2(a) With the aid of a diagram, explain how price discrimination benefits producers, consumers and society. [10]
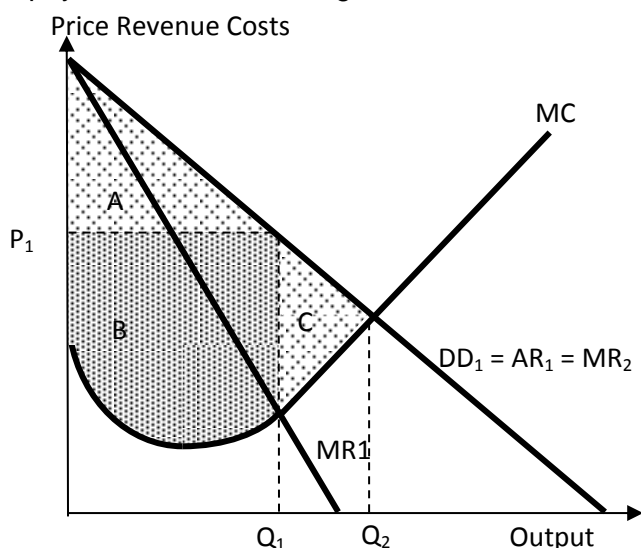
Question interpretation

- What is price discrimination?
- How price discrimination works?
- How consumers, producers and society benefit from price discrimination?

Introduction

- Price discrimination refers to the practice of a firm charging different prices for the same product to different buyers, for reasons not associated with differences in costs.
- The essay aims to explain how firms engage in price discrimination before analysing the possible benefits to producers, consumers and society.

How does price discrimination work

- 1st degree price discrimination (also known as perfect price discrimination) is an extreme case of price discrimination where each buyer is charged the maximum price that he or she is willing to pay for each unit of the good.

- In the absence of price discrimination , the firm maximises profit by producing at output Q_1 where $MR_1 = MC$, and charges a price of P_1 along the demand curve $DD_1 = AR_1$

- If the firms engages in 1st degree price discrimination, it does not have to lower the price of previous units in order to sell the additional unit
- Hence the MR curve becomes MR_2, which is equal to the demand curve $DD_1 = AR_1$
- The new profit maximising output now occurs at Q_2, where $MR_2 = MC$

How does price discrimination benefit producers and consumers?

- Without price discrimination, the producer surplus (i.e. operating profits) = total revenue - total variable costs = P_1 x Q_1 – area under MC until output Q_1 = area B
- With 1st degree price discrimination, producer surplus = total revenue – total variable costs = area between MR_2 and MC up to output Q_2 = area (A+B+C)
- The producer benefits as the rise in producer surplus = area (A+B+C) - area B = area (A+C)
- Without price discrimination, output between Q_1 and Q_2 would not be produced and consumed,
- However, with 1st degree price discrimination, the consumers that consume these units of output so they can be considered as having benefitted from such consumption

How does price discrimination benefit society?

- Without price discrimination, the firm produces at Q_1 where P_1 > MC (or DD>MC)
- Each additional unit of output between Q_1 and Q_2 can generate welfare for society if they were produced hence there is a deadweight loss of area C due to this loss in potential welfare
- With 1st degree price discrimination, the firm produces at output Q_2, thus enabling this deadweight loss to be recovered, hence society benefits from a rise in welfare

L1: Define price discrimination [1]
L2: Explain with a diagram how a firm engages in price discrimination [2-4]
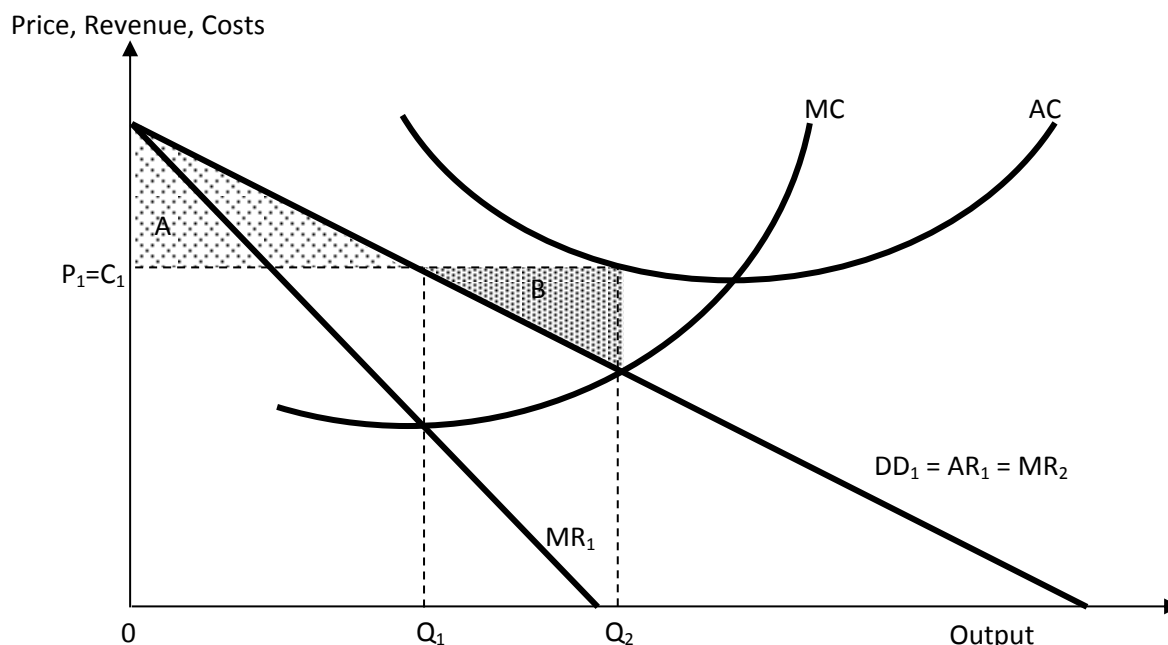L3: Analyse benefits of price discrimination to producers, consumers and society [5-10]

Alternative answer

Introduction

- If the demand in a market is too low, it may not be economically viable for production to take place if the firm were to charge a single price for all its customers
- For example the population of a small town may be too low to profitably run a health clinic
- With price discrimination, cross subsidization and hence profitable production can occur, which will benefit the producer, consumers and society

How can 1st degree price discrimination enable cross subsidisation occur?

- In the diagram, the demand DD_1 is so low that it lies entirely below the average cost curve AC
- If a single price was charged, losses will be made even at the profit maximising price and output of P_1 and Q_1, where $MC = MR_1$
- As this market is not commercially viable without price discrimination, the good will not be produced in the long run.

- If the firm engages in 1st degree price discrimination, it does not have to lower the price of previous units in order to sell the additional unit, so the marginal revenue curve becomes MR_2 and output will be at Q_2, where $MC = MR_2$
- For example in a small town where the doctor knows the economic background of all his patients, he can make it a point to charge his poorer patients less without needing to lower his fees for his more wealthy patients
- From output 0 to Q_1, total revenue exceeds total cost by area A, while from output Q_1 to Q_2, total cost exceeds total revenue by area B.
- The profits that the doctor makes from his richer patients can be used to cross-subsidize the losses that he incurs from his poorer patients
- If area A is more than or equal to area B, a doctor can earn at least normal profits so he will be willing to set up a health clinic in that small town

How does cross subsidisation benefit producer, consumers and society?

- Since area A > area B, the doctor benefits as he is now able to earn supernormal profits
- While all consumers benefit because the good would not have even been available without price discrimination, the poorer patients benefit more as they pay less than the richer patients
- If the good were not produce, the loss in potential welfare i.e. the deadweight loss would be the entire area between DD_1 and MC from output 0 to Q_2
- However, with 1st degree price discrimination, Q2 will be produced, hence society benefits because this deadweight loss will now be recovered.

L1: Define price discrimination [1]
L2: Explain how price discrimination enables cross subsidisation to occur [2-6]
L3: Analyse benefits of cross subsidisation to producers, consumers, and society [7-10]

(Note: 3rd degree price discrimination can also be used to explain the benefits to consumers from cross subsidisation. For example, the higher MRT fares paid by working adults can be seen as being used to cross subsidised the lower MRT fares paid by students and senior citizens, thus benefitting the latter. However, the limitation of using 3rd degree price discrimination is that the benefits to the producer and society can only be inferred but not explicitly illustrated)

2(b) Discuss whether in the real world, all firms big and small, aim to produce at their profit maximising output levels. [15]
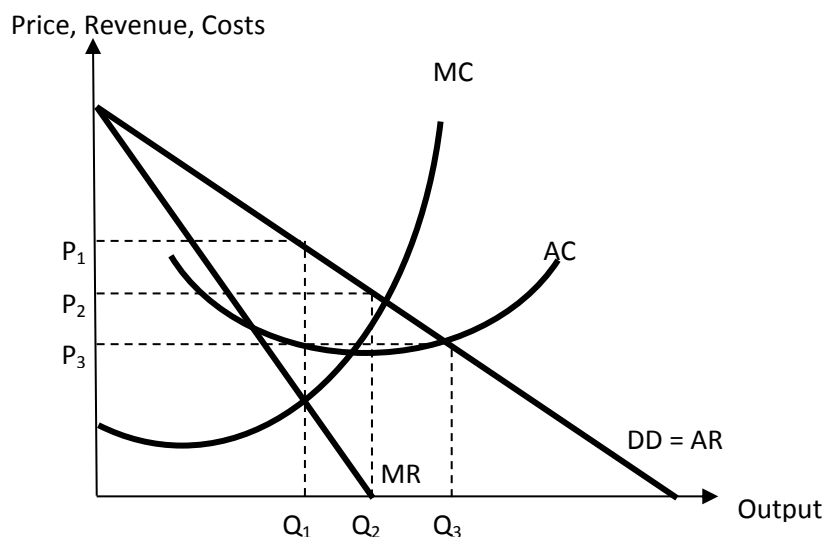
Question interpretation

- What is the short run profit maximizing output level in theory?
- What are the possible reasons why a firm may not want to produce at this output level?
- Why may a firm be unable to produce at this output level even if aim to do so?
- How likely will big and small firms in the real world produce at this output level?

Introduction

- In economic theory, in order to maximize profits, a firm sets its output at where marginal cost = marginal revenue and charge a price along the corresponding point along the demand curve
- This essay aims to first explain the possible reasons why a firm may not want to produce at this level before analysing why it may be unable to do even if it wants to
- It concludes by evaluating how likely will big and small firms in the real world produce at their profit maximising output levels.

What are the possible reasons why firms may not aim to produce at their profit maximising output?

- Due to the separation between ownership and management, which refers to the situation where the owners of the firm hire managers to run it, profit satisficing rather than profit maximising behaviour may arise
- This is because the performance of these managers are often tied to indicators like market share which can be measured in terms of revenue or output
- These managers thus aim to maximize these variables instead of profits, although they still need to achieve a profit level that is satisfactory to the owners.

- If the manager aims to maximize revenue, output will be at Q_2 where MR = 0 and the price will be at P_2 along the midpoint of the demand curve where the price elasticity is one
- Since P_2 > AC, supernormal profits are earned which is likely be satisfactory to the shareholders.
- If the manger instead aims to maximize output, then highest possible output that can be produced while still enabling normal profits to be earned will be Q_3 where AC = AR.
- Since normal profits are still earned, this should be just sufficient to keep shareholders satisfied
- If the shareholders require more than normal profit to be satisfied, then output will have to be correspondingly lower than Q_3 and price higher than P_3.

- Another view is that large firms aim more to maximising long run profits which may be at the expense short run profits.
- Maximising revenue or output raises the firm's market share, which reduces the price elasticity of demand in the long run, thus raising the firms pricing power and profits.
- The same argument can be also applied to growth maximisation, where extra costs are incurred in extensive advertising, product development and capacity investments, which enable firms to gain a stronger foothold in the market.
- Although such expenditure inevitably reduces short run profits, they should pay off in the long run with the resulting expansion of the firm's demand and capacity.

Why may a firm be unable to produce at the short run profit maximising level even if it aims to do so?

- In the real world as information is imperfect, it may not be possible for all firms to accurately estimate marginal costs and marginal revenue in order to maximize profits
- Firms therefore often rely on simpler "rule of thumb" pricing models like 'cost plus pricing'
- Cost plus pricing involve estimating the average cost and attaching a mark-up to determine the price, such that P = AC + m.
- Instead of setting output at the profit maximising level where MC=MR, the firm instead decides on the amount of output to produce that is based on the expected demand for its goods and the amount of resources (e.g. financing) that its able to acquire
- Once the goods have been produced, the price the firm sets will include a mark-up that is over and above the average cost of production
- If the firm expects the demand for its product to be strong, then it will set a higher mark-up but if it expects demand to be weaker, then it will set a lower mark-up

Conclusion

- In reality, the divorce between management and ownership is <u>more likely</u> to occur for large public listed companies than for small and medium sized enterprises
- Also, capturing market share is arguably only important for oligopolies and not for small monopolistic firms as the latter's market shares are <u>likely to be</u> negligible in the first place
- Hence, my opinion is that small firms are <u>more likely</u> to set prices at MC= MR than larger firms
- However, given that imperfect information <u>arguably</u> applies to both large and small firms, the <u>most likely</u> outcome is that neither big nor small firms set prices at MC=MR in reality

L1: Recognise how firms in theory set their output at the profit maximising level [1-2]
L2: Explain why firms may not want to set output at this profit maximising level [3-8]
L3: Analyse why firms may be unable to set output at this profit maximising level [9-11]
E: Evaluate whether big and small firms in reality set output at their profit maximising levels [+4]