

BITS PILANI, K.K. BIRLA GOA CAMPUS
II SEMESTER 2019-20 MID SEM EXAM
Course No. ECON F211 Course Title: Principles of Economics
1/10/2019 Time: 90 minutes Total Marks: 30

INSTRUCTIONS (READ AND FOLLOW)

1. Write your answers legibly. Overwritten answers will not be rechecked.
 2. If you need to make any assumption, then clearly state it and proceed with your analysis.
 3. The final answer must be supported by all the key necessary preceding steps, including mathematical derivations.
 4. Write your answers in sequential order and make an index thereof.
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Q.#

1. Consider a perfectly competitive firm who rents a factory outlet for ₹2000. To produce 800 units of commodity X, the firm is incurring a labour cost of ₹1000 per week. The cost of other raw material is ₹600. The market price for commodity X is ₹5. **Calculate:**
 - 1.a. Total Revenue (TR) and profit (π) the firm can earn. [1 Mark]
 - 1.b. Now the firm faces a price drop to ₹3. Whether the firm should produce or not? Explain the condition/s of cost minimization using proper economic reasoning. [2 Marks]

2. Fill in the gaps in the table below [3 Marks]

Quantity of Variable Input	Total Output	Marginal Product of Variable Input	Average Product of Variable Input
0	0	—	—
1	225		
2			300
3		300	
4	1140		
5		225	
6			225

3. Consider a short run case where wheat is produced according to the production function $q = 100(K^{0.8}L^{0.2})$.
 - 3.a. Beginning with a capital input of 4 and a labor input of 49, show that the marginal product of labor and the marginal product of capital are both decreasing through the production where a maximum of 7 capital inputs and 52 labor inputs are used. [4 Marks]
 - 3.b. Explain using proper economic reasoning, whether the above production function exhibit increasing, decreasing, or constant returns to scale. [1 Mark]
4. Ashok quits his computer programming job, where he was earning a salary of ₹50,000 per year, to start his own computer software business in a building that he owns and was previously renting out for ₹24,000 per year. In his first year of business he has the following expenses: salary paid to himself, ₹40,000; rent, ₹0; other expenses, ₹25,000. Find the

accounting cost and the economic cost associated with Ashok's computer software business. [2 Marks]

- 5 Suppose that a firm's production function is $q = 10L^{\frac{1}{2}}K^{\frac{1}{2}}$. The cost of a unit of labour is ₹20 and the cost of a unit of capital is ₹80. Find the optimal level of capital and labour required to produce the 140 units of output. [2 Marks]
- 6 Suppose that the quantity of steel demanded in India is given by $Q_D = 100 - 2P_s + 0.5Y + 0.2P_A$, where Q_D is the quantity of steel demanded per year, P_s is the market price of steel, Y is real GDP in India, and P_A is the market price of aluminium. In 2019, $P_s = 10$, $Y = 40$, and $P_A = 100$. How much steel will be demanded in 2019? [3 Marks]
- 7 The demand for dinners in the only restaurant in the town has a unitary price elasticity of demand when the current price of a dinner is \$8. At that price, 120 people eat dinners at the restaurant every evening. Write a linear demand equation that fits this information. [3 Marks]
- 8 Suppose the preference pattern of a consumer can be represented by the utility function $U=xy$. The price of x is 2, the price of y is 10, and his income is 10. Find the optimal consumption bundle of the consumer. [3 Marks]
- 9 Suppose that the market for air travel between London and Goa is served by just two airlines, British-Airways and Air-India. An economist has studied this market and has estimated that the demand curves for round-trip tickets for each airline are as follows: British-Airways's demand: $Q^d_B = 10,000 - 100P_B + 99P_A$
Air-India's demand: $Q^d_A = 10,000 - 100P_A + 99P_B$
where P_B is the price charged by British-Airways, and P_A is the price charged by Air-India.
- 9.a. Suppose that both British-Airways and Air-India charge a price of ₹300 each for a round-trip ticket between London and Goa. What is the price elasticity of demand for British-Airways flights between London and Goa? [3 Marks]
- 9.b. What is the market-level price elasticity of demand for air travel between London and Goa when both airlines charge a price of ₹300? [3 Marks]