



**BCM 116: MICRO-ECONOMICS**

**APRIL 2025**

**MARKING SCHEME 1**

**CAUTION:** *This Marking scheme is a guide to ensuring that fairness and justice is applied when marking the examinations. There may be instances where students may originate an argument outside this scheme and in such circumstances; student's effort will be credited as long as the point and its relevant arguments are related to the question.*

## **QUESTION ONE**

Ceteris paribus, supply is defined as the quantity of goods (and services) which producers (suppliers) are willing and able to offer for sale at alternative prices per unit of time; it is represented in table form as a supply schedule or graphically as a supply curve.

Supply is an increasing function of (own) price such that more of a commodity is supplied at higher than at lower prices. This direct relationship between supply and own price of a commodity is represented by an upward sloping supply curve

An increase in price from  $P$  to  $P_1$  encourages producers (firms) to supply more and the quantity supplied increases from  $Q$  to  $Q_1$  units. If, however, price falls from  $P$  to  $P_2$ , the quantity supplied falls as well from  $Q$  to  $Q_2$  since firms are discouraged by the resulting low level of return.

Supply is either an individual or market supply, where individual supply is in respect of the quantity a particular producer (seller) is willing and able to offer for sale per unit of time, and market supply taking the form of the (total) quantity producers (sellers/firms/suppliers) are willing and able to sell at alternative prices per unit of time, Ceteris Paribus.

Demand is the quantity per unit of time which consumers (households) are willing and able to buy in the market at alternative prices, *Ceteris paribus*; it is represented in table form as a demand schedule or graphically as a demand curve. Demand is a decreasing function of (own) price such that more of a commodity is demanded at lower than at higher prices. This inverse relationship between demand and own price of a commodity is represented by a downward sloping demand curve.

An increase in price from  $P$  to  $P_1$  discourages consumption and the quantity demanded reduces from  $Q$  to  $Q_1$  units. If, however, price falls from  $P$  to  $P_2$ , the quantity demanded increases from  $Q$  to  $Q_2$  units.

Demand is either an individual or market demand. An individual demand is the quantity of a commodity that a particular consumer is willing and able to buy at alternative prices per unit of time, *Ceteris paribus*; market demand is the quantity of a commodity that consumers are willing and able to buy at alternative prices per unit of time, other things remaining constant.

Equilibrium price is the market price determined by the free interaction of the market forces of supply and demand. Once this price level is achieved there is no tendency for it to change and the market clears.

Equilibrium price is determined at the intersection point of the supply and demand curves (equilibrium point), such that the quantity of a commodity at this point is called the equilibrium quantity. The determination of the equilibrium price and quantity is diagrammatically demonstrated as shown below:

$P_e$  is the equilibrium price and  $Q_e$  the equilibrium quantity. At the price  $P_1$  there is excess supply over demand represented by  $(Q_{s1} - Q_{d1})$  units which creates a downward pressure on price to fall in order for suppliers to dispose of the surplus.

At  $P_2$  there is excess demand over supply represented by  $(Q_{d2} - Q_{s2})$  units which results in an upward pressure on price to increase.

Overall, the tendency is towards  $P_e$  and  $Q_e$ , and any prices and quantities other than  $P_e$  and  $Q_e$  are known as disequilibrium prices and quantities.

b) Some of the main factors that may cause a fall in the supply of a commodity include:

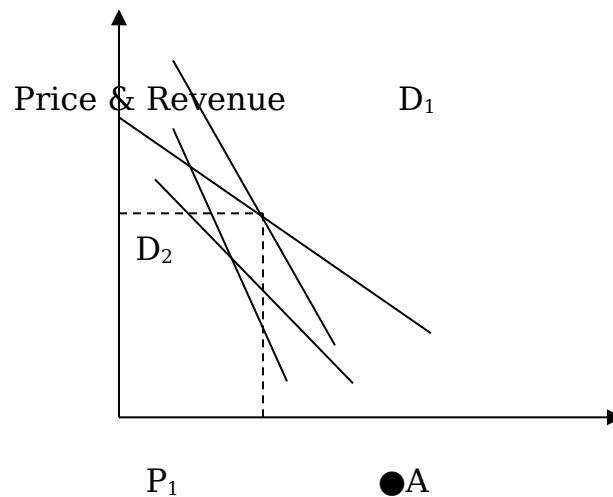
1. Increase in cost of production: An increase in factor prices, for instance, tends to increase the cost of production which reduces the ability of firms to maintain or even expand their scale of production leading to a fall in supply.
2. Inappropriate technology: since production depends on the method(s) used, the decision to use less mechanization than before, for example in agriculture, reduces the utilization of large pieces of land and thus the supply of a product reduces.
3. Unfavourable natural events: In the event of unfavourable factors such as drought, pests or even deteriorating soil fertility, the supply of a commodity tends to fall.

- Government policy: the government as a matter of policy may decide to increase tax or reduce the amount of subsidy provided in the production of a particular commodity. The effect of this decision is an increase in production cost to a level which could become a disincentive to production, leading to a fall in supply of the commodity.

Fig. 3.4: Fall in supply

(b) Why prices are sticky downwards under oligopolistic market structures:

The model for oligopoly that explains why prices are sticky downwards is the kinked demand curve model.



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D1 D2



Fig: 21.1: The Kinked demand Curve

Suppose that the oligopolist was selling a quantity of  $OQ_1$  at the price of  $OP_1$ . Based on past experience, the oligopolist expects that if he lowers his price, his rivals would also reduce their price in order to maintain their market share. Thus below price  $OP_1$  the oligopolist faces a relatively price inelastic demand curve ( $AD_1$ ). A proportionate fall in price below  $OP_1$  will lead to a less than proportionate increase in quantity demanded. Also the oligopolist believes that when he increases his price, his rivals will keep their prices constant so as to increase their market share thus above price  $OP_1$  the oligopolist faces a relatively elastic demand curve ( $AD_2$ ). A proportionate increase in price above  $OP_1$  will lead to a more than proportionate fall in the quantity demanded. The oligopolist thus, has two demand curves  $D_1 D_1$  and  $D_2 D_2$ .  $D_1 D_1$  is the relatively inelastic demand curve when the oligopolist expects his rivals to match his price changes and  $D_2 D_2$  when he does not expect his rivals to react.

For a straight line demand curve, marginal revenue curve lies halfway between the demand curve and the Y-axis.

The corresponding marginal revenue curves are  $MR_1$  and  $MR_2$  respectively. The effective demand curve ( $D_2 AD_1$ ) and the marginal revenue curve facing the oligopolist is illustrated in the diagram below:

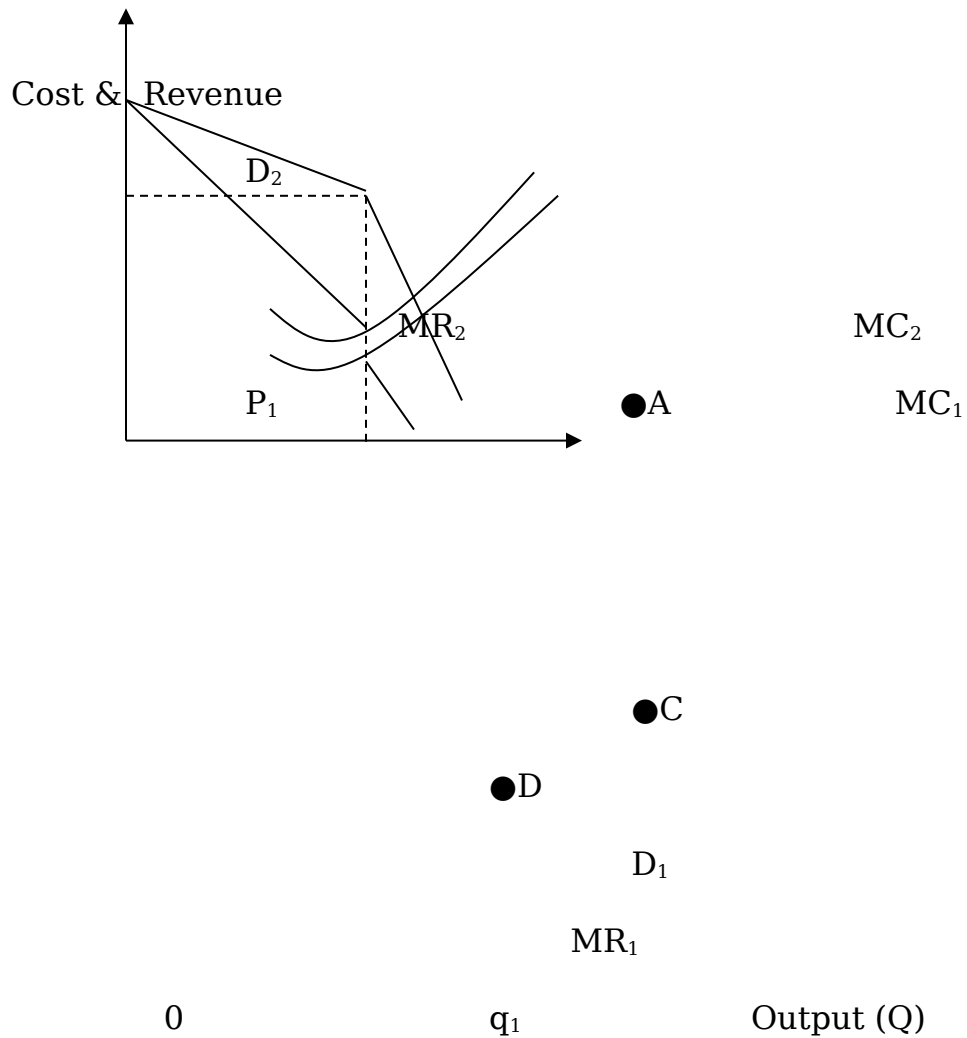


Fig 21.2: To illustrate the effective demand curve and marginal revenue curve in Oligopoly

The effective demand curve is  $D_2 AD_1$ . It is referred to as a kinked demand curve since it is kinked at point A. The effective marginal revenue curve is given by  $D_2 CDMR_1$  with a discontinuity between C and D.

Since the firm is at equilibrium with the output of  $Oq_1$  and price  $Op_1$ , marginal cost curve cuts (intersects) the marginal revenue curve somewhere in the area of discontinuity.

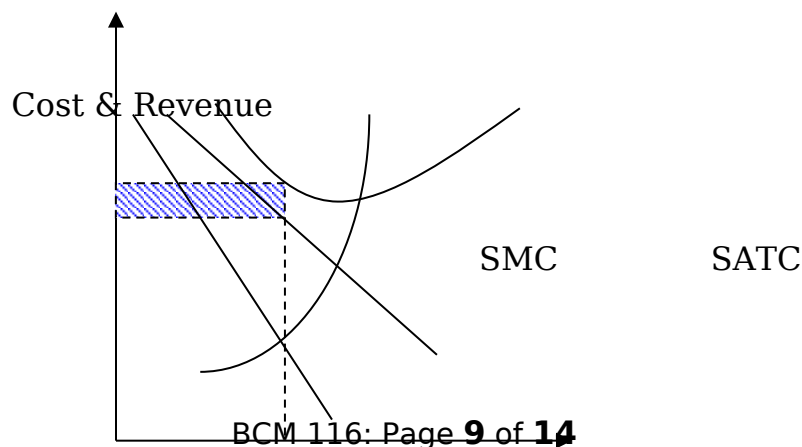
Changes in the firm's marginal cost are possible (from  $MC_1$  to  $MC_2$ ) which will not induce the firm to change its price.

Also possible are the changes in the market demand which shift the demand curve in and out without affecting the height of the kink.

In short, changes in costs and revenue over a certain range will not affect the equilibrium price. The firm can easily reduce the price but it is very hard to increase the price since if it increases, it will lose a big proportion of its market share. The price therefore remains sticky once reduced, that is, all other firms will follow suit and reduce but none will increase the price.

(c) A monopolist making losses:

A monopolist is a single seller in any market. The seller constitutes the industry and there are no close substitutes for the product and there exists barriers to entry in the industry. In the short run, a monopolist can make a loss even when he is producing where  $MR = MC$ . This is illustrated below:



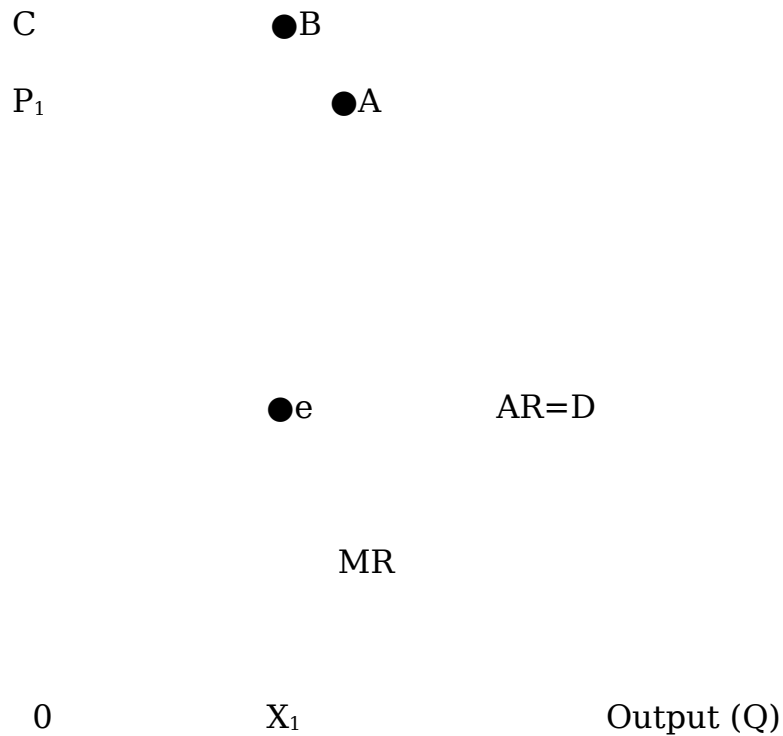


Fig 21.3: Loss - making in monopoly

A monopolist faces a downward sloping demand curve since he is a price maker and quantity setter. The AR curve is the Demand curve. Since the curve (AR) is downward sloping, MR will always be less than price since the firm must reduce the price of all units of output, not just the extra unit in order to sell that extra unit. The monopolist is at equilibrium where  $MC = MR$ . This is at the output level of  $OX_1$ . The price charged by the monopolist is  $OP_1$  and the average cost is  $OC$ . Since the average cost is greater than the average revenue at equilibrium the firm makes a loss. Total Cost is defined by  $OX_1BC$  while total revenue is the area  $OX_1AP_1$ . The firm thus makes a loss equal to  $P_1ABC$ , the shaded area.

Whether the monopolist making a loss will continue production depends on whether he covers the average variable cost or not. This is illustrated below:

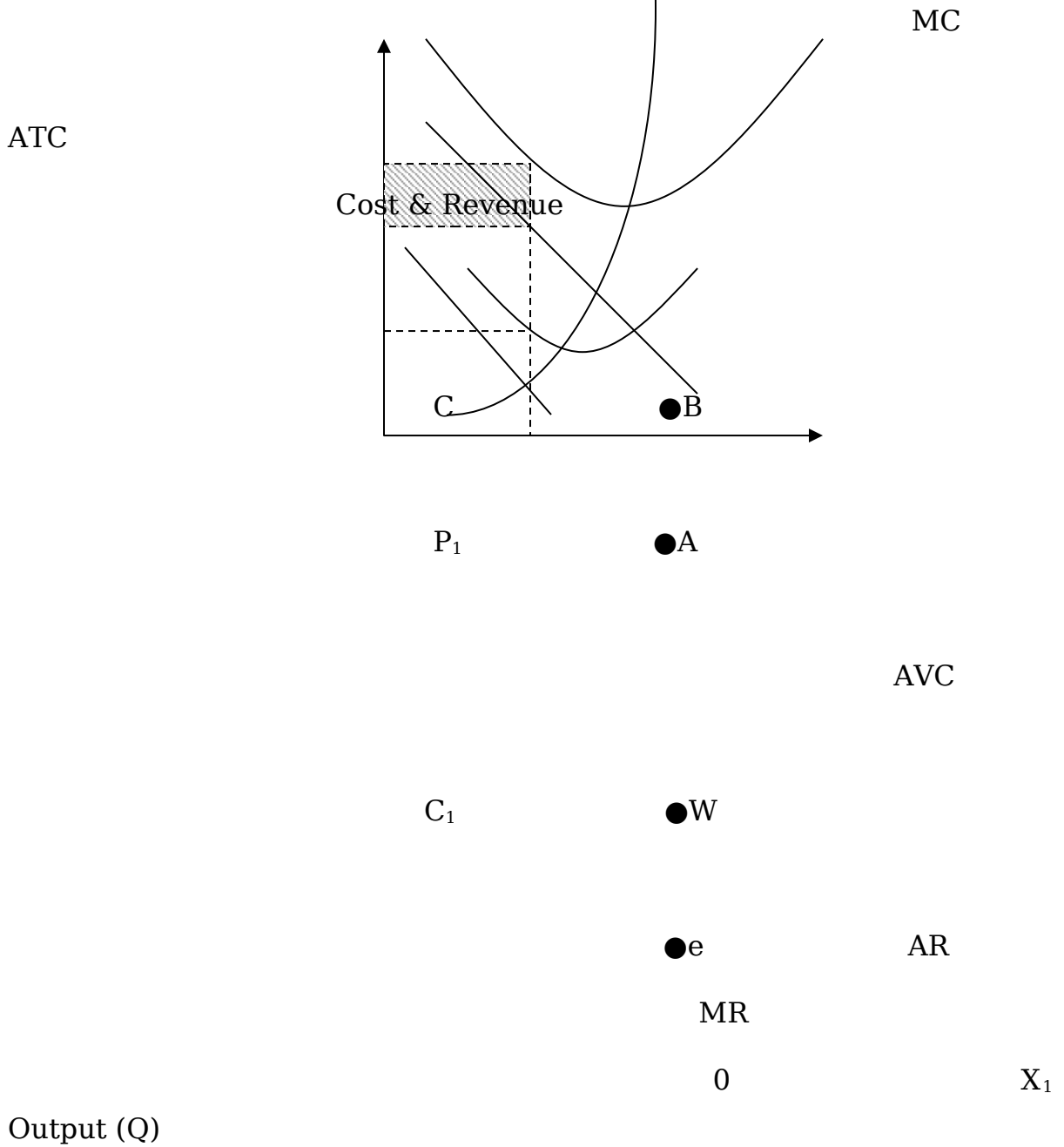
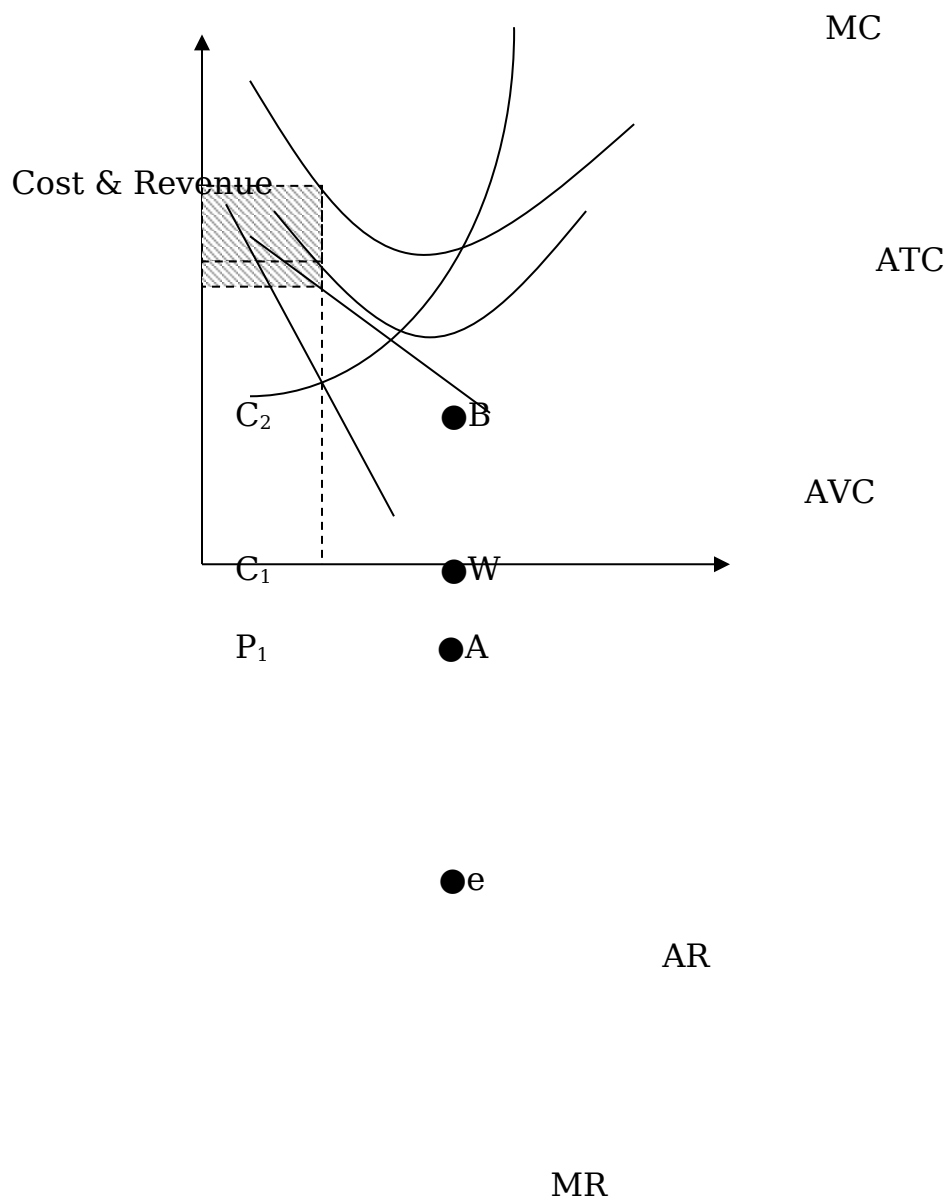


Fig 21.4: A monopolist covering average variable cost

The shaded area is the loss. However, in order to minimize losses, the firm will continue production since AR is greater than average variable cost ( $AR > AVC$ ).

If AR is less than AVC, the firm does not cover its variable cost and will therefore minimize losses by shutting down production.



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$X_1$

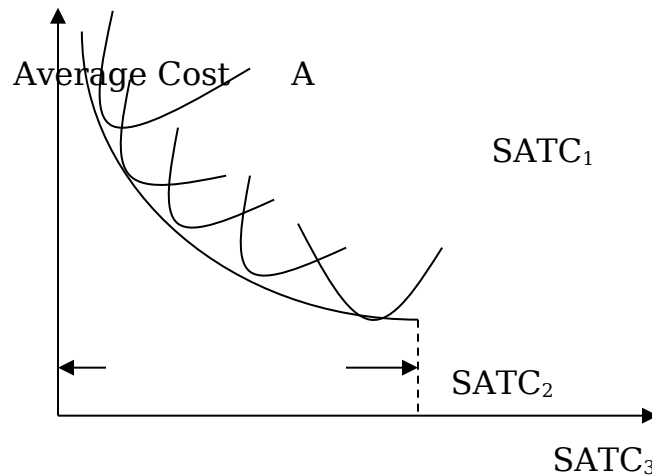
Output (Q)

Fig 21.5: A monopolist not covering average variable cost

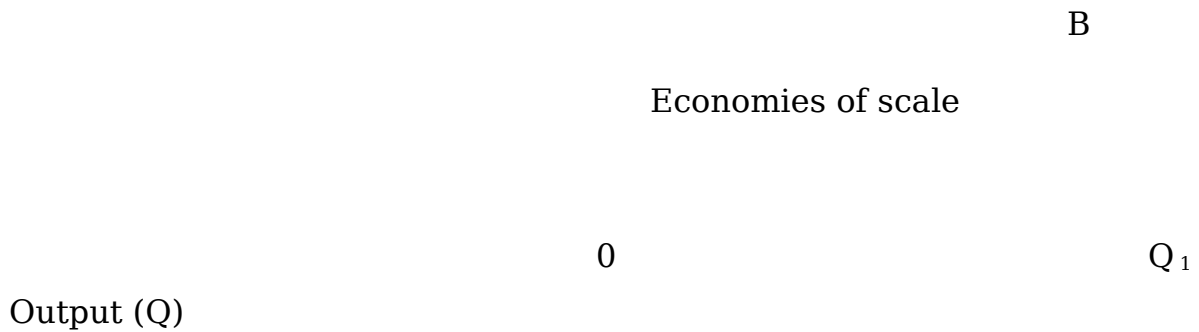
AVC is greater than AR so the firm should shut down (cease production).

Question 22

(a) Economies of scale are those aspects (factors)/benefits which reduce the unit cost of production as a firm expands its scale i.e. one where additional proportionate (proportional) increase in all inputs results in a more than proportionate increase in output. A firm enjoys full economies of scale at the lowest point of its LR average Total Cost Curve (LATC). The diagram below shows a firm experiencing economies of scale.



SATC<sub>4</sub> SATC<sub>5</sub>



Arc AB shows a section of the long-run Average total cost (LATC) curve where the firm is

experiencing economies of scale.

Economies of scale take two forms i.e. internal eg Financial, technical, commercial etc and external such as auxiliary services like banking, insurance; infrastructure, joint research etc.

Diseconomies of scale are those aspects/factors/disadvantages which tend to increase the unit cost of production as the firm expands its scale of the plant. They accrue to a firm experiencing decreasing returns to scale, i.e. one where successive proportional increase in all inputs results in a less than proportional increase in output. Diseconomies of scale begin to set in after full exploitation of the possible economies of scale, such that any increase in output increases unit cost of production