BBA 1st Semester (New Scheme)
Examination, February-2022

BUSINESS MATHEMATICS

Paper-BBAN-102

Time allowed : 3 hours] *[Maximum marks : 80*

Note : ***Section-A (Question No. 1) is compulsory.*** *Attempt* ***one*** *question from each unit in* ***Section-B.*** *All questions carry equal marks.*

Section-A

1. (a) Write the elements of set

$$A=\left\{x:\frac{-1}{2}<x<\frac{9}{2}, x\in z\right\}$$

(b) Find the power set of the set A={1, 2, 5}

(c) Solve = $16^{x+1}=\frac{64}{4^{x}}$

(d) Which term of the series, 20 + 16 + 12 ------- is – 96 ?

(e) In how many ways can 5 passengers sit in a compartment having 8 vacant seats ?

(f) What is an absolute term ?

(g) What is the condition for addition of two matrices ? Illustrate.

(h) Differentiate $\left(\sqrt{x}+\frac{1}{\sqrt{x}}\right)^{2}$ w.r.t. x

Section-B

Unit-I

2. Using suitable examples, explain and illustrate the following :

(a) Disjoint sets

(b) Intersection of two sets

(c) Complement of set

(d) Cartesian product of two sets

3. If A = {2, 4, 6, 8, 10} , B ={1, 2, 3, 4, 5, 6, 7} and C={2, 6, 7, 10} then verify that –

(a) $A-(B\cup C)=(A-B)\cap(A-C)$

(b) $A-(B\cap C)=(A-B)\cup(A-C)$

(c) $(A\cap B)\cap C=A\cap(B\cap C)$

Unit-II

4. Prove that $=\frac{1}{1+x^{a-b}+x^{a-c}}+\frac{1}{1+x^{b-c}+x^{b-a}}$

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

5. (a) Sum of three numbers in AP is 30 and their product is 960. Find the numbers.

   (b) Which term of the series 1, 2, 4 -------- is 2048 ?

Unit-III

6. Solve the equation :

$$\sqrt{3x^2 - 7x - 30} - \sqrt{2x^2 - 7x - 5} \qquad x - 5$$

7. Find $(x + a)^n$, if First three term of expansion are 729, 7290 and 30375 respectively.

Unit-IV

8. (a) Differentiate $x^2 (x + 1) (x^3 + 3x + 1)$ w.r.t. x

   (b) Integrate $\frac{1}{\sqrt{x-1} - \sqrt{x+1}}$ w.r.t. x

9. Solve the following set of linear equations using Cramer Rule –

$$x + y + 2z = -1$$
$$x - 2y + z = -5$$
$$3x + y + z = 3$$