

Issued On:		Past Paper Questions [PPQs]	11 [69 - 79]
Deadline:		Model Questions [MQs]	
Marks : Time	1 mark = 1 ½ Mnt	Units - Essentials Covered	Unit 4

Production, Cost and Profit Analysis [Unit 4.1]

[01] 2011 A/Ls (ECON – II): Q3 (I - III)

(I) Distinguish between the short run and the long run in production

(II) Explain the 'Law of Diminishing Returns'

(02 marks each)

(III) Explain the difference between explicit and implicit costs giving examples

(04 marks)

(I) Short run is a stage or time period in production, where a business organization is unable to increase or change certain inputs (at least one input) used in production, when attempting increase output.

(01 mark)

Alternative Answer:

A time period in production where a given production firm's inputs consists of certain fixed inputs, used along with variable inputs is known as the short run.

(01 mark)

Long run is a stage or time period in production long enough to change or vary all inputs used in the production process.

(01 mark)

Alternative Answer:

A time period in production where all inputs used by a given production firm function as variable inputs is known as the long run

(01 mark)

(II) Law of Diminishing Returns states that as a firm increases output in the short-run by adding variable inputs on an incremental basis, to its fixed inputs, after a certain point (or eventually), first the marginal product (MP) and then (or subsequently) average product (AP) of the variable input will begin to diminish.

(02 marks)

(III) Explicit cost is the opportunity cost of inputs which the firm purchases from outside parties. This cost involves an actual monetary payment.

Examples: Wages on external labour, cost on raw materials, cost on transportation, electricity and advertising expenses

(02 marks)

Implicit costs are the costs that represent the value of resources used in production for which no monetary payment is made. They represent the imputed value that the firm's resources could command in their best alternative uses.

Examples:

- Foregone salary for the owner of the firm who used his/her time to conduct the business
- Foregone interest income because the owner invested his/her funds in the firm, rather than investing in another interest income earning alternative
- Foregone rental income from using the owners land and building for his /her own business
- Normal profits

(02 marks) (Total 04 marks)

[02] 2005 A/Ls (ECON – II - II): Q2

Distinguish between the following pairs of concepts:

- (a) Money cost and opportunity cost
- (b) Normal profits and supernormal profits
- (c) Fixed costs and variable costs

(03 marks each)

- (a) The monetary payments (direct cost incurred) made in the process of producing or consuming goods and services by a given firm or individual to suppliers is known as money cost.

(01 mark)

The value or benefit foregone from the next best alternative use on which all resources or inputs used in the process of consuming or producing a given good or service, could have been used or invested is known as opportunity cost (or economic cost)

(01 mark)

Money or financial cost only consist of direct cost, while opportunity cost (i.e. total economic cost) consists of both direct and indirect (implicit or imputed) costs.

(01 mark) (03 marks)

- (b) Minimum profit an entrepreneur is expecting to earn, in order to continue engaging in (or remain) the current production or business activity is known as normal profits.

Normal profit or return is an 'Implicit Cost', which is the payment for entrepreneurship effort. If the producer fails to even secure this minimum return or normal profit within the current production activity, their entrepreneurship efforts to another industry or business. It is also noteworthy that normal profit is a fixed cost by nature.

(01 mark)

Surplus of total revenue which, exceeds or surpasses the total opportunity cost of all inputs used in the production process ($TR > TC$). 'Concept of Profit' in economics refers to Supernormal Profits or Abnormal Profits.

(01 mark)

Normal profits are said to prevail, if a firm's **total income (TR) equals total cost (TC)** i.e. when economic profits are zero, while a super normal profit can only be earned if total revenue exceeds total opportunity cost.

(01 mark)(03 marks)

- (C)** Total Fixed Cost (TFC) is the cost that does not change as output changes (increases), and the cost for which a value exists even at zero output. The total fixed cost curve tends to be parallel to the output (horizontal) axis.

(01 mark)

Total Variable Cost (TVC) is the cost that changes (increases) as output changes (increases), and the cost for which is zero in value at zero output. This is the cost on variable inputs used in production. The short run total variable cost curve tends to resemble an inverted 'S' shape.

(01 mark)

Fixed cost is specific to short run production, while variable cost is relevant to all production time period (i.e. the production short run and long run).

(01 mark) (03 marks)

[03] 2012 A/Ls (ECON – II): Q3

- (I)** What is meant by short run production function **(02 marks)**

- (III)** How do the concepts of accounting profit and economic profit differ?

(04 marks each)

- (I)** The short run production function for a particular product expresses the technical relationship between the rate of output and the rates of inputs of the variable elements of production, while the size of the plant and technical knowledge are given.

(02 marks)

Alternative Answer:

Short-run production function refers to the technical relationship between inputs and output when variable inputs are changed while holding fixed elements such as plant size and technology constant. This function can be indicated by $Q = f(v_1, v_2, \dots, v_n; K)$

(02 marks)

- (II)** Economic profits are equal to total revenue less opportunity costs (total economic cost). Opportunity costs are the sum of explicit and implicit costs.

(01 mark)

Accounting profits are equal to total revenue less only explicit costs. **(01 mark)**

Economic profit is obtained by subtracting the implicit costs of the firm from accounting profit.

(01 mark)

Accounting profit exceeds economic profit because accounting profit does not include implicit costs.

(01 mark) (04 marks)

➔ **[04]** 2010 A/Ls (ECON – II - II): Q4 (II)

Explain the difference between ‘diminishing returns’ and ‘decreasing returns to scale’

(02 marks)

Law of Diminishing Returns states that as a firm increases output in the short-run by adding variable inputs on an incremental basis, to its fixed inputs, after a certain point (or eventually), first the marginal product (MP) and then (or subsequently) average product (AP) of the variable input will begin to diminish.

(01 mark)

The behavior of output following a change in all inputs is defined as The Law of Returns to Scale. Decreasing Returns to Scale occurs when output of a firm is increasing at a lower percentage (less than proportional) than the rate of increase in all inputs. This is real concept, specific to the long run in production.

(01 mark) (02 marks)

➔ **[05]** 2017 A/Ls (ECON – II): Q3 (II)

What happens to the difference between average total cost (ATC) and average variable cost (AVC) as a firm’s output expands in the short run? Explain

(04 marks)

When a firm operating in its short run, expands production or output the difference between average total cost (ATC) and average variable cost (AVC), tends to gradually decrease

[01 mark]

A difference between ATC and AVC is caused by average fixed cost (AFC)

As output or production is gradually increased the importance of AFC within ATC gradually diminishes, thereby the ATC curve shall gradually become closer to the AVC curve (i.e. the vertical distance between AVC and ATC reduces).

At a higher range of output AFC becomes a highly insignificant value within ATC, and AVC becomes the dominant element within ATC.

However at all output levels in the short run there will essentially be a difference between ATC and AVC, while this difference or gap shall diminish gradually as output or production is increased.

[01 mark any one of the above points for a maximum of 03 marks]

[Total 04 marks]

[06] 2013 A/Ls (ECON – II): Q3 (I)

(I) Explain how the law of diminishing returns and the law of returns to scale affect a firm's cost of production

(04 marks)

2006 A/Ls (ECON – I - II): Q4 (a)

Explain how the law of diminishing returns and the law of returns to scale affect a firm's cost of production

2012 A/Ls (ECON – II): Q3 (II)

What is the law of diminishing returns, and what does it imply about the likely shape of short run cost curves

(04 marks each)

Diminishing Returns & Short-run Cost Curves

- ✓ The cost of a production firm is primarily decided by the technology used for production, by the production firm
- ✓ **The 'Law of Diminishing Returns' states that as a firm increases output in the short-run by adding more of a variable input to its fixed factors, eventually the marginal (MPP) and average product (APP) of the variable input will begin to fall.**
- ✓ Short-run cost curves are a reflection of the 'law of diminishing marginal returns (law of variable proportions).
- ✓ Given constant price of the variable input, Marginal Costs (MC) decline as long as the marginal physical product (MPP) of the variable input is rising.
- ✓ At the point at which diminishing marginal returns begin, Marginal Costs (MC) begin to rise as the marginal physical product (MPP) of the variable input begins to decline.
- ✓ The essentially the Average Variable Cost (AVC) and in turn the Average Total Cost (ATC) curves are affected. They will have their familiar 'U' shape in the short-run, due to the effects of the law of diminishing (marginal) returns.

Returns to Scale & Long-run Cost Curves

- ✓ In the long-run the production process is subject to the law of returns to scale and the shape of the Average Total Cost (ATC) in the long-run (LRAC or LRATC) tends to be a **flat or wider 'U' shape, due to Economies of Scale and Diseconomies of Scale, created by different forms of Returns to Scale.**
- ✓ Due to the increasing returns to scale, which may lead to the creation of economies of scale, Average Total Cost (ATC) shall reduce or decline.

- ✓ Due to the constant returns to scale, which may lead to the creation of constant returns to scale, Average Total Cost (ATC) shall remain constant.
- ✓ Due to the diminishing returns to scale, which may lead to the creation of diseconomies of scale, Average Total Cost (ATC) shall increase or rise.

[04 marks, for a Logical and technically correct answer]

- ➔ [07] 2009 A/Ls (ECON – I - II): Q4 (I - II)**
- (I) Define the term ‘economies of scale’ (02 marks)**
- (II) How do the economies of scale arise? (04 marks)**
- (I)** Economies of scale refer to a situation or phenomenon in which, when a business expands its capacity or scale of operation in the long-run, its Average Total Cost (ATC or LRATC) tends to decrease.
- It can be observed that due to increasing returns to scale and financial benefits of large scale production, technical economies of scale tends to be created.
- (02 marks)**
- (II) How do economies scale arise (Sources or Reasons)**
- **Technical economies**
 - Financial economies
 - Managerial economies
 - Marketing economies
 - Risk related economies (Economies of diversification)
 - Trading economies
- (01 mark each, total 04 marks)**

Part [B]: Market Structures & Factor Market Analysis (Unit 4.2)

- ➔ [08] 2007 A/Ls (ECON – I - II): Q3**
- (I) What are the characteristic of a perfectly competitive market (03 marks)**
- (II) Categorise the following industries in Sri Lanka according to the main types of market structure:**
- a) Soft drinks
 - b) Railways
 - c) TV Broadcasting
 - d) Grocery Stores
 - e) Paddy Cultivation
 - f) Barber Shops
- (03 marks)**

(I) Perfectly Competitive Markets

- ✓ A uniformed or **homogeneous product** (all products are very close/perfect substitutes)
- ✓ A very **large number** of buyers and **sellers** operate with in the market
- ✓ **No barriers** ^[1] to enter or exit the market (no entry and exit, especially in the long-run)
- ✓ All buyers and seller possess **perfect market information** (perfect market knowledge is available free of charge)
- ✓ Perfect mobility of resources
- ✓ No single buyer or seller can influence ruling Market Price, by their own actions, i.e. insignificant market power of a single firm (**Price Taking** Behavior [AR/P = MR=D])
- ✓ In the long-run equilibrium, all firms shall only earn 'Normal Profits' [AR = LRATC]

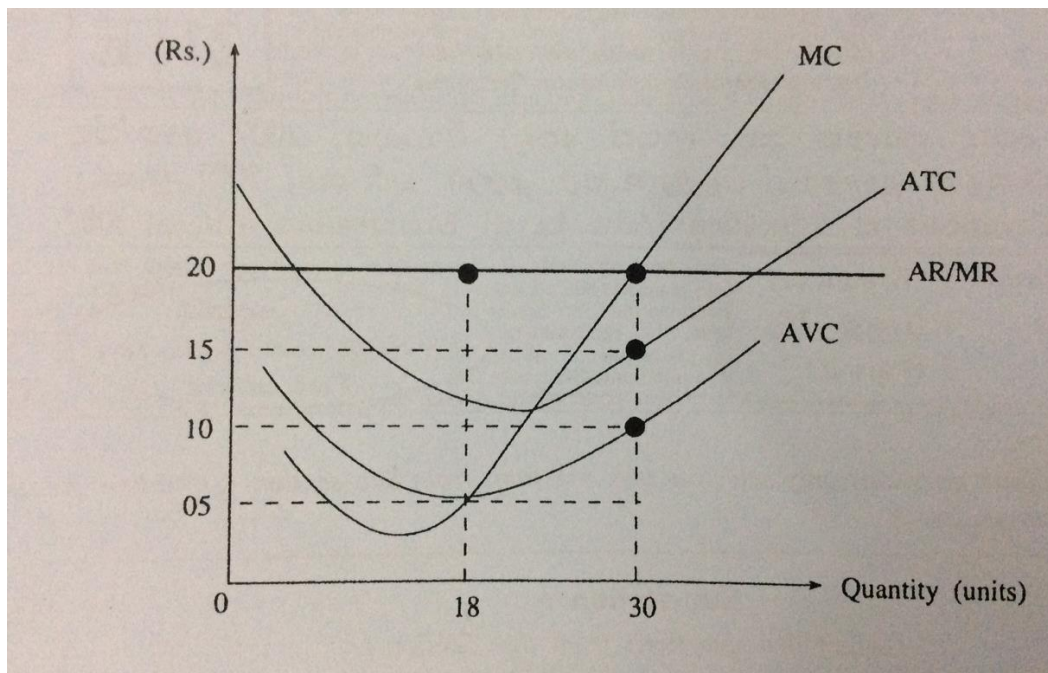
[01 mark each; max 03 marks]

(II)

- (A) Oligopoly Market
- (B) Monopoly Market
- (C) Oligopoly Market
- (D) Monopolistic Competition Market
- (E) Perfect Competition
- (F) Monopolistic Competition

[03 Marks]

(III) The graph below illustrates the cost and revenue structure facing a perfectly competitive firm in the short run



(a) If the market price is Rs. 20 per unit, calculate the total economic profit of the firm

(05 marks)

(b) What is the lowest price at which a firm produces an output in the short-run? Explain why.

(04 marks)

2009 A/Ls (ECON – I - II): Q4 (V)

What is the lowest price at which a firm produces an output in the short-run? Explain why.

(04 marks)

(III) (A) Economic Profit = Total Revenue – Total Cost

$$\begin{array}{r}
 \text{(Price x Quantity)} \quad - \quad \text{(ATC x Quantity)} \\
 (20 \times 30) \quad - \quad (15 \times 30) \\
 600 - 450 \\
 \underline{\underline{150}}
 \end{array}$$

[02 Marks]

(B)

- ✓ Minimum Price is Rs. 5.00
- ✓ A profit motivated firm will minimum expect a price equal to its lowest Average Variable Cost (AVC) in order to continue producing or operating the within the industry.
- ✓ A perfectly competitive firm in the short-run shall continue to operate in the market as long as it is able to secure or receive a revenue sufficient enough to at minimum recover its variable cost incurred in production.

In order for the above condition to be satisfied within a perfectly competitive market, the market price (the given price) should equal the Average Variable Cost (AVC). If the market price (i.e. Average Revenue – AR) is greater than the (AVC) of the firm, the excess revenue can be used to at least cover a part of its Fixed Cost (FC).

- ✓ Accordingly at any price below this minimum price (i.e. P or $AR < AVC$), the given profit motivated perfectly competitive firm shall shutdown production or exit the market.

[01 mark each] [03 Marks]

[09] 2009 A/Ls (ECON – I - II): Q4 (III) and (V)

(III) State **three** characteristics of an oligopoly market (03marks)

(IV) Explain what is meant by the term '**barriers to entry**' (02 marks)

(III) **Oligopoly Markets**

- ✓ A very small number of suppliers or firms (small number of large or dominant firms)
- ✓ The product transacted in the market may be differentiated (heterogeneous) or homogenous in nature
- ✓ Existence of strong and effective barriers to enter or exit the market (entry to the industry is restricted)
- ✓ A high degree of interdependence among the oligopolistic firms (The market strategy may be focused on collusion, cartels and market sharing)

[03 Marks]

(IV) [Ideal: Paragraph based answer expected]

- ✓ These are the different technical, legal and economic barriers or preventive measures faced by a new entrant to a given industry or profession.
- ✓ **Forms of such barriers may include**, exclusive control over a strategic resources, intellectual property rights (patents, copyrights) requirement to incur large cost on R&D, Marketing and large Sunk cost at inception.

[02 Marks]

[10] 2010 A/Ls (ECON – I - II): Q4

(I) What is the difference between '**producer surplus**' and '**economic profits**'

(III) Define the term '**natural monopoly**'

(IV) Why is a firm in a perfectly competitive industry a price taker?

(02 marks)

(I) **Producer Surplus Vs. Economic Profit**

- ✓ Producer Surplus
- ✓ Difference between Market Price and Minimum Supply Price or Marginal Cost (MC).
- ✓ At equilibrium, this is the difference between total sales revenue (TR) and Total Variable Cost (TVC or Producer's Revenue).
- ✓ While producer surplus ignores Total Fixed Cost (TFC) the concept of Economic Profits considers Total Cost, which includes both Fixed and Variable Cost ($TC = TFC + TVC$)

[02 Marks]

- (III) If a certain firm operating within a given industry is able supply the total quantity requirement of the market at a lower price than two or more firms in the industry, such a firm is termed as a Natural Monopoly. Such a firm shall experience a downward sloping LRATC; as it increases output, due to increasing economies or returns to scale.

Accordingly other competitive firms are unable to remain competitive in the industry and the market shall naturally show a tendency towards becoming a monopoly.

[02 Marks]

(IV) **Price Taker** (Perfectly Competitive Firm)

- ✓ An individual seller who cannot influence the market price and is able to sell as much as desired at this existing market price is known as a price taker.
- ✓ An individual firm operating within a perfectly competitive market cannot alter or change market price, but can only adjust and adopt its own production and pricing decisions, according to the existing market price.
- ✓ A perfect competition firm is subject to price taking, due to the combinations insignificant market power held by the firm, the homogeneity of the product it supplies and the perfect nature of market information. As a result the demand curve and the AR, MR curves faced by the firm tends to be perfectly elastic in nature.

[02 Marks]

[11] 2013 A/Ls (ECON – II): Q3

- (II) Discuss whether there is a relationship between the marginal cost curve of the firm and the supply curve of the industry to which it belongs.
- (III) Explain why a firm under perfect competition faces horizontal demand curve while the industry faces a downward sloping demand curve.
- (V) Why is the equality of marginal revenue (MR) and marginal cost (MC) essential for profit maximization in all market structures? Explain why price (P) can be substituted for marginal revenue (MR) in the (MR = MC) rule when the firm is operating in a perfectly competitive industry

(04 marks each)

(II) **A Firm's Supply Curve** [Paragraph based answer expected]

- ✓ A firm in a perfectly competitive producers or supplies at the profit maximizing or loss minimizing level of output.
- ✓ The profit maximizing output is where the Marginal Revenue (MR) equals Marginal Cost (MC).
- ✓ Accordingly the supply curve of a perfectly competitive firm is its marginal cost curve above the minimum Average Variable Cost (AVC).

[02 Marks]

Market Supply Curve [Paragraph based answer expected]

- ✓ The supply curve of a perfectly competitive market (industry) represents the quantities all the firms in the industry are willing to supply in total, at different market prices, while the number of firms within the industry and the capacity of each of those firms is held constant.
- ✓ The total quantity supplied to the market by a perfectly competitive industry is a combination of the quantities each firm in the industry is willing to supply at different prices.
- ✓ Accordingly the market supply curve is derived by horizontally adding all the individual firm's supply curves, i.e. each firm's Marginal Supply curve above the minimum point of Average Variable Cost (above point at which $AVC = MC$).

[02 Marks]

(III) A Firms Demand Curve [Paragraph based answer expected]

- ✓ A firm in a perfectly competitive market is a price taker (due to the combination of insignificant market power, homogeneity of products and perfect nature of market information)
- ✓ The demand curve diagram of a firm functioning as a 'Price Taker' will be represented parallel to the quantity axis at the existing or given Market Price (i.e. perfectly or infinitely elastic in nature).
- ✓ Such a demand curve behavior suggests that a given firm operating within a perfectly competitive market is able to sell any quantity it desires at the prevailing market price.
- ✓ This unique demand situation caused due to the price taking behavior, results in the (AR) and (MR) values earned by the firm to also equal the existing or given market price ($P = AR = MR$), therefore these revenue curves also mirror the perfectly elastic demand curve

[03 Marks]

The Market Demand Curve [Paragraph based answer expected]

- ✓ The demand curve faced by the market or industry tends to downward sloping from top left to bottom right.
- ✓ The elasticity of the market demand curve depends on the substitutability of the product produced by one market or industry, with that of another industry, Therefore the demand curve faced by the industry tends to downward sloping.

[01 Mark]

(V) The Profit Maximizing Condition [Paragraph based answer expected]

- ✓ If the Marginal Revenue is greater than the Marginal Cost at certain level of output ($MR > MC$), every incremental unit of output produced by the firm shall create or add to the firm's economic profits. In such a situation a firm working towards profit maximization should expand output on a persistent basis.
- ✓ If a certain firm operating within a given market structure is at an output situation where Marginal Cost is greater than the firm's Marginal Revenue ($MC > MR$), i.e. every incremental unit produced shall create an economic loss. In such a situation a profit maximizing firm should contract its output to reduce further losses and increase profits.
- ✓ The output level at which the firm experiences a Marginal Revenue equal Marginal Cost, economic profits of the firm shall be maximized. This is a situation where there will not be any addition or deductions from the firm's economic profit, therefore there is no tendency to expand or contract production.

[02 Marks]

Second section of the question

Due to the 'Given or Price Taking' the Marginal Revenue (MR) of a perfectly competitive firm is equal to the prevailing market price, i.e. the addition to the Total Revenue when selling one extra unit is equal to the given price ($P = MR$). Accordingly with regards to a perfectly competitive firm the profit maximizing condition can be presented as ($P = MC$) alternative to ($MR = MC$).

[02 Marks]

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'Pen on Paper'

Answer Grid [MCQs]

Question	Answer	Question	Answer
01	1	21	3
02	5 [Estimation]	22	3 [Estimation]
03	1	23	2 [Estimation]
04	2	24	5
05	2	25	3
06	4		
07	3		
08	2		
09	4		
10	3		
11	4		
12	5		
13	3		
14	3		
15	2		
16	4		
17	1		
18	2		
19	3		
20	4		

Answer Grid [OTQs]

Question	Answer	Question	Answer
01	True	04	True
02	True	05	True
03	False		