Tutorial(27/08/2025)

Question 01. Find the demanded bundle for a consumer whose utility function is

$$u(x_1, x_2) = x_1^{\frac{2}{3}} x_2$$

and her budget constraint is

$$3x_1 + 4x_2 = 100.$$

Question 02. Taking the same budget set

$$3x + 4y = 100,$$

find the demanded bundle for each of the following utility functions. Also, discuss the properties of each demand function.

(A) $u(x, y) = \ln x + y$

(B) $u(x, y) = \ln x + \ln y$

(C) $u(x, y) = \sqrt{xy}$

(D) $u(x, y) = \min\{x, y\}$

Question 03. Trisha's consumption preference on biryani (x) and pudding (y) is given by the utility function

$$U(x, y) = x + 4y.$$

The price per unit of biryani is Rs. 2 and the price per unit of pudding is Rs. 3. Trisha's total income is Rs. 120. She also faces quantity constraints: she is not allowed to consume more than 60 units of biryani and more than 30 units of pudding. Find the optimum quantities of biryani and pudding consumed by Trisha.

Question 04. Tom and Jerry both arrive at a petrol pump. Tom says, "I want 10 liters of petrol," regardless of the price. Jerry says, "I want petrol worth Rs. 1000," regardless of the price. Let ε_T and ε_J denote their own-price elasticities of demand, respectively. Which of the following is correct?

(a) $\varepsilon_T = 0, \quad \varepsilon_J = -\infty$

(b) $\varepsilon_T = 0, \quad \varepsilon_J = -1$

(c) $\varepsilon_T = -\infty, \quad \varepsilon_J = 0$

(d) $\varepsilon_T = -1, \quad \varepsilon_J = 0$

Question 05. Suppose $\alpha \in (0, 1)$. Rohit chooses x and y to maximize

$$U(x, y) = x^2 + 2xy + y^2 + 4\alpha^2 + 8\alpha + 10$$

subject to

$$2x + y = 10,$$
$$x, \ y \geq 0.$$

Then the optimal value of y chosen by Rohit is _____ (in integer).

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