year 1st Semester (New Scheme) Examination – December, 2022

BUSINESS MATHEMATICS

Paper : 501-P3

Time : Three Hours] *[Maximum Marks : 80*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all. Section – A (Questions No. 1) is *compulsory*. Attempt *four* more questions from Section – B selecting *one* question from each Unit. All questions carry equal marks.

SECTION – A

1. (a) What are equivalent sets ? 2

(b) If (A) = 100, (B) = 50 and (A ∪ B) = 120, find (A ∩ B). 2

(c) Find the value of $\frac{x^{m+2n} \cdot x^{3m-8n}}{x^{5m-6n}}$ 2

(d) If $\log_2 x = 6$, find x. 2

(e) Find that value of ${}^5P_2 \times {}^4P_1$. 2

(f) Expand $(2x - 3y)^3$. 2

(g) Distinguish between differentiation and integration. 2

(h) Explain and illustrate a diagonal matrix. 2

SECTION – B

UNIT – I

2. Using suitable examples, differentiate between : $4 \times 4 = 16$

(a) Null set and singleton set.

(b) Subset and proper subset.

(c) Intersection of two sets and difference of two sets.

(d) Finite and infinite sets.

3. (a) Prove that : $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ 8

(b) Prove that : $A \cap (B - C) = (A \cap B) - (A \cap C)$ 8

UNIT – II

4. (a) Simplify : 8

$$\frac{1}{x^b + x^{-c} + 1} + \frac{1}{x^c + x^{-a} + 1} + \frac{1}{x^a + x^{-b} + 1}$$

(b) Using log tables, find the value of : 8

$$\frac{(6.284)^3 \sqrt[3]{624}}{\sqrt[4]{0.005}}$$

5. (a) Sum of three numbers in A.P. is 32. If 3, 8, 20 are added to the first, second and third numbers respectively, the new numbers are in G.P. Find the numbers. 8

(b) Insert 7 geometric means between 1 and 256. 8

UNIT – III

6. (a) The letters of the word 20 MBIE are written in all possible orders. If all these words are written as in dictionary, find the rank of the word 20 MBIE. 8

(b) Prove that : ${}^{n}C_{r} + {}^{n}C_{r-1} = {}^{n+1}C_{r}$ 8

7. (a) Using Binomial theorem expand $(2x - 3y)^6$. 8

(b) If the 21st and 22nd terms in the expansion of $(1 + x)^{44}$ are equal, find the value of x. 8

UNIT – IV

8. Solve the following linear equations : 16

$$x + 2y + 3z = 00$$
$$3x + y + 2z = 10$$
$$2x + 3y + z = 38$$

9. (a) Differentiate : 8

$$\frac{(2x+1)(x^2+2x+3)}{4x^2-1} \text{ w.r.t. } x$$

(b) Evaluate : 8

$$\int \frac{1}{\sqrt{x-1}-\sqrt{x+1}}\,dx$$