THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

151/1 **ECONOMICS 1**

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2012**

Instructions

1. This paper consists of EIGHT questions.

2. Answer all questions in section A and choose two questions each from section B and C.

1. (a) Explain five types of Internal Economies arising from the expansion of a firm.
Internal economies of scale are cost-saving advantages that a firm experiences as it grows in size and increases its output. The five types include:

Technical economies: These are achieved when a firm invests in large-scale production machinery and equipment that increases efficiency and reduces unit cost of production. Larger firms can afford advanced technology that improves productivity.

Managerial economies: As firms expand, they can employ specialized managers for various departments like finance, production, and marketing. This specialization improves coordination and decision-making, enhancing overall efficiency.

Financial economies: Large firms have better access to credit and can borrow at lower interest rates due to their established reputation and lower risk. They can also raise capital through shares and bonds more easily than smaller firms.

Marketing economies: A larger firm can spread advertising and marketing costs over a bigger output, reducing per-unit marketing cost. It can also negotiate better terms with suppliers and distributors due to higher purchase volumes.

Risk-bearing economies: Diversification in product lines, markets, or production techniques allows large firms to spread risks. Losses in one area may be compensated by gains in another, reducing overall business risk.

(b) Examine five features of the oligopolistic market structure.
Oligopoly is a market structure dominated by a few large firms. Its main features are:

Few sellers: The market is controlled by a small number of firms, each holding a significant share. The actions of one firm directly impact others, making the market highly interdependent.

Interdependence: Firms closely monitor each other's pricing and production decisions. A change in one firm's strategy may trigger similar responses from others, leading to price rigidity or collusion.

Product differentiation: Products may be either homogeneous (e.g., cement) or differentiated (e.g., cars, smartphones). Firms try to create brand loyalty through advertising and quality enhancement.

Barriers to entry: High entry costs, economies of scale, and brand loyalty prevent new firms from easily entering the market, allowing existing firms to maintain market power.

Non-price competition: Due to fear of price wars, firms compete using product quality, advertising, packaging, and customer service instead of altering prices.

2. (a) Describe four economic problems which any product would face.
Every economy faces basic problems due to the scarcity of resources. For any product, the following economic problems may arise:

What to produce: Resources are limited, so producers must decide which goods and services to produce based on demand, profitability, and societal needs.

How to produce: The method of production must be chosen—whether labor-intensive or capital-intensive—based on the cost-effectiveness and availability of inputs.

For whom to produce: Products must be distributed among individuals in the society. Decisions must be made about which segment of the population will receive which goods.

Resource allocation: Resources like land, labor, and capital must be allocated efficiently among competing needs to maximize output and welfare.

(b) (i) What is meant by the term price discrimination?
Price discrimination is a pricing strategy where a seller charges different prices for the same product to different customers, without any difference in cost of production. This is done to maximize profits by capturing consumer surplus based on each group's willingness to pay.

(ii) Analyse five necessary conditions for price discrimination.
For price discrimination to be effective, the following conditions must be met:

Market power: The firm must have some control over prices, usually found in monopolistic or oligopolistic markets.

Consumer segmentation: The firm must be able to identify and classify consumers based on their price elasticity of demand.

Prevention of resale: There must be barriers that prevent consumers from reselling the product to others, as this would defeat the price difference.

Different price elasticities: The market segments must have different sensitivities to price so that higher prices can be charged to inelastic consumers and lower prices to elastic consumers.

Legal and ethical allowance: Price discrimination must not violate consumer protection laws or lead to unethical practices, or it may face legal consequences.

3. Given the following price and average cost functions of the firm E:
$P = 140 - 2Q$
$AC = 10/Q + 5Q$

Where P = Price
Q = Quantity
AC = Average cost

Find:
(a) The quantity of output at which the given firms will maximize profit.
To find the profit-maximizing output, we equate Marginal Cost (MC) to Marginal Revenue (MR).

First, find Total Revenue (TR):
$TR = P \times Q = (140 - 2Q)Q = 140Q - 2Q^2$
Then, $MR = d(TR)/dQ = 140 - 4Q$

Find Total Cost (TC):
$AC = TC/Q \rightarrow TC = AC \times Q = (10/Q + 5Q) \times Q = 10 + 5Q^2$
Then, $MC = d(TC)/dQ = 10Q$

Set MR = MC:
$140 - 4Q = 10Q$
$140 = 14Q$
$Q = 10$

(b) The profit maximizing price.
Substitute Q = 10 into the demand equation:
$P = 140 - 2(10) = 140 - 20 = 120$

(c) The maximum profit of the firm.
$TR = P \times Q = 120 \times 10 = 1200$
$TC = 10 + 5Q^2 = 10 + 5(10)^2 = 10 + 500 = 510$
Profit = TR - TC = 1200 - 510 = 690

(d) The market structure under which the firm operates. Give reasons for your answer.
The firm operates in an imperfect competition market, most likely a monopolistic or oligopolistic structure. Reasons include:

The firm has a downward sloping demand curve, indicating it is a price maker.

Price discrimination and profit maximization through MR = MC point suggest market control.

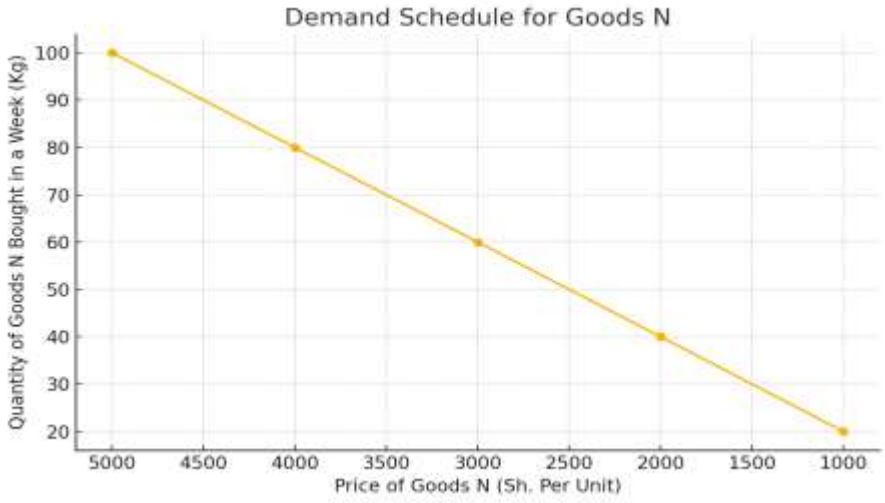
Existence of unique cost and revenue functions implies lack of perfect competition.

4. (a) Precisely elaborate the term price elasticity of demand.
Price elasticity of demand is a measure of the responsiveness of quantity demanded of a good to a change in its price. It indicates how sensitive consumers are to price changes. It is calculated as:

Price elasticity of demand =
Percentage change in quantity demanded ÷ Percentage change in price

If the result is greater than 1, demand is elastic; if less than 1, it is inelastic; and if equal to 1, it is unitary elastic.

(b) Given the following demand schedule:
(i) Draw graph:



(ii) Calculate price elasticity of demand when the price of N falls from sh. 3000 to sh. 2000 per Kg.
Initial price (P1) = 3000
New price (P2) = 2000
Initial quantity (Q1) = 60
New quantity (Q2) = 40

Percentage change in quantity = (40 - 60) ÷ 60 × 100 = -33.33%
Percentage change in price = (2000 - 3000) ÷ 3000 × 100 = -33.33%

Price elasticity of demand = -33.33 ÷ -33.33 = 1
The demand is unitary elastic.

(iii) Name two commodities which may show such behaviour. Give reasons for your answer.
Commodities such as salt and electricity often show unitary elasticity because:

They are essential but can be adjusted within a limit.
Consumers change usage moderately as price changes, neither highly responsive nor completely unresponsive.

5. (a) Describe the following economics terms:
(i) Maximum price
A maximum price is a price ceiling set by the government below the equilibrium price to protect consumers from high prices. It leads to shortages when demand exceeds supply, as suppliers may not be willing to sell at the lower price.

(ii) Minimum price
A minimum price is a price floor set above the equilibrium price to protect producers by ensuring they receive a fair price. It may lead to surpluses when supply exceeds demand, requiring government intervention to buy excess stock.

(b) With the aid of diagrams, explain the likely effects of fixing price ceiling and price floor.
(Not drawable in this format, but explained:)
A price ceiling causes shortages, black markets, and long queues due to excess demand. A price floor causes surpluses and wasted resources due to excess supply.

(c) Briefly explain the following terms:
(i) Production function
The production function shows the relationship between inputs (like labor and capital) and output. It indicates how changes in input quantities affect output, helping firms optimize resource allocation.

(ii) Production possibility curve
A production possibility curve (PPC) represents different combinations of two goods that an economy can produce using all available resources efficiently. It illustrates the concepts of opportunity cost, efficiency, and economic growth.

6. (a) Assumptions of the price mechanism are unrealistic. Justify.
The price mechanism assumes that market forces of demand and supply are sufficient to allocate resources efficiently. However, several of these assumptions are unrealistic:

Perfect competition: The model assumes a perfectly competitive market with many buyers and sellers, homogeneous products, and perfect information. In reality, most markets are imperfect, with few sellers, product differentiation, and lack of transparency.

Rational behavior: It assumes that all economic agents act rationally to maximize utility or profit. In practice, emotions, habits, misinformation, and limited cognitive capacity influence decision-making.

No externalities: The model assumes that private costs and benefits reflect social costs and benefits. In reality, externalities like pollution or public goods distort outcomes and lead to market failure.

No government intervention: It assumes free markets without government interference. Yet, in reality, taxes, subsidies, regulations, and price controls exist to correct inequalities and inefficiencies.

Mobility of resources: It assumes that factors of production can move freely from one use to another. However, factors like land are immobile, and labor may face barriers like skill mismatch or social constraints.

(b) Given the following table of a firm, calculate the Marginal Cost and Average Cost:

Output	Total Cost	Marginal Cost	Average Cost
1	100	-	100
2	180	80	90
3	240	60	80
4	320	80	80

Marginal Cost is the change in Total Cost divided by change in output:
$MC_2 = (TC_2 - TC_1) / (Q_2 - Q_1) = (180 - 100) / (2 - 1) = 80$
$MC_3 = (240 - 180) / (3 - 2) = 60$
$MC_4 = (320 - 240) / (4 - 3) = 80$

Average Cost is Total Cost divided by Output:
$AC_1 = 100 / 1 = 100$
$AC_2 = 180 / 2 = 90$
$AC_3 = 240 / 3 = 80$
$AC_4 = 320 / 4 = 80$

7. (a) Identify four factors which cause the firm in Tanzania fail to reach the optimum size.
Firms in Tanzania may fail to reach optimum size due to:

Inadequate capital: Many firms lack access to financial resources needed for expansion, limiting investment in machinery, skilled labor, and production facilities.

Poor infrastructure: Unreliable transport systems, electricity, and internet increase operational costs and limit production capacity.

Limited market: Small domestic market size and lack of access to international markets constrain demand, making large-scale production unprofitable.

Managerial inefficiency: Lack of trained and experienced managers results in poor planning, decision-making, and coordination, hindering growth to optimum scale.

(b) Elaborate six conditions of perfect competition.
Perfect competition is an ideal market structure with the following conditions:

Large number of buyers and sellers: No single buyer or seller can influence the market price due to their small market share.

Homogeneous products: All firms sell identical products, making consumers indifferent between sellers.

Free entry and exit: Firms can enter or leave the market without restrictions, maintaining normal profits in the long run.

Perfect knowledge: Buyers and sellers have complete information about prices, quality, and market conditions, enabling rational decisions.

Perfect mobility: Factors of production can move freely between firms and industries, ensuring efficient allocation.

Price takers: Firms accept the market price as given because individual firms are too small to influence it.

8. Explain the merits and demerits of mixed economic system.
A mixed economic system combines elements of capitalism and socialism. It has both private and public sector involvement in the economy.

Merits:
Efficient resource use: The private sector promotes efficiency through competition and profit motive.
Social welfare: The public sector provides essential services like health, education, and infrastructure, ensuring equity.
Balanced growth: Government planning supports strategic industries, while markets allocate other resources.
Reduces inequality: Progressive taxation and subsidies help redistribute wealth and protect vulnerable groups.
Stability: Government intervention can regulate inflation, unemployment, and business cycles.

Demerits:
Bureaucracy: Government control may lead to red tape, delays, and inefficiency in decision-making.
Corruption: Public sector activities may encourage corruption and misuse of resources.
Market distortions: Price controls and subsidies can distort supply and demand, leading to shortages or surpluses.
Conflict of interest: The coexistence of private and public sectors may result in policy conflicts or inconsistent objectives.

9. (a) Describe five exceptions to the law of demand.
The law of demand states that price and quantity demanded are inversely related. However, in some cases, this does not apply:

Giffen goods: Inferior goods for which demand increases when price rises due to the income effect outweighing the substitution effect.

Veblen goods: Luxury items like designer clothes or luxury cars are bought more as their prices increase, due to their prestige value.

Speculative demand: If people expect prices to rise further, they may buy more even at higher prices, as in stock or housing markets.

Necessities: Essential goods like medicine may be purchased regardless of price changes, making demand inelastic or positively sloped.

Ignorance effect: Consumers may believe higher prices mean better quality and buy more at higher prices without rational consideration.

(b) Let the hypothetical production function be:
$Q = -L^3 + 10L^2 + 200L$

(i) Amount of labour in stage one.
Stage one ends where Marginal Product (MP) is maximized.
$MP = dQ/dL = -3L^2 + 20L + 200$
To find max MP, set $d(MP)/dL = 0$
$d(MP)/dL = -6L + 20 = 0$
$L = 20/6 = 3.33$
So stage one ends at $L = 3.33$

(ii) Output rate at the beginning of stage two.
Substitute $L = 3.33$ into Q:
$Q = -(3.33)^3 + 10(3.33)^2 + 200(3.33)$
$Q \approx -37.037 + 110.889 + 666 = 739.85$

(iii) Amount of labour at the end of stage two and its corresponding output.
Stage two ends when $MP = 0$:
$MP = -3L^2 + 20L + 200 = 0$
Solve quadratic:
$3L^2 - 20L - 200 = 0$
$L = [20 \pm \sqrt{(400 + 2400)}] / 6$
$L = [20 \pm \sqrt{2800}] / 6 \approx [20 \pm 52.92] / 6$
$L \approx (20 + 52.92)/6 = 72.92/6 \approx 12.15$
$Q = -(12.15)^3 + 10(12.15)^2 + 200(12.15)$
$Q \approx -1795.6 + 1476.2 + 2430 = 2110.6$

10. (a) Given demand curve: $P = 300 - 15Q$

Supply curve: P = 120 + 30Q

Find equilibrium:
300 - 15Q = 120 + 30Q
180 = 45Q
Q = 4
P = 300 - 15(4) = 240

(b) By using illustrations, distinguish between change in quantity supplied and change in supply.
Change in quantity supplied: Movement along the supply curve due to price change of the good.
Change in supply: Shift of the supply curve due to non-price factors like technology, input cost, or government policy.

(c) Outline six factors which influence elasticity of supply.
Time: Supply is more elastic in the long run when firms can adjust production.
Availability of resources: More availability leads to greater responsiveness.
Spare production capacity: Firms with unused capacity can easily increase output.
Mobility of factors: More mobile resources increase supply elasticity.
Storage ability: Non-perishable goods can be stored and supplied when needed.
Production time: Goods that require longer time to produce have less elastic supply.