Q. No.	Questions	Max. Marks
1.	The total cost function is given as $C = \frac{1}{3}x^3 - 6x^2 + 108x$. a) Derive the average cost (AC) and marginal cost (MC) functions. b) Determine the output level at which the AC is minimum. c) Show that $AC = MC$, when AC is at the minimum.	4+4+2
2.	What do you mean by substitutes and complementary goods? Suppose x_1 and p_1 are the quantity demand and price of commodity A, and x_2 and p_2 are the quantity demand and price of commodity B. Determine whether A and B are substitutes or complementary from the given demand functions: $Commodity\ A: x_1 = p_1^{-1.3}p_2^{0.5}$; $Commodity\ B: x_2 = p_1^{0.3}p_2^{-0.5}$	4+6
3.	Suppose the utility function of Ram is given as: $U = f(q_1, q_2) = q_1^{1.5}q_2$. The price of commodity q_1 is given as Rs. 3 whereas that of q_2 is Rs. 4. If Ram has an income of Rs. 100, then determine the optimal quantity of q_1 and q_2 that he must consume to maximize his utility.	10
4.	Briefly explain the different degrees of price elasticity of demand. Determine the degree of price elasticity of the following demand functions $x = 75 - 3p$ at $p = 4$ and 15.	5+5
5.	The demand function is given as $p = 12 - x^2$ whereas the total cost function is given as: $C = -\frac{4}{3}x^3 + 4x^2 + 10$. p denotes price and x the quantity demand. Determine the profit-maximizing output of the firm. What will be the impact of a tax of Rs. 12 per unit of the product on price and profit?	10