

SHREE NARAYANA COLLEGE OF COMMERCE

AHMEDABAD

Name of the Department:

Subject : Business Mathematics

Class & Semester : BBA (Hons.) Semester – I

Faculty Name: Prof. Mehul Purohit

ASSIGNMENT (2026–2027)

SECTION – 1 (UNIT – 1)

Q.1 Define the following terms with suitable examples:

- (a) Universal Set
- (b) Empty Set
- (c) Finite Set
- (d) Infinite Set
- (e) Equal Sets.

Q.2 Let

$$A = \{1, 2, 3, 4, 5\}$$

$$B = \{3, 4, 5, 6, 7\}$$

Find:

- (a) $A \cup B$
- (b) $A \cap B$
- (c) $A - B$
- (d) $B - A$.

Q.3 Let

$$U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

$$A = \{2, 4, 6, 8, 10\}$$

$$B = \{2, 3, 5, 7\}$$

Find:

- (a) A'
- (b) B'
- (c) $(A \cup B)'$
- (d) $(A \cap B)'$.

Q.4 In a class of 42 students, each play at least one of the three games cricket, hockey and football. It is found that 14 play cricket, 20 play hockey and 24 play football, 3 play both cricket and football, 2 play both hockey and football. None play all the three games. Find the number of students who play cricket but not hockey.

Q.5 Let

$$A = \{1, 2, 3\}$$

$$B = \{a, b\}$$

Find:

- (a) $A \times B$
- (b) $B \times A$
- (c) Number of elements in $A \times B$

SECTION – 2 (UNIT – 2)

Q.1 Define Function, Domain, Co-domain and Range with suitable examples.

Q.2 A company has:

- Fixed Cost = ₹30,000
- Variable Cost per unit = ₹150
- Selling Price per unit = ₹250

Find the Break-even Point in units and sales value.

Q.3 Evaluate:

(a) $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$

(b) $\lim_{x \rightarrow 2} \frac{x^2 + 3x - 10}{x - 2}$

Q.4 Evaluate:

(a) $\lim_{x \rightarrow \infty} \frac{5x^2 + 7}{2x^2 + 1}$

(b) $\lim_{x \rightarrow \infty} \frac{4x + 5}{2x^2 + 1}$

Q.5 State the rules of limits and solve

a. $\lim_{x \rightarrow 2} (4x^2 - 3x + 1)$

b. $\lim_{x \rightarrow 1} (x^3 + 2x - 5)$

c. $\lim_{x \rightarrow 4} \frac{x^2 - 16}{x - 4}$

d. $\lim_{x \rightarrow \infty} \frac{3x^2 + 5x - 1}{x^2 + 4}$

SECTION – 3 (UNIT – 3)

Q.1 Define differentiation and state rules of Derivative.

Q.2 Find the derivatives of:

(a) $y = 5x^4 + 3x^2 - 6x + 8$

(b) $y = 7x^5 - 2x^3 + 4$

Q.3 Find the derivatives of:

(a) $y = e^{3x+2}$

(b) $y = e^{5x}$

Q.4 Find the second-order derivative of:

(a) $y = x^4 + 3x^2 + 5$

(b) $y = 2x^3 - 5x + 7$

Q.5 Find derivative:

(a) $y = (x^2 + 1)(x^3 + 2)$

(b) $y = \frac{x^2+1}{x+2}$

SECTION – 4 (UNIT – 4)

Q.1 Find the Marginal Cost Function and Average Cost Function if

$$C(x) = x^3 + 4x^2 + 5x + 120$$

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Q.2 Explain average Revenue and Marginal Revenue and also Find the Marginal Revenue Function if

$$R(x) = 150x - 2x^2.$$

Q.3 Find the value of x for which the function

has maximum or minimum value.

$$f(x) = x^3 - 6x^2 + 9x + 4$$

Q.4 The demand function is

$$x = 50 - P$$

and the cost function is

$$C(x) = 100 + 10x$$

Find the maximum profit.

Q.5 The demand function is

$$x = 40 - 2P$$

Find the price elasticity of demand when $P=10$.

SECTION – 5 (REVISION & PRACTICE)

Match the Following: (10 Marks)

Column A

Column B

- | | |
|--|--------------------------------------|
| 1. Complement of a Set | A. Domain |
| 2. Intersection of Sets | B. Total Revenue = Total Cost |
| 3. Set of all input values of a function | C. A' |
| 4. Break-even Point | D. e^x |
| 5. $\lim_{x \rightarrow 2} (3x + 5)$ | E. $5x^4$ |
| 6. Derivative of x^5 | F. Differentiating the Cost Function |
| 7. Derivative of e^x | G. $f'(x)$ |
| 8. Marginal Cost | H. 11 |
| 9. Point Elasticity of Demand | I. $E = \frac{p}{x} \frac{dx}{dp}$ |
| 10. Second Derivative | J. Common elements of two sets |