THE PAPUA NEW GUINEA
UNIVERSITY OF TECHNOLOGY

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Department of Business Studies

AE211: MICROECONOMICS

Semester 1, 2021

ASSIGNMENT # 01 (8%)

Question 1: Suppose supply function for buai at Taraka market is estimated to be Q=10 +2P – 3T_c - P_d where P=price of buai=K300/bag, T_c = transport cost = K20/bag and P_d = price of daka =K50/bag; answer the following: *(6marks)*

a. What is the price elasticity of supply? (3marks)

b. What is the cross-price elasticity of supply with respect to daka? (3marks)

Question 2: The demand for eggs at Unitech farm is given by the function: Q= 12-2P+6P_c+5Y, where Q is quantity demanded of eggs, P is price of eggs, P_c is the price of layer chickens for meat and Y is income. The supply function for eggs is Q=200+P-3L_c-5W_c, Q is quantity of eggs supplied, P is the price of eggs, L_c is the cost of layer chickens and W_c is cost of labor.

Assume the price of layer chicken for meat is K15/bird, income is K60/fortnight, cost of layer chicken is K7/bird and cost of labor is K4/hour.

a. What is the quantity of eggs demanded when the price of eggs is K12/dozen? (3marks)

b. What is the equilibrium price of eggs? What is the equilibrium quantity of eggs? (5marks)

c. Holding other things constant, if the price of egg increased by K3/dozen, what are the new equilibrium price and quantity of eggs? (5 marks)

d. Sketch the graphs (graph need not be perfect). (6 marks)

e. What is the income elasticity of demand if income rises to K100/fortnight? Note: Evaluation should be done of initial demand function and values of variables. (5 marks)

Show all the necessary calculations and leave all your answers to 2 decimal places if there are any decimal numbers.

Question 3.

If you have a utility function of $U(X, Y) = 2X^2+XY+3Y^2$ subject to the constraint function $2X+ Y = 60$. What are your optimal levels of utility for good X and good Y respectively? What is the value of λ? Solve using lagrangian method of maximization (20 marks).

Question 4. This is the Cobb-Douglas utility function from the lecture $U = q_1^a q_2^{1-a}$.

a. Find the marginal rate of substitution (MRS). (4 marks)
b. If $a=0.6$, $q_1=10$ and $q_2=3$ respectively, what is the value of MRS in (a)? (4marks)

End of assignment