# MASENO UNIVERSITY

## UNIVERSITY EXAMINATIONS 2013/2014

### FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN FINANCE

### (CITY CAMPUS - EVENING)

### BEC 801: ADVANCED MICROECONOMICS

Date: 31ˢᵗ March, 2014          Time:  5.30 - 8.30 p.m.

**INSTRUCTIONS:**

- Answer ANY FOUR questions.

1. Suppose there are two goods $y_1$ and $y_2$ and their prices are given as $p_1$ and $p_2$ respectively, if the consumer's original budget constraint is given as $M_1 = p_1 y_1 + p_2 y_2$ while his budget constraint after the Slutsky compensating variation in income has been carried out is given as $M_2 = p_1' y_1 + p_2 y_2$ , assuming further that demand for $x_1$ is $y_1 = y^d(p_1, p_2, M)$. Required:

(a).Prove that $\Delta M = y_1 \Delta p_1$. (3marks)

(b). Determine change in demand due to Slutsky compensation. (2marks)

(c). Establish demand curve for good $y_1$ holding income constant. (3marks)

(d). Show that Slutsky equation from the problem above will be;

$$\frac{\Delta y_1}{\Delta p_1} = \frac{\Delta y_s}{\Delta p_1} - \frac{\Delta y_m}{\Delta M} y_1,$$ where $\Delta y_s$ and $\Delta y_m$ are substitution and income effects

of the price change respectively. (7marks)


2. (a). If fixed cost of production is given as "$C_0$" and variable cost is "$c_1 x$", assuming further that the firm's total revenue is $(R) = Px$, determine the output level at breakeven point. (3marks)

(b).The head of Finance department in a hypothetical university is considering introducing a new area of specialization in Business Administration programme. The university's planning sub-committee has estimated that it will cost Ksh 500,000 per year in fixed costs to maintain lecture rooms and equipment. Lecturer's salaries plus suppliers will cost Ksh 50 per student per year. If the university charges Ksh 250 in tuition per student per year,

(i). How many students should the head of Finance department enroll in order to breakeven? (4 marks)

(ii). Determine the total revenue, total cost and total profit or loss at this level of output. (8 marks)

3. (a). A consumer's utility function is given as U= f(X, Y) = $X^{0.6} Y^{0.25}$, where "x" represents commodity X and "Y" denotes commodity y. If unit prices for the commodities are USD 8 for commodity x and USD 5 for commodity y and the consumer's budget constraint given as USD 680, determine the units of good x and y that will maximize the consumer's utility. (5marks)

(b). If the consumer's utility curve passes through points (45, 90), determine MRCS x,y and MRCS y, x. (5marks)

(c). A firm's demand function is given as $P = 100e^{-0.004q}$, determine the quantity and price at which the total revenue is optimum and identify the nature of optimality. (5marks)

4. (a).Explain the meaning of the term "transport problem" as used in microeconomics. (2marks)

(b). Distinguish between an infeasible transportation problem and a feasible transportation problem. (2marks)

(c). The table below shows a transportation problem;

|  | Warehouse 1 | Warehouse 2 | Warehouse 3 | Warehouse 4 | Supplies |
|---|---|---|---|---|---|
| Factory 1 | 48 | 60 | 56 | 58 | 280 |
| Factory 2 | 45 | 55 | 53 | 60 | 520 |
| Factory 3 | 50 | 65 | 60 | 62 | 720 |
| Demand | 400 | 640 | 500 | 420 | |

(i). Find the basic feasible solution using Least Cost Method. (4marks)

(ii). Determine the basic feasible solution using North West Corner Method. (4marks)

(iii). Which of the two methods would adopt? Give reasons for your answer. (3marks)

5. (a). Using an illustration, show that a monopolist can make losses in the short-run even when $MC = MR$. (3marks)

(b). Explain the equilibrium of a firm in a perfectly competitive market and the long-run equilibrium of an industry. (5marks)

(c). Consider a duopoly in case of two producers with inverse market demand function $p(Q) = 200 - \frac{1}{2}Q$, and with cost functions, $c_1(q_1) = 10q_1$, $c_2(q_2) = 5q_2$

(i). Determine both reaction functions $R_1(q_2)$ and $R_2(q_1)$. (4marks)

(ii). Determine the Cournot-equilibrium (3marks)

6. "Pareto efficiency exists when it is impossible to make any economic agent better off without making the other worse off." In light of this statement, exhaustively discuss the Pareto optimal conditions that an efficient economy must fulfill. (15marks)