

57502

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

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

- (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, $20 + 16 + 12 + \dots$ 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.

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

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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 :

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

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 –

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

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

$$3x + y + z = 3$$