Application of Calculus in Commerce and Economics

ISC Previous Years Board Questions with Answers

2005 to 2021

1. A company is selling a certain product. The demand function of the product is linear. The company can sell 2000 units when the price is ₹ 8 per unit and 3000 units when the price is ₹ 4 per unit. Determine:
   (i) the demand function,
   (ii) the total revenue function. [ISC 2005]

2. Given the total cost function for x units of a commodity as $C(x) = \frac{1}{3}x^3 + x^2 - 8x + 5$. Find:
   (i) the marginal cost function,
   (ii) the average cost function,
   (iii) the slope of average cost function. [ISCBM 2005]

3. A firm has the following total cost and demand functions:
   $C(x) = \frac{x^3}{3} - 7x^2 + 111x + 50 \quad and \quad p = 100 - x$.
   Find the profit maximizing output. [ISCBM 2005]

4. A television manufacture finds that the total cost for the production and marketing of x number of television sets is $C(x) = 300x^2 + 4200\,x + 13500$. Each product is sold for ₹ 8400. Determine the break-even points. [ISC 2006]

5. The fixed cost of a new product is ₹ 18,000 and the variable cost is ₹ 550 per unit. If the demand function $p(x) = 4000 - 150\,x$, find the break-even points. [ISC 2007]

6. The average cost function associated with producing and marketing x units of an item is given by $AC = 2x - 11 + \frac{50}{x}$. Find:
   (i) the total cost function and the marginal cost function.
   (ii) the range of values of output x for which AC is decreasing. [ISC 2008]

7. The cost of manufacturing of certain items consists of ₹ 1600 as overheads, ₹ 30 per item as the cost of the material and the labour cost ₹ $\frac{x^2}{100}$ for x items produced. How many items must be produced to have a minimum average cost? [ISC 2009]

8. The average cost function AC for a commodity is given by $AC = x + 5 + \frac{36}{x}$ in terms of output x. Find the
   (i) total cost and the marginal cost as the function of x .
   (ii) output for which AC increases. [ISC 2010]