OLABISI ONABANJO UNIVERSITY, AGO-IWOYE
FACULTY OF SOCIAL AND MANAGEMENT SCIENCES
DEPARTMENT OF ECONOMICS

Course Code /Title: ECO 301/Intermediate Microeconomics

REVIEW QUESTIONS

CONSUMER BEHAVIOUR

1. (a) With the aid of well-labeled graphs and brief explanations, illustrate the substitution and income effects of a fall in price for: (i) normal good (ii) inferior good (iii) Giffen good
(b) Given a consumer's utility function $U = q_1q_2$ and a budget constraint equation: $Y = p_1q_1 + p_2q_2$ where p_1 is the price of good q_1 and p_2 is the price of good q_2, derive the consumer's Hicksian demand functions for goods q_1 and q_2.

2. (a) Given the utility function $U = f(X_1, X_2) = 5\log X_1 + 3\log X_2$ and $M = P_1X_1 + P_2X_2$, where money income of the consumer is N100, price of commodity X_1 is N10 and price of commodity X_2 is N2, determine:
(i) The quantities of X_1 and X_2 that maximize his utility.
(ii) What is the marginal utility of last naira spent by the consumer?
(iii) Show that the consumer actually maximized his utility.
(b) With the aid of mathematical expression, illustrate the principle of equi-marginal utility

3(a) Given the utility function $U = q_1q_2$ where q_1 and q_2 are consumer goods with the budget constraint #10,000 $= 100q_1 + 80\,q_2$ determine:
(i) The quantities of q_1 and q_2 that maximize his utility.
(ii) What is the marginal utility of last naira spent by the consumer?
(iii) Show that the consumer actually maximized his utility.

4. Given a consumer's utility function $U = q_1q_2$ and a budget constraint equation: $Y = p_1q_1 + p_2q_2$ where p_1 is the price of good q_1 and p_2 is the price of good q_2, derive:
(a) The consumer's Marshallian demand functions for goods q_1 and q_2.
(b) The consumer's Hicksian demand functions for goods q_1 and q_2.
(c) What are the distinguishing features between the derived Marshallian and Hicksian demand functions?

5. Given $U = XY$ such that $I = P_xX + P_yY$ where P_x is the price of good X= N2, P_y is the price of good Y = N4 and I is the money income of the consumer = N200.
(a) Maximise the utility of the consumer subject to the budget constraint.
(b) Derive the utility function and its value.
(c) Minimize expenditure s.t. utility
(d) Is utility actually maximised?

6. (a) Find the utility maximising quantities of two commodities consumed, given $U = q_1q_2$ and a budget constraint $100q_1 + 80q_2 \leq N10{,}000$
(b) Confirm if the consumer actually maximized his utility.
(c) What is the marginal utility of the last naira spent by the consumer.

7. Given $U = q_1q_2 - q_1^2$, where q_1 and q_2 are consumer goods with prices P_1 = N30 and P_2 = N60, if the consumer has a budget of N9000 to spend on these commodities
(a) determine the quantities of q_1 and q_2 that maximise his utility.
(b) Show that in the above case the FOC is satisfied where the SOC is satisfied.

8. (a) Find the optimum commodity combinations that maximise the utility of the consumer given by: $U = e^{7xy}$ with $P_x = P_y = N12$ and money income is N246.

(b) Ascertain whether or not the bundle of the two commodities obtain the maximum for the consumer.

9. Given $U(X,Y) = \log_e X + \log_e Y$ with P_x being price of good X, P_y being price of good Y and M being the money income, write the Langrangier expression for the consumer's utility maximisation problem and derive the utility maximising expression for X and Y.

10. (a) The utility function of a consumer is expressed as: $U = 20q_1q_2$ where q_1 and q_2 represent the quantities of commodities consumed, find the utility-maximizing quantities of the two-commodities given a budget constraint: $50q_1 + 20q_2 \leq N5000$. Is utility actually maximized?

(b) What are the features of a utility function?

11. Given the consumer's utility function U=AB and a budget constraint equation: $Y = P_A A + P_B B$, where P_A is the price of good A and P_B is the price of good B, derive:

(a) The consumer's ordinary demand function for goods A and B.

(b) The consumer's compensated demand functions for goods A and B.

(c) What are the distinguishing features between the derived ordinary and compensated demand functions?

MARKET ORGANISATIONS

1. (a) Given the inverse demand function of a multi-plant monopolist as $P = 50 - 0.25q$, where $q = q_1 + q_2$ and the cost facing the two plants as $C_1 = 5q_1$ and $C_2 = 0.125q_2^2$, determine:

(i) Equilibrium quantities to be produced in the two plants

(ii) Total profit of the monopolist

(b) Explain any six factors that could make monopoly power to arise

2. (a) A discriminating monopolist's cost function is expressed as $C = 50 + 20q$ while his demand functions in two sub-markets are $P_1 = 80 - 5q_1$ and $P_2 = 180 - 20q_2$ respectively, determine:

(i) q_1 and q_2 (ii) p_1 and p_2 (iii) c_1 and c_2 (iv) total output (v) total profit (vi) Is profit actually maximized?

(b) Explain any four conditions that could make price discrimination to occur.

3. (a) Explain six peculiar features of perfect competition.

(b) With the aid of graph, distinguish between the short-run and the long-run equilibrium of a perfect competitor.

(c) Is there any difference between the short-run and long-run equilibrium of a monopolist? Support your position with graphical illustrations.

(b) Given the inverse demand function of a multi-plant monopolist as $P = 100 - 0.5q$, where $q = q_1 + q_2$ and the cost facing the two plants as $C_1 = 10q_1$ and $C_2 = 0.25q_2^2$, determine:

(i) Equilibrium quantities to be produced in the two plants

(ii) Total profit of the monopolist

(c) Enumerate four core features of a monopolistic firm.

4. (a) A discriminating monopolist's cost function is expressed as $C = 25 + 20q$ while his demand functions in two sub-markets are $P_1 = 40 - 2.5q_1$ and $P_2 = 90 - 5q_2$ respectively determine:

(i) q_1 and q_2 (ii) p_1 and p_2 (iii) e_1 and e_2 (iv) total output (v) total profit

5. A discriminating monopolist cost function is expressed as $C = 60 + 18q$ while his demand functions in two sub-markets are: $P_1 = 180 - 1.8q_1$ and $P_2 = 250 - 3.5q_2$.

(a) Find: (i) q_1 and q_2 (ii) P_1 and P_2 (iii) e_1 and e_2 (iv) total output (v) total profit

(vi) Confirm if the SOC is satisfied.

6. In a monopolistic market, the cost function of a firm is expressed as: $C = 50q + 5q^2$ while the market demand function is $P = 350 - 3q$. Determine:

(a) The equilibrium quantity of output produced.

(b) Estimate the monopolist equilibrium profit level

(c) What would have been the equilibrium price, output and profit of the firm if the industry were to be perfectly competitive?

7. Given that the total cost function facing a perfectly competitive firm is: $C = 0.043q^3 - 0.8q^2 + 10q$, derive:

(a) Level of output that minimizes AVC

(b) The equilibrium price

(c) Supply function of the firm.

8. Given the demand function for a monopolist producing in two plants as $P = 450 - 1.7q$ where $q = q_1 + q_2$ while the cost function in the two plants are: $C_1 = 35 + 20q_1$, and $C_2 = 25 + 0.9q_2^2$. Determine:

(a) The equilibrium quantities of q_1 and q_2 as well as price

(b) Total output and profit

(c) Is profit actually maximized?

9. Given that the inverse demand functions for segmented markets are: $P_1 = 40 - 2.5q_1$ and $P_2 = 90 - 5q_2$ with the cost function given as: $C = 25 + 20q$, solve for:

(a) q_1 and q_2 (b) prices of q_1 and q_2 (c) elasticity of demand in the two markets (d) Total profit

(e) Confirm if the determinant of the relevant bordered Hessian matrix is positive.

10. Given that the total cost function of a firm is $C = 0.5q^3 - 3q^2 + 12q + 20$

(a) Derive the supply function of the firm

(b) What level output minimizes AVC?

(c) What is the equilibrium price?

Features of Monopoly

* The product has no substitutes
* Only one seller
* The entry into the market is blocked
* The firm is a price maker, it has control over the prices