

UNIVERSITY OF NORTHUMBRIA AT NEWCASTLE

DIVISION OF ECONOMICS

EC425 Microeconomics 2: Economics and Organisations

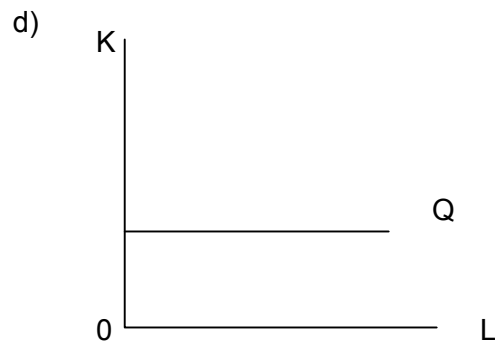
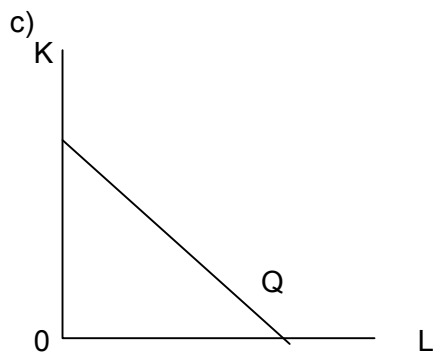
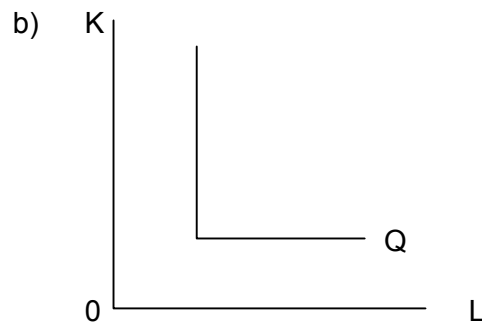
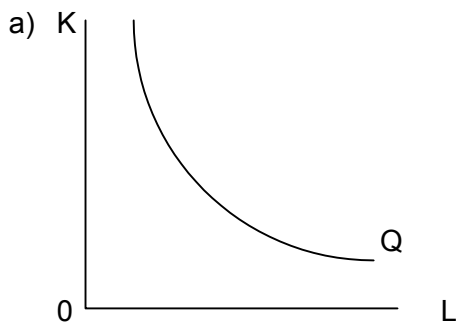
Level 2

Thursday
3rd May 2001

Time allowed:
1 hour

Instructions: 30 questions set.
Candidates are to answer all questions.
All questions carry equal marks

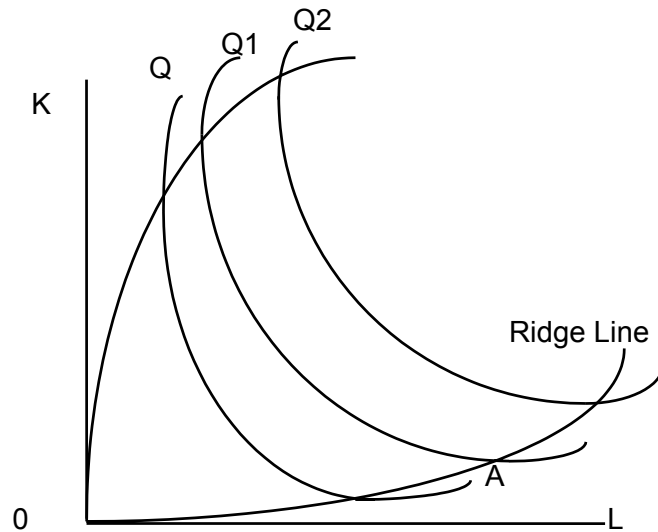
1. Which of the following diagrams describes a Leontief production function?



P.T.O.

2. Which of the following production functions shows perfect substitutability between the capital (K) and labour (L) inputs.
- $Q = 10 \min(K, L)$
 - $Q = K^{0.4} L^{0.5}$
 - $Q = K L$
 - $Q = 3K + 2L$
3. Assuming K is fixed at 4 units, which of the following short run production functions obey the law of diminishing marginal returns.
- $Q = F(K, L) = 3K + 2L$
 - $Q = F(K, L) = K^2 L^3$
 - $Q = F(K, L) = K^{1/2} L^{1/2}$
 - $Q = F(K, L) = KL$
4. A horticulturalist has the following cost function $c(q) = 240q^2$ where q is the number of tubs of plants she pots up and sells per day. She faces a competitive market for plants, with a price of £2 a tub. How many tubs should she produce per day?
- $\sqrt{240}$
 - 57600
 - 240
 - 480
5. A firm has a production function of the following form $Q = K + 2L$ Where Q is output, K is the capital input and L is the labour input per time period. The wage rate and the rental rate on capital is £1 per unit. The cost minimising output
- is achieved by producing at any point along the isoquant.
 - is achieved by using labour input only.
 - is achieved by using the capital input only
 - is impossible to achieve.

The following diagram refers to question 6



6. Assuming constant return to scale which of the following explains why a movement along the isoquant Q_1 to the right of point A in the above diagram represents inefficiency in production.

- a) Negative marginal product of capital
- b) Positive marginal product of capital
- c) Negative marginal product of labour
- d) Positive marginal product of labour

7. Which of the following best describes a Nash equilibrium strategy.

- a) A strategy where the player chooses to maximise their payoff irrespective of what its opponent does.
- b) A strategy where the player chooses to maximise their payoff given what they anticipate their opponent is doing.
- c) A strategy where the dominant player maximises their payoff at the expense of the other.
- d) A strategy where the subordinate player tries to dominate by bluffing the other.

8. Assume the following payoffs (in £ millions per month) for the Prisoner's Dilemma game below.

		Green plc	
		High Price	Low Price
Blue plc	High Price	(8,8)	(1,9)
	Low Price	(9,1)	(3,3)

If the game were repeated 20 times which quadrant (assuming game theory rationality) would best indicate the equilibrium outcome at the end of period 20?

- a) Green plc plays high price, Blue plc plays high price
 - b) Green plc plays high price, Blue plc plays low price
 - c) Green plc plays low price, Blue plc plays high price
 - d) Green plc plays low price, Blue plc plays low price
9. Big Pig and Little Pig are put in a box with a button at one end and a chute that dispenses food into a trough at the other. The pigs have two possible strategies, Press Button and Wait at the trough. If both pigs choose Wait they each get 4 units of food. If both pigs press the button then they each get 5 units of food. If Little Pig presses the button and Big Pig waits at the trough, then Big Pig gets 10 units of food and Little Pig gets 0. Finally, if Big Pig presses the button and Little Pig waits, then Big Pig gets 4 units of food and Little Pig gets 2. In Nash Equilibrium,
- a) Little Pig gets a payoff of 2 and Big Pig gets a payoff of 4.
 - b) Little Pig gets a payoff of 5 and Big Pig gets a payoff of 5.
 - c) Both pigs wait at the trough.
 - d) Little Pig gets a payoff of zero.

10. Assume that two consumers face a choice between buying a Betamax or a VHS video recorder. The payoffs (measured in units of utility per month) for this 'Battle of the Sexes' game are shown in the following matrix.

		Consumer Y	
		Betamax	VHS
Consumer X	Betamax	(2,1)	(0,0)
	VHS	(0,0)	(1,2)

If both consumers adopted a mixed strategy approach what is the probability that they will both choose a VHS machine.

- a) $5/9$
- b) $4/9$
- c) $1/3$
- d) $2/9$

11. What is the Nash equilibrium in the following game matrix?

		Player 2		
		Left	Centre	Right
Player 1	Top	(3,3)	(0,5)	(0,20)
	Middle	(4,2)	(8,7)	(2,4)
	Bottom	(5,7)	(5,8)	(2,5)

- a) Bottom, Left
- b) Bottom, Centre
- c) Middle, Centre
- d) Top, Right

12. What is the Marginal rate of technical substitution of labour for capital in the following production function?

$$Q = 10 K^{0.5} L^{0.5}$$

- a) 0.5 K/L
- b) 0.5 L/K
- c) K/L
- d) 1

13. A firm has the following production function:

$$Q = K^{0.7} L^{-0.3}$$

Where Q, K and L represent output, capital and labour flows per time period.

This shows that the firm exhibits:

- (a) Decreasing returns to scale and diminishing marginal products for factor K.
- (b) Increasing returns to scale and decreasing marginal products for factor K.
- (c) Decreasing returns to scale and increasing marginal products for factor K.
- (d) Constant returns to scale and a constant marginal product for factor K.

14. The firm has fixed costs of £1000. Its short run production function is

$$Q = 9L^{0.5},$$

where L is the variable factor (labour). The price of L is £4000 per unit of output, Q. The Short run total cost function is

- a) $1000/Q + 4000$
- b) $1000 + 81 Q^2$
- c) $1000 + 4000Q$
- d) $1000 + 49.38 Q^2$

15. Which of the following best describes a sunk cost?

- a) A large investment cost that varies with output.
- b) An investment in an asset that has no alternative use value and is an unavoidable cost.
- c) An investment in a large fixed cost that is avoidable.
- d) A depreciating asset.

16. Which of the following definitions best describes economies of scope.

- a) The results of physically combining inputs to form outputs that continually reduce producer unit costs over the relevant range of demand.
- b) The results of physically using inputs that can be shared to create multiple outputs at a lower cost than could be provided by two or more related organisations.
- c) When an X% increase (decrease) in all inputs causes output to increase (decrease) by only Y%, where X is greater than Y.
- d) The relationships between groups of activities in an organisation in that one activity experiences feedbacks from changes in another activity.

17. The following relationship must hold between the average total cost (ATC) curve and the marginal cost curve (MC):

- (a) if MC is rising, ATC must be rising
- (b) if MC is rising, ATC must be greater than MC
- (c) if MC is rising, ATC must be less than MC
- (d) if ATC is rising, MC must be greater than ATC

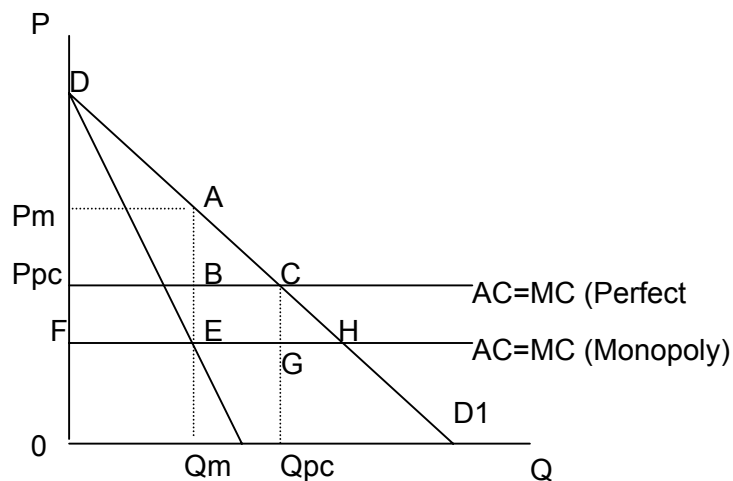
18. Which of the following best describes allocative efficiency?

- a) The cost of minimising output.
- b) Output is maximised at minimum cost.
- c) Resources are allocated optimally over time.
- d) Prices equate with marginal costs.

19. Assuming a linear downward sloping demand curve and a constant marginal cost and a price elasticity of demand of 2, what is the Mark up for a monopolist (clue: use the Lerner Index of Market Power)

- a) 33.3%
- b) 50%
- c) 100%
- d) 200%

The following diagram refers to questions 20 and 21.



20. What is the productive efficiency gain from monopoly?

- A $0FEQ_m$
- B $BCGE$
- C $P_{pc}BEF$
- D $FEAP_m$

21. Using the same diagram what is the allocative efficiency loss from monopoly?

- A AEH
- B ABC
- C DAP_m
- D DCP_{pc}

22. A natural monopoly occurs

- a) When the firm's marginal cost begins to rise.
- b) In a situation where there is a single buyer and many sellers.
- c) Where it is cheaper for one firm to produce a basket of goods and services than for two or more firms to produce that same portfolio.
- d) The smallest quantity at which the long run average cost curve attains its minimum point.

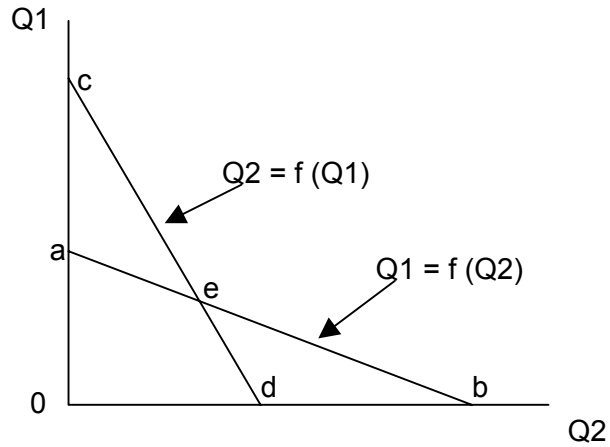
23. If a monopolist faces the following inverse demand curve

$$P = £200 - 4Q$$

And marginal cost is constant at £40. What would be the resultant deadweight loss (i.e. the size of the Harberger Triangle)?

- a) £600.
- b) £800
- c) £1000
- d) £1200

The following diagram refers to questions 24, 25 and 26.



24. Point e is known as a

- a) Perfect Competition equilibrium.
- b) Bertrand equilibrium.
- c) Monopoly equilibrium.
- d) Cournot equilibrium.

25. How do firm 2's profits increase?

- a) As we move from a to b
- b) As we move from b to a
- c) As we move from c to d
- d) As we move from d to c

26. Assume marginal cost is constant. If firm 1's marginal cost rose by £1 how would this be depicted on the above diagram?

- a) The line ab would shift parallel and to the left from its present position.
- b) The line ab would shift parallel and to the right from its present position.
- c) Point e would shift inwards and towards the origin, 0.
- d) There would be no shift in the reaction curve.

27. Assume a Cournot oligopoly with three firms. Each firm faces a linear downward sloping market demand curve and has constant marginal costs. Which of the following statements is true?

- a) Output is one-third of the perfectly competitive output.
- b) Output is one half of the perfectly competitive output.
- c) Output is two-thirds of the perfectly competitive output.
- d) Output is three-quarters of the perfectly competitive output.

28. Two Cournot duopolists of sugar face the following inverse demand curve.

$$P = £290 - 4Q$$

where P is the price and Q the industry quantity demanded.

If marginal cost is constant at £50 per unit then in equilibrium each firm's production would be:

- A 5 units
- B 10 units
- C 15 units
- D 20 units

29. If demand in the UK is given by

$$Q_1 = 23400 - 900P_1, \text{ where } P_1 \text{ is the price in the UK.}$$

And demand in France is given by

$$Q_2 = 2800 - 200P_2, \text{ where } P_2 \text{ is the price in France}$$

If marginal cost is zero, then the difference between the price charged in the UK and France will be

- A 0
- B 6
- C 12
- D 14

30. A monopolist faces a demand curve described by $P = 100 - 4Q$ and constant marginal costs of 40 with zero fixed costs. If this monopolist could practice perfect price discrimination, its total profits would be.

- A 256
- B 375
- C 400
- D 450