The Theory of the Firm under Perfect Competition

Standard difficulty · 20 questions · 40 marks · Time: 37 minutes

Name: _____ Date: _____ Score: ____ / 40

Write full answers in Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. In perfect competition, each firm is a:
(a) monopolist **(b)** price leader **(c)** price maker **(d)** price taker

2. What is meant by "shut down point"?
(a) where price equals minimum AVC
(b) horizontal sum of firms' supply curves
(c) % change in quantity supplied ÷ % change in price
(d) the least profit that keeps a firm in business

3. What happens to a competitive firm's supply curve with a rise in the price of an input?
(a) does not change at all **(b)** shifts right
(c) shifts left **(d)** becomes the demand curve

4. A competitive firm's total revenue from 450 units is ₹2,250. What is its marginal revenue from one more unit?
(a) ₹10 **(b)** ₹2,250 **(c)** ₹5 **(d)** ₹6

5. A competitive firm's marginal cost for units 1 to 7 is 16, 12, 20, 25, 31, 33, 37 rupees. If the market price is ₹37, how many units maximise profit?
(a) 7 units **(b)** 1 unit **(c)** 6 units **(d)** 8 units

6. A competitive firm sells 20 units at ₹19 each; its average cost is ₹44. What is its profit or loss?
(a) loss of ₹500 **(b)** profit of ₹520 **(c)** profit of ₹380 **(d)** loss of ₹880

7. A competitive firm's minimum average variable cost is ₹23. In the short run, at a market price of ₹16, it should:
(a) double its output to cover all costs
(b) produce, since price covers AVC
(c) shut down, since price is below minimum AVC
(d) raise its price above the market price

8. When the price of a good rises from ₹100 to ₹150, the quantity supplied rises from 1,800 to 3,150. What is the price elasticity of supply?
(a) 1.5 **(b)** 0.67 **(c)** 3 **(d)** 0.75

Section B — Short answer — 8 × 2 = 16 marks

9. Name three features of a perfectly competitive market.

10. What does each feature of perfect competition mean? (a) price-taking behaviour (b) many buyers and sellers

11. Explain each term: (a) shut down point (b) marginal revenue

12. The market price is ₹8. Find a competitive firm's TR, AR and MR at outputs 2, 5, 6.

13. A competitive firm's marginal cost for units 1 to 7 is 18, 13, 20, 25, 28, 30, 35 rupees. The price is ₹28. How many units should it produce, and why not produce unit 6?

14. A competitive firm sells 140 units at ₹45. Its TFC is ₹470 and its AVC is ₹24. Find TR, TC and profit.

15. Each of 38 identical firms supplies q = 10 + 4p. Write the market supply and find it at p = 30.

16. What happens to a firm's supply curve with (a) a unit tax on the good (b) a rise in the market price of the good? Give a reason.

Section C — Longer answers — 4 × 4 = 16 marks

17. Explain why a firm maximises profit where price equals marginal cost.

18. Match each with its meaning: (a) shut down point (b) break-even point (c) super-normal profit. Choose from: profit above normal profit; where price equals minimum AVC; where price equals minimum average cost.

19. A competitive firm's MC for units 1 to 7 is 16, 11, 20, 26, 31, 36, 42 rupees and its TFC is ₹60. The price is ₹31. (a) What output maximises profit? (b) Find TR, TVC and profit there. (c) Does TR cover TVC, and what does that tell the firm about producing in the short run?

20. Each of 68 identical firms has the supply curve $q = (p - 12)$ for $p \geq 12$, and $q = 0$ below 12. (a) What is the market supply at $p = 25$? (b) What is it at $p = 11$? (c) What does ₹12 represent for each firm?

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Answer key

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Q	Answer	Working
1	**(d) price taker**	—
2	**(a) where price equals minimum AVC**	—
3	**(c) shifts left**	—
4	**(c) ₹5**	MR = AR = price = 2,250 ÷ 450
5	**(a) 7 units**	p = MC on the rising part of MC, at unit 7
6	**(a) loss of ₹500**	(19 − 44) × 20
7	**(c) shut down, since price is below minimum AVC**	compare 16 with 23
8	**(a) 1.5**	75% ÷ 50%
9	**Many buyers and sellers, a homogeneous product, free entry and exit (and perfect information).**	—
10	**(a) a firm sells any amount at the market price but nothing above it (b) no one can affect the market price**	—
11	**(a) where price equals minimum AVC (b) extra revenue from one more unit**	—
12	**TR ₹16, ₹40, ₹48; AR and MR are ₹8 at every output**	TR = 8 × q; AR = TR ÷ q; MR = ΔTR
13	**5 units, where p = MC on the rising part of MC; unit 6 would add ₹30 to cost but only ₹28 to revenue, cutting profit**	p = 28 = MC of unit 5
14	**TR ₹6,300, TC ₹3,830, profit ₹2,470**	TR = 45 × 140; TC = 470 + 24 × 140
15	**Q = 380 + 152p; at p = 30, Q = 4,940**	38 × (10 + 4 × 30)
16	**(a) shifts left (b) a movement up along the curve**	—
17	**If price exceeds MC, an extra unit adds to profit; if MC exceeds price, cutting output adds to profit; so profit is highest where they are equal on the rising MC.**	—
18	**(a) where price equals minimum AVC (b) where price equals minimum average cost (c) profit above normal profit**	—
19	**(a) 5 units (b) TR ₹155, TVC ₹104, loss ₹9 (c) Yes: price covers AVC, so it**	TVC = 16 + 11 + 20 + 26 + 31

Q	Answer	Working
	should produce (even a loss would be smaller than its fixed cost).	
20	**(a) 884 (b) 0 (c) minimum AVC: the shut down price**	68 × 1 × (25 − 12)