4.3 Monopoly, monopolistic competition and oligopoly

Name: _____ Class: _____ Date: _____ **Total: 26 marks**

KEY WORDS monopoly • marginal revenue • natural monopoly • excess capacity • game theory • collusion

Objective

Build the skills to answer HL exam questions on **monopoly** , **monopolistic competition** and **oligopoly** : profit maximization, efficiency, game theory and collusion.

You must be able to:

- explain monopoly profit maximization and its welfare effects
- explain natural monopoly and how it may be regulated
- explain short-run and long-run equilibrium in monopolistic competition
- use game theory to explain oligopoly behaviour, collusion and non-price competition
- compare market structures for price, output, efficiency and innovation

1 Key knowledge and worked examples

■ Monopoly, monopolistic competition and oligopoly

Monopoly: the firm faces the market's downward-sloping demand curve (AR), so **MR is below AR**. It produces where **MC = MR** and sets the price from the demand curve. With high barriers, it can keep **abnormal profit in the long run**. Compared with perfect competition: **higher price, lower output**, P > MC (allocative inefficiency, a **welfare loss**) and usually not at minimum ATC. Possible benefits: **economies of scale**, and abnormal profit to fund **research and development** (dynamic efficiency).

Natural monopoly: LRATC is still falling when one firm supplies the whole market (water pipes, rail track), so one firm is cheapest. It is often **regulated** (price caps) or state-owned.

Monopolistic competition: many firms, **differentiated** products (cafés, hairdressers), low barriers. Short run: abnormal profit is possible; long run: new firms enter, each firm's demand falls until **P = ATC** (normal profit). It is not at minimum ATC: **excess capacity**. Consumers gain **variety**.

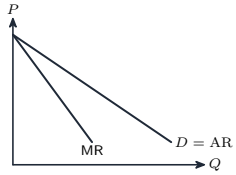
Oligopoly: a few large firms that are **interdependent**: each must think about how rivals will react.

- **Game theory:** the **prisoner's dilemma** shows that each firm's best choice on its own (e.g. cut price) leads to a worse result for both than cooperating.
- **Collusion:** firms agree to fix prices or share markets (a **cartel**, e.g. OPEC) to act like a monopoly. Formal collusion is illegal in most countries; **tacit** collusion (price leadership) is harder to prove. Cartels are unstable: each member has an incentive to cheat.
- **Non-price competition:** advertising, branding, quality, loyalty schemes, because price wars hurt all firms.

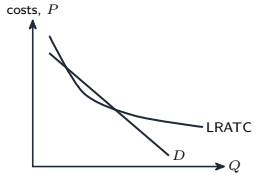
Answer shapes: monopoly diagram: D = AR, MR (twice as steep), MC, ATC; Q at MC = MR, P up to AR, profit $(P - \text{ATC}) \times Q$ shaded, welfare loss between Q and where MC meets AR.

2 Practice

2.1 Explain why a monopolist's marginal revenue is less than its price. [2]



2.2 Define **natural monopoly**. [2]

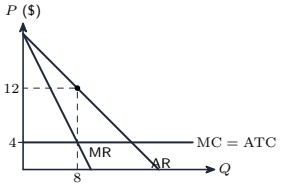


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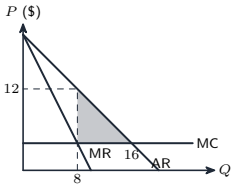
2.3 Explain why a firm in monopolistic competition makes only normal profit in the long run. [4]



2.4 A monopolist faces demand $P = 20 - Q$, so MR $= 20 - 2Q$. Its MC = ATC = \$4. Calculate its profit-maximizing output, price and profit. [3]



2.5 Using the data in the previous question, calculate the output and price if the market were perfectly competitive, and the welfare loss of monopoly. [3]



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3 Exam-style questions

3.1 Two airlines, A and B, choose a high or low fare. The table shows their profits (\$ million), A's first.

(a) Identify A's best strategy if B chooses high, and if B chooses low. [2]

(b) Explain why both firms end up choosing low fares, and why they might try to collude. [4]

	B high	B low
A high	10, 10	4, 14
A low	14, 4	6, 6

(c) Explain **two** reasons why collusion may break down. [2]

3.2 A government is deciding whether to regulate the only railway company in the country.

Explain **two** possible advantages of allowing the monopoly to continue. [4]



Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

2.1

to sell one more unit, the monopolist must lower the price on all units it sells; so the extra revenue from the extra unit is less than its price: MR < AR

2.2

a market where one firm can supply the whole market at a lower average cost than two or more firms could; because economies of scale are very large / LRATC is still falling at the market output

2.3

in the short run firms may make abnormal profit; barriers to entry are low, so new firms enter with similar (differentiated) products; each firm's demand falls and becomes more elastic (shifts left); entry continues until demand (AR) is tangent to ATC: P = ATC, normal profit

2.4

$20 - 2Q = 4$, so $Q = \mathbf{8}$; $P = 20 - 8 = \$\mathbf{12}$; profit $= (12 - 4) \times 8 = \$\mathbf{64}$

2.5

competition: P = MC = \$4, so $Q = 16$; welfare loss $= \frac{1}{2} \times (16 - 8) \times (12 - 4) = \$\mathbf{32}$

3.1

(a) if B high: A chooses low (14 > 10); if B low: A chooses low (6 > 4)

(b) low is a dominant strategy for both firms, whatever the other does; so both choose low and earn \$6 million each; but both choosing high would give \$10 million each: a prisoner's dilemma; so they have an incentive to agree to keep fares high (collusion)

(c) any two: each firm can gain by cheating and cutting fares; collusion is illegal and firms risk large fines; new entrants or demand changes upset the agreement

3.2

economies of scale: one firm can run the network at the lowest average cost, avoiding wasteful duplication of track; abnormal profit can fund research and investment, e.g. faster trains (dynamic efficiency); one network can be planned and coordinated more easily

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