

Past-paper walk-through

Monopolistic Competition ■ 4.4

eXercise

Questions in this set

- 2021 Set 2 Q3
- 2016 Q3

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 3

2021 Set 2 ■ Q3

3. The table below shows the total cost and total benefit of advertisements placed by AZY Foods, a firm in the retail food market.

Number of Advertisements	Total Cost (\$)	Total Benefit (\$)
1	300	1,200
2	500	2,200
3	800	3,000
4	1,300	3,600
5	2,100	4,000
6	3,000	4,200

Question 3

7	4,100	4,200
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- (a) Calculate the total net benefit of placing three advertisements. Show your work.
- (b) Calculate the marginal net benefit of the third advertisement. Show your work.
- (c) What is the optimal number of advertisements placed by AZY Foods? Explain using marginal analysis.
- (d) Suppose over the next year the marginal benefit that AZY Foods receives from each advertisement increases by \$300. Identify the optimal number of advertisements.
- (e) There are many firms in the retail food market. Each firm places its own firm-specific advertisements without considering the actions of its competitors. In what market structure is AZY Foods operating?

Question 3

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

Solution 3

(a)

Mark scheme

- Total net benefit of placing three advertisements = Total Benefit – Total Cost = \$3,000 – \$800 = \$2,200.

Solution 3

(b)

Mark scheme

- Marginal net benefit of the 3rd advertisement = (Total benefit at 3 ads – Total benefit at 2 ads) – (Total cost at 3 ads – Total cost at 2 ads) = $(\$3,000 - \$2,200) - (\$800 - \$500) = \$800 - \$300 = \$500$.

Solution 3

(c)

Mark scheme

- The optimal number of advertisements is 4. Using marginal analysis: the marginal net benefit of the 4th advertisement is positive ($600 - 500 = 100 > 0$), *so it should be placed*; *the marginal net benefit of the 5th advertisement is negative* ($400 - 800 = -400 < 0$), so it should not be placed. AZY Foods should add advertisements while marginal net benefit is positive and stop once it turns negative, giving 4 ads.

Solution 3

(d)

Mark scheme

- The optimal number of advertisements remains 4. With the marginal benefit of each advertisement up by \$300, the marginal net benefit of the 4th ad becomes $(\$600 + \$300) - \$500 = \400 (still positive, so it is worth placing), while the marginal net benefit of the 5th ad becomes $(\$400 + \$300) - \$800 = -\100 (still negative, so it is not worth placing). AZY Foods should still stop at 4 advertisements.

Solution 3

(e)

Mark scheme

- AZY Foods is operating in a monopolistically competitive market structure: many firms in the retail food market, each independently placing its own firm-specific advertisements without considering the actions of its competitors.

Question 3

2016 ■ Q3

Camden's Cakery is one of many dessert cafés serving a local community. Each café produces a slightly differentiated product, there are no barriers to entry or exit, and the firm is in long-run equilibrium.

(a) Draw a correctly labeled graph showing Camden's demand curve, marginal revenue curve, marginal cost curve, and long-run average total cost curve. Label Camden's profit-maximizing output Q_m and its price P_m .

[Graph to be drawn by student: monopolistically competitive firm in long-run equilibrium, showing downward-sloping demand (D) and marginal revenue (MR) curves, a marginal cost (MC) curve, and a long-run average total cost ($LRATC$) curve tangent to the demand curve; profit-maximizing output labeled Q_m and price labeled P_m at the point where $MR = MC$.]

Question 3

- (b)** On your graph in part (a), label the output at which total revenue is maximized Q_R .
- (c)** Do firms in this market experience economies of scale, diseconomies of scale, or neither in long-run equilibrium? Explain.

Solution 3

(a) Mark scheme

- A correctly labeled graph of Camden's monopolistically competitive firm in long-run equilibrium: a downward-sloping demand curve (D) with its associated marginal revenue curve (MR) lying below and steeper than D ; the marginal cost curve (MC) intersecting MR at the profit-maximizing quantity Q_m (where $MC = MR$); the profit-maximizing price P_m found by going up from Q_m to the demand curve; and the long-run average total cost curve ($LRATC$) drawn tangent to the demand curve exactly at the point above Q_m (at price P_m) — the tangency reflecting zero economic profit in long-run equilibrium. Full credit requires all four elements: (1) correctly labeled downward-sloping D with MR below it, (2) Q_m

Solution 3

shown at $MC=MR$, (3) P_m shown on D above Q_m , (4) $LRATC$ tangent to D at Q_m .

Solution 3

(b)

Mark scheme

- QR, the output at which total revenue is maximized, is labeled at the quantity where the marginal revenue curve crosses the horizontal axis, i.e., where $MR = 0$. Because demand is downward sloping (elastic at low quantities, inelastic at high quantities) and TR is maximized where $MR=0$, QR lies to the right of Q_m (since Q_m , where $MC=MR>0$, sits on the elastic portion of demand).

Solution 3

(c)

Mark scheme

- Firms in this market experience ECONOMIES OF SCALE in long-run equilibrium, because the LRATC curve is still decreasing (downward sloping) at Q_m — equivalently, Q_m lies to the left of the minimum point of the LRATC curve.