Assignment for Production

1. Let the production function, Q= 30K^0.7L^0.5, rate of interest = Rs 20, wage rate =Rs 30.
2. Compute marginal productivities of two inputs
3. Derive an equation for the expansion path
4. What is the efficient input combination, profit and minimum cost under production quota i) Q=200 and ii) Q=500?
5. Let, production function, Q=98L -3L^2, Price of product =Rs. 200, Wage rate =Rs 400, fixed cost =Rs 100000
6. Compute output maximizing units of labor and maximum output. What will be the profit?
7. Compute output maximizing units of labor and maximum output when wage rate increases to Rs. 520? What will be the profit?
8. Sujal Food Pokhara has introduced different products like Ice-cream, Chocolates, Cake, Biscuits, etc as joint products since 2050. The figures of total quantity of these products in 2023 and 2024 below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Products | 2023 | | 2024 | |
| Price  (Rs. Per unit) | Demand  (in units) | Price  (Rs per unit) | Demand  (in units) |
| Ice-Cream | 55 | 60000 | 45 | 70000 |
| Chocolates | 100 | 50000 | 85 | 60000 |
| Cake | 250 | 7500 | 300 | 5000 |
| Biscuits | 70 | 10000 | 80 | 8500 |

1. Compute price elasticity of demand for the products of Sujal Food by proportion method.
2. Suppose that you are appointed as a marketing manager in 2025. The BOD of Sujal Food assigned you to revise existing prices in order to increases total revenue in 2025 on the basis of price elasticity of demand. How do you revise price of each product of Sujal Food to meet this goal? Explain with proper reasons. How price elasticity of demand useful to (i) price discrimination (ii) pricing of inputs?
3. Consider the following production function:

**Q=40K0.5L0.5**

1. Calculate marginal production function for capital and labor.
2. Determine the expansion path for the firm when r=Rs. 10 and w= Rs. 8
3. The firm is currently producing 400 units of output per period, using input rate of L= 8, and K =50. Is this efficient combination, why or why not?
4. Consider the following demand schedule:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Points; | A | B | C | D |
| Income(Rs) | 20000 | 40000 | 60000 | 80000 |
| Demand (Units) | 100 | 200 | 300 | 400 |

1. Calculate income elasticity from D to B (percentage method)
2. Consider the following demand schedule for mango.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Price | 8 | 10 | 12 | 14 | 16 |
| Demand in Kg (Y = 10000) | 80 | 64 | 48 | 32 | 16 |
| Demand in Kg (Y = 15000) | 100 | 90 | 60 | 40 | 30 |

1. Calculate price elasticity of demand as the price of mango increases from Rs. 8 to Rs. 14 if income is Rs. 10000 and comment the nature of product.
2. Calculate income elasticity of demand as income increase from Rs 10000 to Rs 15000 if price is Rs 12 per kg and comment the nature of product.
3. Given the elasticity of commodity X= 1.25, the seller is selling 2500 units in the market at the rate of Rs. 60 per unit. If the producer plans to increase the price by Rs. 5/ unit forecast the future demand of commodity.