

CLASS XI | CBSE | 2025-26

INTRODUCTORY

MICROECONOMICS

CHAPTER 10

Producer's Equilibrium

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Chapter Overview

What You Will Learn

- Meaning of Producer's Equilibrium
- TR-TC Approach to equilibrium
- MR-MC Approach to equilibrium
- Two conditions of MR=MC approach
- Equilibrium under Perfect Competition
- Equilibrium under Monopoly
- Diagrammatic and numerical analysis

Exam Importance ★★★★★

This chapter is HIGHLY important. MR=MC approach and its two conditions appear repeatedly in board exams as 3-mark and 6-mark questions. Diagrams under both PC and Monopoly are frequently asked.

Real-Life Connection

Every business owner — from a small shopkeeper to a large factory — aims to maximise profit. Producer's equilibrium explains exactly when and how that maximum profit point is reached.

1. Meaning of Producer's Equilibrium

DEFINITION: Producer's Equilibrium

A producer is said to be in equilibrium when he produces that level of output at which his profit is maximum (or loss is minimum). At this level, he has no tendency to increase or decrease output.

Key Points:

- Equilibrium means a state of rest — no incentive to change output.
- The goal of a rational producer is profit maximisation.
- Profit = Total Revenue (TR) – Total Cost (TC)

MEMORY TRICK

■ Trick: EQUILIBRIUM = MAX PROFIT POINT. Remember: 'E for Equilibrium = E for Earning Maximum'

2. TR-TC Approach

Under this approach, a producer compares Total Revenue (TR) with Total Cost (TC) at each level of output. Equilibrium is achieved where the difference (TR – TC) = Profit is MAXIMUM.

Two Conditions:

Condition 1: TR – TC must be MAXIMUM (profit is maximised)

Condition 2: After equilibrium output, profit must start falling (or gap between TR and TC must start narrowing)

Numerical Illustration

Output (Units)	TR (₹)	TC (₹)	Profit TR–TC (₹)	Remark
1	10	12	-2	Loss
2	20	18	2	Profit rising
3	30	22	8	Profit rising
4	40	28	12	← EQUILIBRIUM (Max Profit)
5	50	40	10	Profit falling

6	60	55	5	Profit falling
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EXAM TIP

Equilibrium at Output = 4 units because profit (■12) is maximum here. After this, profit declines.

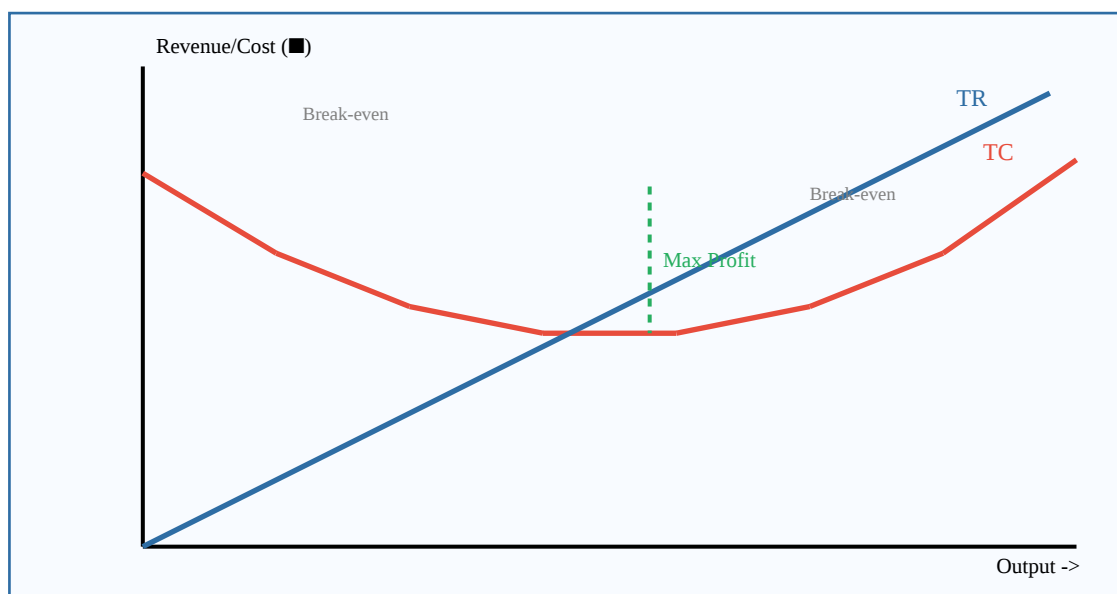
TR-TC Diagram

Diagram: TR is a straight line from origin (under PC). TC curve is U-shaped. Maximum profit = maximum vertical gap between TR and TC.

3. MR-MC Approach

This is the most important and commonly used approach. A producer is in equilibrium when Marginal Revenue = Marginal Cost ($MR = MC$).

$MR = MC \rightarrow$ Producer's Equilibrium

This is a necessary but not sufficient condition alone

TWO CONDITIONS of $MR=MC$ Approach:

Condition 1: $MR = MC$

At equilibrium output, Marginal Revenue must equal Marginal Cost.

Condition 2: MC must be Rising (or MC cuts MR from Below)

After the equilibrium point, MC must be greater than MR ($MC > MR$). This ensures that the producer does not increase output further, because any additional unit would add more to cost than to revenue — reducing profit.

COMMON MISTAKE

Common Exam Mistake: Students write only ' $MR=MC$ ' as the condition. Always write BOTH conditions. The second condition (MC rising/ $MC > MR$ after equilibrium) is equally important and earns separate marks.

Numerical: MR-MC Approach

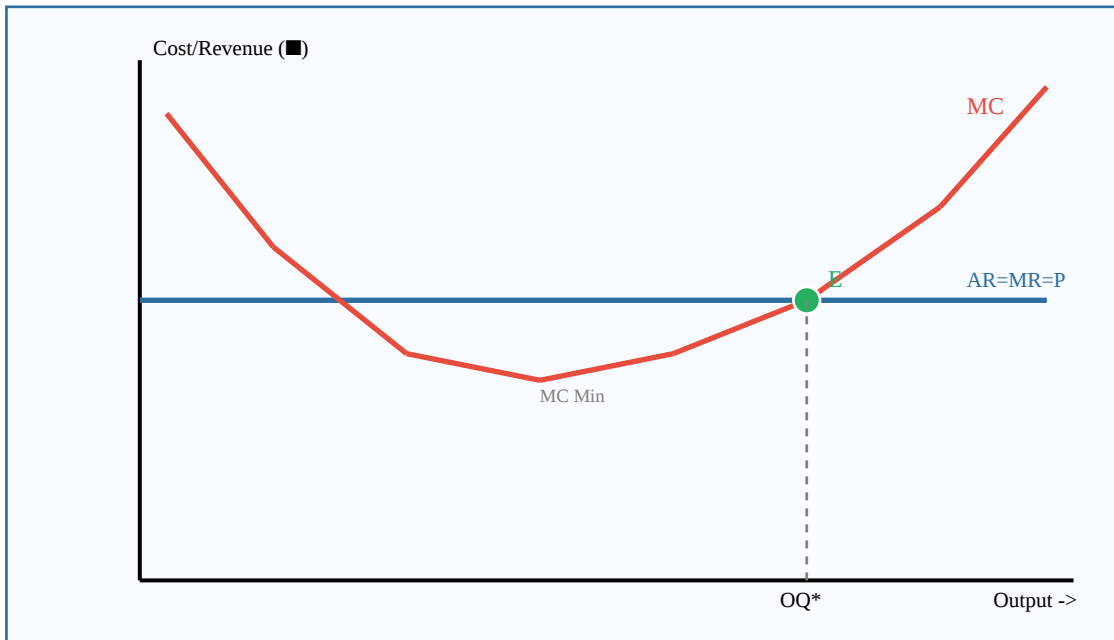
Output	TR (■)	MR (■)	TC (■)	MC (■)	Profit (■)	Remark
1	10	10	12	—	-2	
2	20	10	18	6	2	
3	30	10	22	4	8	
4	40	10	28	6	12	
5	50	10	38	10	12	MR=MC? No MC>MR, max profit
6	60	10	51	13	9	MC>MR profit falls

EXAM TIP

At Output 4: $MR=10$, $MC=6$ (MC $MR=MC$ AND MC is rising $\rightarrow$ EQUILIBRIUM at Output 5 with Profit=■12.

4. Equilibrium Under Perfect Competition

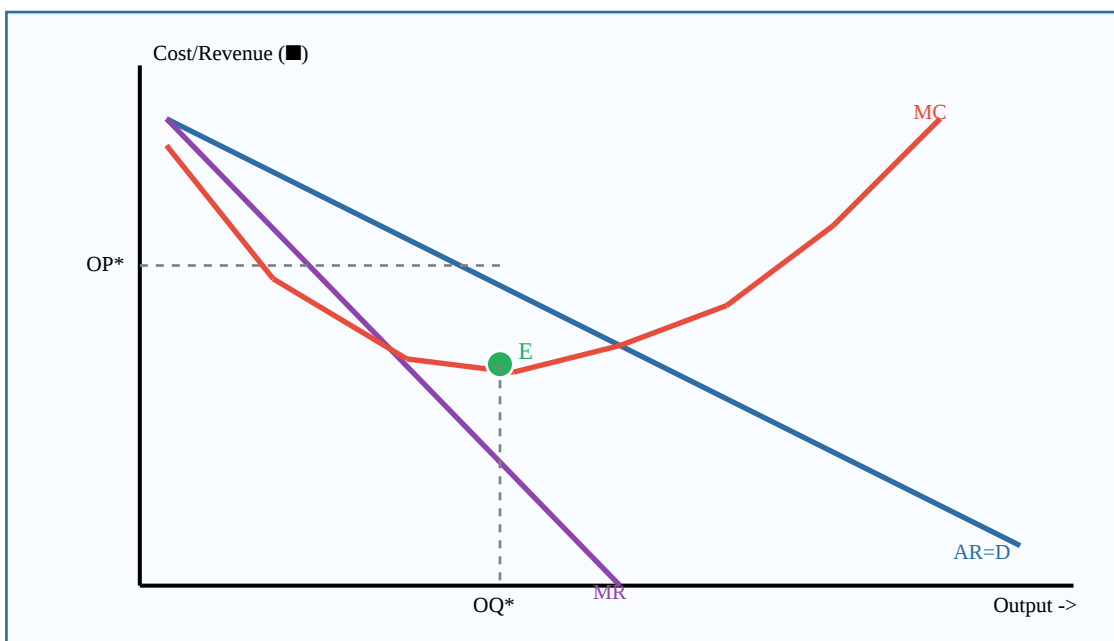
Under Perfect Competition, $AR = MR = \text{Price}$ (horizontal straight line). MC curve is U-shaped. Equilibrium where $MC = MR (= AR = \text{Price})$ AND MC is rising.



Point E: $MC = MR (= AR = P)$. MC is rising at E. OQ^* is the equilibrium output. This satisfies BOTH conditions.

5. Equilibrium Under Monopoly

Under Monopoly, $AR > MR$ and both slope downward. Equilibrium where $MC = MR$ and MC cuts MR from below (MC is rising).



Under Monopoly: Equilibrium at E where $MR=MC$. Price (OP^*) is read from the AR/Demand curve at that output (OQ^*). Notice: Price $>$ MR at equilibrium — monopolist earns supernormal profit.

6. TR-TC vs MR-MC Approach — Comparison

Basis	TR-TC Approach	MR-MC Approach
Basis of comparison	Compares totals	Compares marginals
Equilibrium condition	TR–TC is maximum	MR = MC & MC rising
Clarity	Easy to understand	More precise
Preferred for	Introductory level	Higher analysis
Diagram	TR and TC curves	MR and MC curves

7. Equilibrium: PC vs Monopoly

Basis	Perfect Competition	Monopoly
Market structure	Many sellers	Single seller
AR and MR	AR = MR (horizontal)	AR > MR (both downward)
Price determination	Price = MR = MC	Price > MR = MC
Profit in long run	Normal profit only	Supernormal profit possible
Equilibrium condition	MR=MC, MC rising	MR=MC, MC rising

MEMORY TRICK

■ TRICK — 'PRICE EQUALS MR ONLY IN PC' PC: $P = AR = MR = MC$ at equilibrium
 Monopoly: $P = AR > MR = MC$ at equilibrium Remember: Monopoly has a GAP between Price and MR!

Exam-Oriented Questions & Model Answers

[1-Mark] What is producer's equilibrium?

■ Model Answer: Producer's equilibrium is the level of output at which a producer earns maximum profit (TR–TC is maximum), and has no tendency to change output.

[1-Mark] State the condition of producer's equilibrium under MR-MC approach.

■ Model Answer: $MR = MC$ AND MC must be rising ($MC > MR$ after equilibrium point).

[3-Mark] Explain the MR=MC approach to producer's equilibrium.

■ Model Answer: Under MR-MC approach, a producer is in equilibrium when: (1) $MR = MC$ — the addition to revenue equals addition to cost. (2) MC is rising after equilibrium — if $MC < MR$, producer increases output (more profit); if $MC > MR$, he reduces output (saves cost). Only at $MR=MC$ with rising MC is profit maximum. Example: If $MR=₹10$ and $MC=₹8$, producer increases output. If $MC=₹12$, he reduces. When $MC=MR=₹10$ and MC is rising, he stops — equilibrium achieved.

[4-Mark] With the help of a diagram, explain producer's equilibrium under Perfect Competition.

■ Model Answer: Under PC, $AR=MR=Price$ (horizontal line). MC is U-shaped. Equilibrium: Where $MC = MR$ and MC is rising. In diagram: MC curve cuts MR line from below at point E. Vertical line from E to X-axis gives equilibrium output OQ^* . Price is constant at $OP^*=MR$. Both conditions satisfied at E: 1. $MR=MC$ 2. MC is rising ($MC>MR$ beyond E)

[6-Mark] Explain both approaches to producer's equilibrium with numerical examples.

■ Model Answer: **APPROACH 1 - TR-TC:** Producer compares total revenue with total cost at each output. Equilibrium where TR–TC (profit) is MAXIMUM. Numerical: At output 4, $TR=40$, $TC=28$, Profit=12 (maximum). At output 5, Profit=10 (falls). So equilibrium at Output 4. **APPROACH 2 - MR-MC:** Equilibrium where $MR=MC$ AND MC is rising. Numerical: At output 5, $MR=10$, $MC=10$ and MC is rising. So equilibrium at Output 5. Both approaches give the same equilibrium output when based on the same data. MR-MC is more widely used as it is more precise and useful for diagrammatic analysis.

[HOTS] A producer is producing 100 units. At this level, $MR = ₹20$ and $MC = ₹25$. Should he increase or decrease output? Why?

■ Model Answer: He should DECREASE output. At 100 units, $MC (₹25) > MR (₹20)$. Each additional unit adds more to cost than to revenue — reducing profit. By reducing output, MC will fall until $MC = MR$, restoring equilibrium and maximising profit.

[Case Study] A firm's data: Output 1–5 units, $MR = ₹15$ throughout, MC values are ₹20, ₹12, ₹10, ₹15, ₹20. Find equilibrium output and explain why.

■ Model Answer: $MR = ₹15$ at all units. At Output 3: $MR = 15$, $MC = 10 \rightarrow MC < MR$ increase output At Output 4: $MR = 15$, $MC = 15 \rightarrow MR = MC$ AND MC is rising (from 10 $\rightarrow$ 15 $\rightarrow$ 20) $\rightarrow$ EQUILIBRIUM at Output 4. Beyond output 4, $MC = 20 > MR = 15 \rightarrow$ profit would fall if output increased. Both conditions satisfied at output 4.

Chapter Summary & Quick Revision

Key Terms

- Producer's Equilibrium: Output level where profit is maximum
- TR-TC Approach: Equilibrium where $TR-TC$ is maximum
- MR-MC Approach: Equilibrium where $MR=MC$ and MC is rising
- Break-even Point: Where $TR=TC$ (zero profit)
- Supernormal Profit: $TR > TC$ (profit above normal)

■ LAST-MINUTE REVISION BOX

1. Equilibrium = Max Profit Point
2. TR-TC: $\text{Max } (TR-TC) = \text{equilibrium}$
3. MR-MC: TWO conditions $\rightarrow MR=MC + MC \text{ rising}$
4. PC equilibrium: $P=AR=MR=MC$ (all equal)
5. Monopoly equilibrium: $P=AR > MR=MC$
6. If $MR > MC \rightarrow \text{increase output}$ | If $MC > MR \rightarrow \text{decrease output}$ | If $MR=MC \rightarrow \text{Equilibrium!}$