QUEEN'S UNIVERSITY

FACULTY OF ARTS AND SCIENCE

DEPARTMENT OF ECONOMICS

ECON 111

FINAL EXAMINATION

April 2018

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INSTRUCTIONS:

This examination is THREE HOURS in length. There are three sections to this examination.

Only Casio 991 calculators are allowed.

Part A [60 marks]: Answer all FORTY multiple choice questions – 1.5 marks each
Part B [20 marks]: Answer FOUR of SIX True/False/Uncertain questions – 5 marks each
Part C [20 marks]: Answer ONE of TWO problem solving questions

Mark your answers for **Part A** on the Answer Sheet in PENCIL. If you make changes, be sure to erase completely. There is only one correct answer for each question; multiple answers will be marked as incorrect.

Before you begin the exam please record your **Student Number**, **Name**, and **Test Form A** in the appropriate sections of the Answer Sheet. For detailed instructions on filling in this information see the next page.

Write your answers for **Part B** and **Part C** in the booklet provided. Put your name and student number on the front of all answer booklets.

GOOD LUCK!

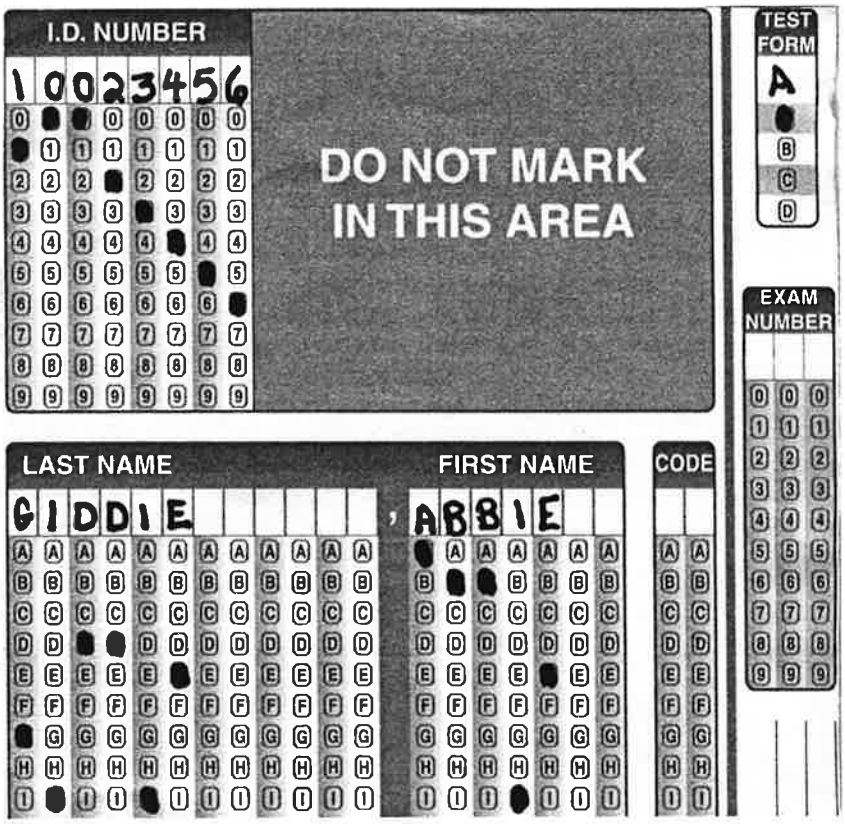
PLEASE NOTE: Proctors are unable to respond to queries about the interpretation of exam questions. Do your best to answer exam questions as written.

Before You Begin the Exam:

1. Write your Student # under "**I.D. Number**" on the Answer Sheet and fill in the appropriate rectangle below each number. **See example below.**

2. Print your **Last Name** followed by first name in the appropriate space, and fill in the appropriate rectangle under each letter. (If your name is too long to fit in the spaces provided, please enter as many letters as you can.) **See example below.**

3. Under "**Test Form**", fill in "**A**". **See example below.**



Part A: Multiple Choice Questions [60 marks]

Anwer all FOURTY multiple choice questions.

Choose the one alternative that best completes the statement or answers the question.

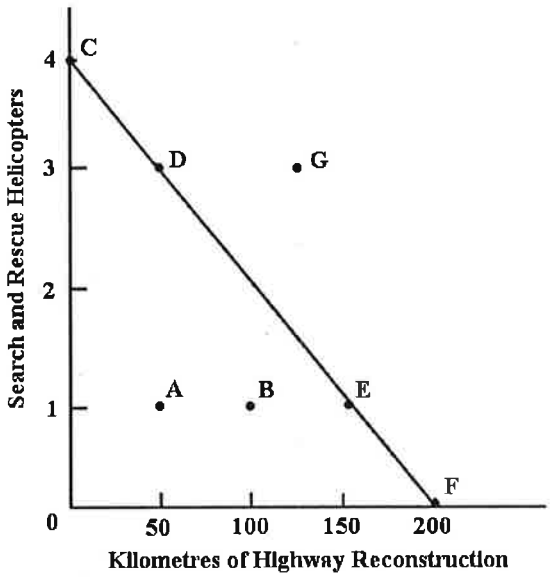


FIGURE 1-1

With a budget of $200 million, the government can choose to purchase 4 helicopters or repair 200 km of highway.

1) Refer to Figure 1-1. For the government, the opportunity cost of one kilometre of highway repair is _____
   A) 1/10 of a search and rescue helicopter.
   B) 1 search and rescue helicopter.
   C) 1/50 of a search and rescue helicopter.
   D) 1/2 of a search and rescue helicopter.
   E) 1/100 of a search and rescue helicopter.

2) A greater specialization of labour leads to which of the following major results? _____
   A) the circular flow of income contracts
   B) there is a greater need for trade
   C) each worker must become more self-sufficient
   D) the overall output of the economy declines
   E) there is an increased need for government to intervene in the marketplace

3) Which is an example of a positive statement? _____
   A) The higher the price for gasoline, the less of it will be consumed.
   B) There should be one price for gasoline throughout Canada.
   C) Corporations in Canada should pay more taxes.
   D) Substitutes for fossil fuels should be developed.
   E) Canada should reduce its imports of consumer goods.

4) Suppose we observe that consumption of electricity decreases when the price of electricity rises. We can say that the two variables are related _____
   A) positively.
   B) non-linearly.
   C) negatively.
   D) linearly.
   E) exogenously.

5) For a given commodity, quantity demanded can be represented by _____
   A) the money value of the stock of the commodity held by households.
   B) a demand schedule.
   C) a point on a demand curve.
   D) a demand curve.
   E) the price on the vertical axis.

6) Consider the following two statements. (1) An increase in the price of eggs will cause a decrease in the demand for eggs. (2) An increase in the price of eggs will cause a decrease in the demand for bacon. In which of these two statements is the term "demand" used correctly? _____
   A) neither statement
   B) the first statement only
   C) both statements
   D) the second statement only
   E) more information is needed

7) Suppose that many coal mines are shut for environmental reasons. This will cause _____
   A) a decrease in the supply of coal (a leftward shift of the supply curve).
   B) no change in the supply curve, only a change in price.
   C) an increase in the supply of coal (a rightward shift of the supply curve).
   D) a movement up the supply curve.
   E) a movement down the supply curve.

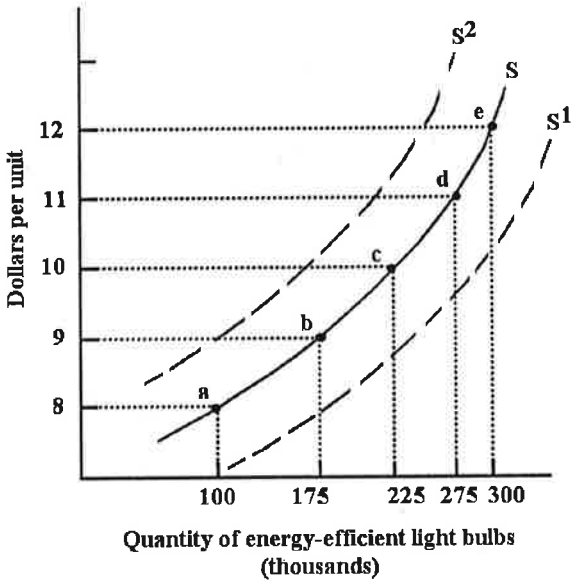


FIGURE 3-2

8) Refer to Figure 3-2. A shift of the supply curve for energy-efficient light bulbs from S to S^2 could be caused by
A) an increase in the number of suppliers.
B) a change in consumers' preferences away from ordinary light bulbs.
C) an increase in the price of energy-efficient light bulbs.
D) a decrease in the price of energy-efficient light bulbs.
E) the elimination of existing government subsidies to suppliers of energy-efficient light bulbs.

9) If the price elasticity of demand is 0.5, then a 10% increase in price results in a
A) 5% increase in quantity demanded.
B) 5% decrease in quantity demanded.
C) 0.5% decrease in quantity demanded.
D) 5% decrease in total revenues.
E) 50% reduction in quantity demanded.

10) Suppose that as the price of some product increases from $4.00 to $5.00 per unit the quantity supplied rises from 500 to 1000 units per month. The price elasticity of supply for this product is
A) 0.33. B) 3.0. C) 2.0. D) 1.0. E) 2.5.

Consider the following data for a hypothetical economy.

Year	Average Household Income ($)	Price of Gasoline ($/litre)	Quantity Demanded of Gasoline (millions of litres)
2012	78 000	1.30	1940
2013	82 000	1.30	2060

TABLE 4-3

11) Refer to Table 4-3. The income elasticity of demand for gasoline in this economy is
A) 1.2. B) 0.6. C) 8.3. D) 6.0. E) 0.5.

12) With respect to some commodity, X, if government objectives are to (1) restrict production and (2) keep prices down to protect consumers, then legislated price ceilings will
A) satisfy only the second goal if a black market develops.
B) satisfy both goals as long as a black market does not develop.
C) satisfy both goals but only if a black market develops.
D) be a dismal failure as neither goal can ever be achieved with price ceilings.
E) only have an effect on commodities at the international level.

Demand and Supply Schedules for Chocolate Bars

Price ($)	Quantity Demanded (thousands per week)	Quantity Supplied (thousands per week)
2.00	1500	2100
1.80	1600	2050
1.60	1700	2000
1.40	1800	1950
1.20	1900	1900
1.00	2000	1850
0.80	2100	1800
0.60	2200	1750
0.40	2300	1700

TABLE 5-1

13) Refer to Table 5-1. Suppose that as a public health measure the government wants to reduce the number of chocolate bars consumed by children. If the government imposes a price of $1.60 per chocolate bar, how many fewer chocolate bars will be consumed each week, relative to the competitive equilibrium?
A) 2000 B) 300 C) 1800 D) 1700 E) 200

The diagram below shows the market for litres of milk.

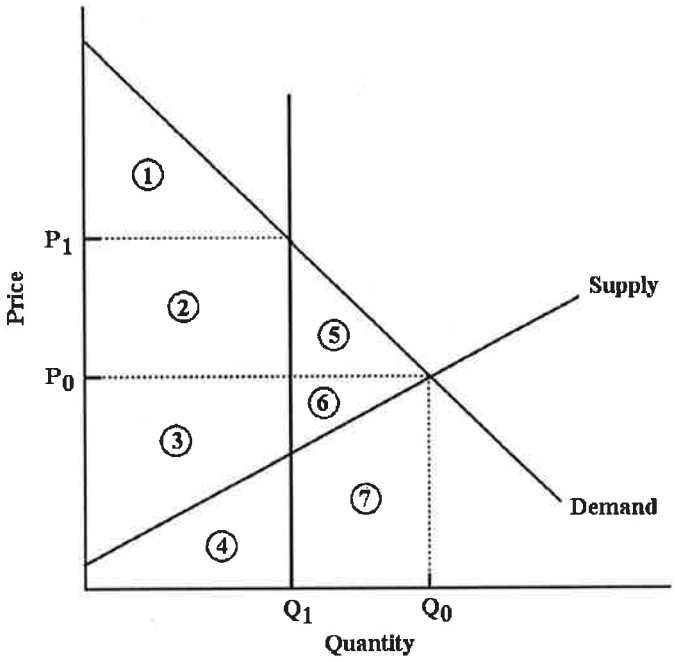


FIGURE 5-8

14) Refer to Figure 5-8. Suppose that a binding output quota is imposed on this market at quantity Q_1. The loss in economic surplus due to the quota is equal to

A) areas 5, 6 and 7.
B) area 1.
C) areas 1, 2 and 3.
D) areas 5 and 6.
E) areas 2 and 5.

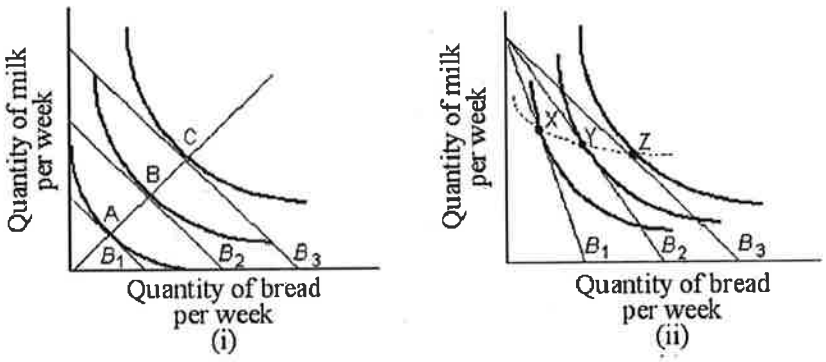


FIGURE 6-9

15) Refer to Figure 6-9. In part (ii), the consumer's move from point Z to point Y is caused by _____
A) an decrease in the price of bread.
B) an increase in the price of bread.
C) an increase in the price of milk.
D) a change in the consumer's preferences towards milk.
E) a decrease in money income.

16) The total value that Doug places on his consumption of computer games equals _____
A) the total amount he pays for all the games he purchases.
B) his total expenditure on computer games plus his consumer surplus.
C) the price multiplied by quantity demanded.
D) price times marginal value.
E) his marginal utility multiplied by quantity demanded.

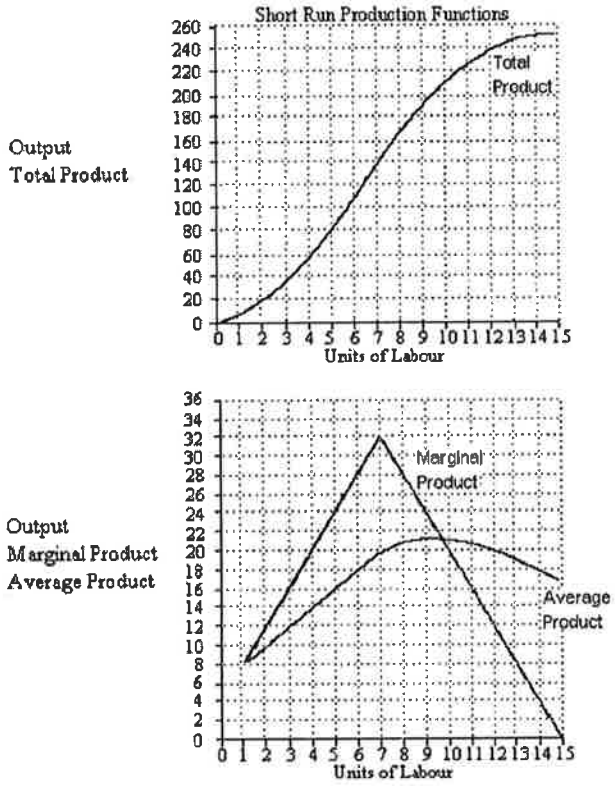


FIGURE 7-1

17) Refer to Figure 7-1. Total product is increasing at an increasing rate _____
A) from 0 to 32 units of output.
B) from 0 to 140 units of output.
C) between 140 to 200 units of output.
D) between 200 to 250 units of output.
E) over the whole production range.

18) Refer to Figure 7-1. Suppose each unit of labour represents one worker for one month. What is the maximum number of workers the firm could hire so that the final worker hired still raises the average product of the other workers? _____
A) 8 B) 7 C) 9 D) 10 E) 15

19) Consider a firm's short-run cost curves. If average total cost is increasing as output rises, then _____
A) average total cost is no longer equal to the sum of average variable cost and average fixed cost.
B) average fixed costs must be increasing.
C) total fixed costs must be increasing.
D) average variable cost must be increasing.
E) marginal cost must be below average total cost.

20) For a firm with only two inputs, capital and labour, the condition $MP_K/MP_L = P_K/P_L$ guarantees that the firm is
A) minimizing its costs but is not necessarily maximizing its profits.
B) at its profit-maximizing output but is not necessarily minimizing its costs.
C) at its profit-maximizing and cost-minimizing level of output.
D) economically efficient but not technically efficient.
E) technically efficient but not economically efficient.

21) Suppose a firm is employing labour (L) and capital (K) such that $MP_K/MP_L = P_K/P_L$. If the price of labour rises, the cost-minimizing firm should
A) employ more labour and less capital because $MP_K/MP_L > P_K/P_L$.
B) employ more labour and less capital because $MP_K/MP_L < P_K/P_L$.
C) employ more capital and less labour because $MP_K/MP_L > P_K/P_L$.
D) employ more capital and less labour because $MP_K/MP_L < P_K/P_L$.
E) do nothing.

22) If a firm in a perfectly competitive market were to raise its price, its
A) revenue would increase only if market demand were inelastic.
B) total costs would increase.
C) profits would increase as long as costs remained constant.
D) revenue would decrease only if market demand were elastic.
E) revenue would fall dramatically.

23) If firms in a competitive industry are earning positive economic profits, in the long run we expect
A) the supply curve for the product will shift to the right as new firms enter the industry, causing industry output to increase and price to fall.
B) the demand curve for the product will shift to the left, so that the price of the product will fall.
C) there would be no change in the industry as long as $P = MC$ for the individual firms.
D) the government would intervene and force the firms to lower prices.
E) the individual firms will lower their price to discourage new firms from entering the industry.

24) For a single-price monopolist, marginal revenue falls faster than price (as output rises) because
A) profits are maximized when marginal cost equals marginal revenue.
B) the firm has no supply curve.
C) in order to sell additional units, the price must be lowered on all units.
D) the cost of producing extra units of output increases as production is increased.
E) none of the above — marginal revenue does not fall faster than price.

25) If a monopolist's marginal revenue is $MR = 15 - 2Q$ and its marginal cost is $MC = 5$, then the profit-maximizing quantity is
A) 7.5. B) 0. C) 5. D) 15. E) 10.

Suppose a monopolist faces the demand curve and cost curves shown below.

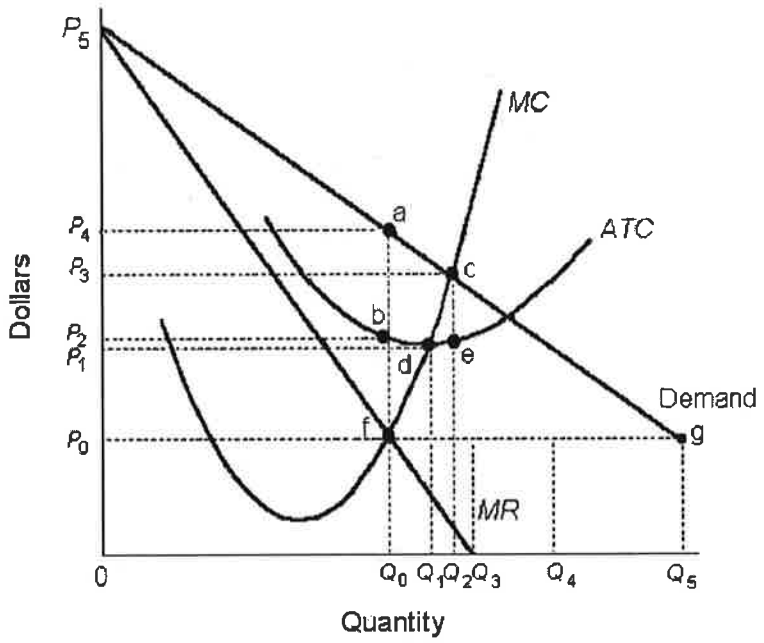


FIGURE 10–4

26) Refer to Figure 10–4. A profit-maximizing single-price monopolist would charge the price _____
A) P_0. B) P_1. C) P_2. D) P_3. E) P_4.

27) Refer to Figure 10–4. If the monopolist is practicing perfect price discrimination and is maximizing its profits, the total revenue is represented by the area _____
A) $0P_3cQ_2$.
B) $0P_5cQ_2$.
C) $0P_4aQ_0$.
D) $0P_1dQ_1$.
E) $0P_2bQ_0$.

28) Suppose there are many independent dry cleaners in your city, each of which provides essentially the same service. However, one offers local delivery, another offers free coffee in the shop, while another offers one-hour dry cleaning. Which of the following statements explains what is happening in this market? _____
A) These firms are perfectly competitive and are engaging in non-price competition.
B) These firms are perfectly competitive and are attempting to increase sales and maximize their profits.
C) These firms are perfectly competitive and are engaging in strategic behaviour.
D) These firms are oligopolistic and are engaging in strategic behaviour.
E) These firms are monopolistically competitive and are attempting to differentiate their product.

29) The sugar industry in Canada is effectively a duopoly with two large firms competing with each other for market share. Suppose the two firms collude and successfully restrict joint output to that of a profit-maximizing monopolist. As a result, they each realize an increase in their profits. Why would this collusive agreement be difficult to sustain?
A) Because a non-cooperative outcome is inevitable in which output is further restricted and each firm's profit is reduced.
B) Because the firm with the lower long-run average costs will be able to capture all sales, driving the second firm out of the market.
C) Because each firm has an incentive to break the agreement by further restricting output in order to increase the price, thereby increasing their own profits.
D) Because each firm has an incentive to break the agreement by increasing output in order to increase their own profits.

The payoff matrix below shows the payoffs to Firms A and B from producing different levels of output. The numbers in parentheses are (payoff to A, payoff to B).

		Firm B: Produce 1000 Units	Firm B: Produce 2000 Units
Firm A	Produce 1000 Units	(100, 100)	(10, 150)
	Produce 2000 Units	(150, 10)	(30, 30)

TABLE 11-3

30) Refer to Table 11-3. The Nash equilibrium in this game is
A) (Firm A: produce 1000 units, Firm B: produce 1000 units).
B) (Firm A: produce 1000 units, Firm B: produce 2000 units).
C) (Firm A: produce 2000 units, Firm B: produce 1000 units).
D) (Firm A: produce 2000 units, Firm B: produce 2000 units).
E) non-existent.

31) We can safely say that each point *on* a country's production possibilities boundary (PPB) is
A) allocatively efficient.
B) not productively efficient.
C) one at which P = MC for all goods.
D) productively efficient.
E) Pareto optimal.

32) In the absence of other market failures, allocative efficiency is achieved in a perfectly competitive industry because
A) the industry produces a level of output such that the marginal cost of production is minimized.
B) there are barriers to entry.
C) firms do not need to maximize profits.
D) the industry produces a level of output such that the marginal cost to producers equals the marginal benefit to consumers.
E) the industry produces a level of output such that there are increasing returns to scale.

Consider the following table for a firm. The first column shows the number of units of a variable factor of production employed by the firm.

Total Number of Units of the Factor	Total Number of Units of Output
2	100
3	110
4	128
5	148
6	162
7	170
8	166

TABLE 13-2

33) Refer to Table 13-2. The marginal product of the 7th unit of the factor is _____
A) 170. B) -8. C) 162. D) 8. E) 0.

34) Suppose a cook at a diamond mining camp in Canada's North earns a much higher wage than a cook with similar training and experience at an office building in Halifax. Economists would likely call this _____
A) a temporary factor-price differential.
B) an equilibrium differential.
C) an intrinsic difference.
D) an acquired difference.
E) a compensating differential.

35) There will be no gains from specialization and trade between two countries if _____
1) neither country has an absolute advantage in the production of any good;
2) neither country has a comparative advantage in the production of any good;
3) opportunity costs are the same in the two countries.
A) 3 only B) 2 and 3 C) 2 only D) 1 and 2 E) 1 only

Ireland and Japan are assumed to produce only wool and steel, to have full employment and complete mobility of resources between industries. Their production possibilities boundaries before trade are drawn in solid lines. It is assumed that the two countries have the same amount of resources. Their consumption possibilities after trade are shown by the dotted lines. The outputs of wool and steel are given in physical units.

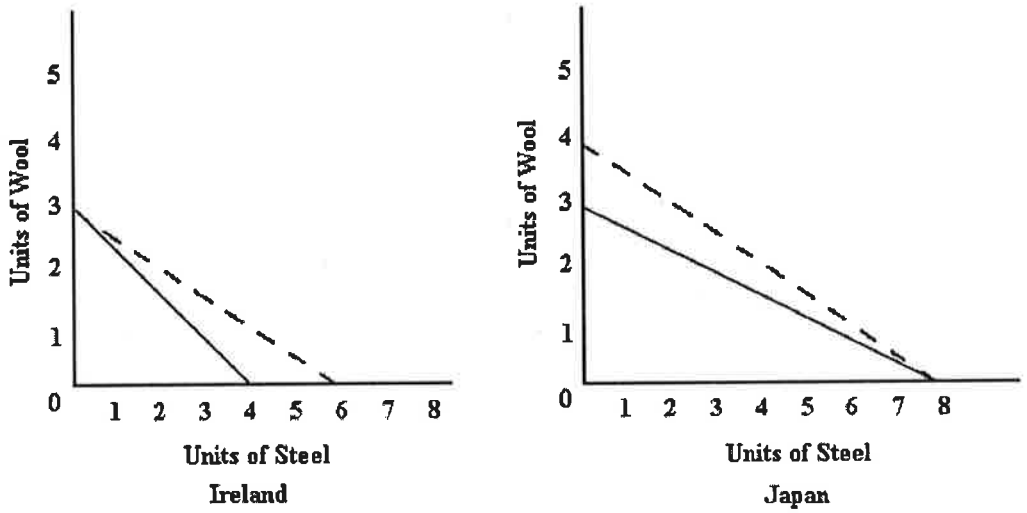


FIGURE 33-1

36) Refer to Figure 33-1. Japan has an absolute advantage in _____
A) wool.
B) steel.
C) both goods.
D) neither good.
E) Insufficient information to determine the answer.

37) Refer to Figure 33-1. When trade between Ireland and Japan begins, the probable trade pattern is to _____
A) export both wool and steel from Ireland to Japan.
B) export both wool and steel from Japan to Ireland.
C) export wool from Japan to Ireland and steel from Ireland to Japan.
D) export wool from Ireland to Japan and steel from Japan to Ireland.
E) impose tariffs on both goods in both countries.

The diagram below shows the domestic demand and supply curves in the market for newsprint in Paperland.

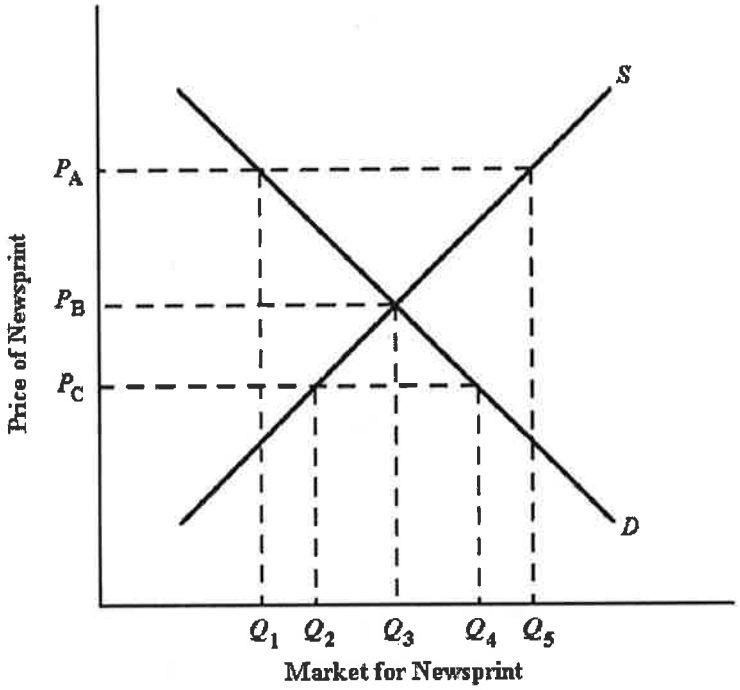


FIGURE 33-5

38) Refer to Figure 33-5. If Paperland engages in international trade and the world price is P_A, the amount of newsprint _____ will be _____. _____

A) exported; Q_5
B) exported; $Q_5 - Q_1$
C) imported; $Q_5 - Q_1$
D) imported; $Q_5 - Q_3$
E) imported; Q_1

39) Many people argue that the imposition of tariffs in industry X will increase factor incomes in that industry and therefore be good for the country as a whole. The counter-argument is that _____

A) the increase in factor incomes would increase unemployment.
B) factor incomes overall would increase, but wages in industry X would fall, which would hurt workers in that industry.
C) the increase in factor incomes in industry X would reduce profits to business owners by an equal amount.
D) the increase in industry X factor incomes would be more than offset by reductions in real incomes to all other domestic residents.
E) factor incomes would first rise and then decrease in industry X.

The diagram below shows the domestic demand and supply curves for denim jeans in Canada. The prevailing world price is P_W. Assume that all jeans are identical.

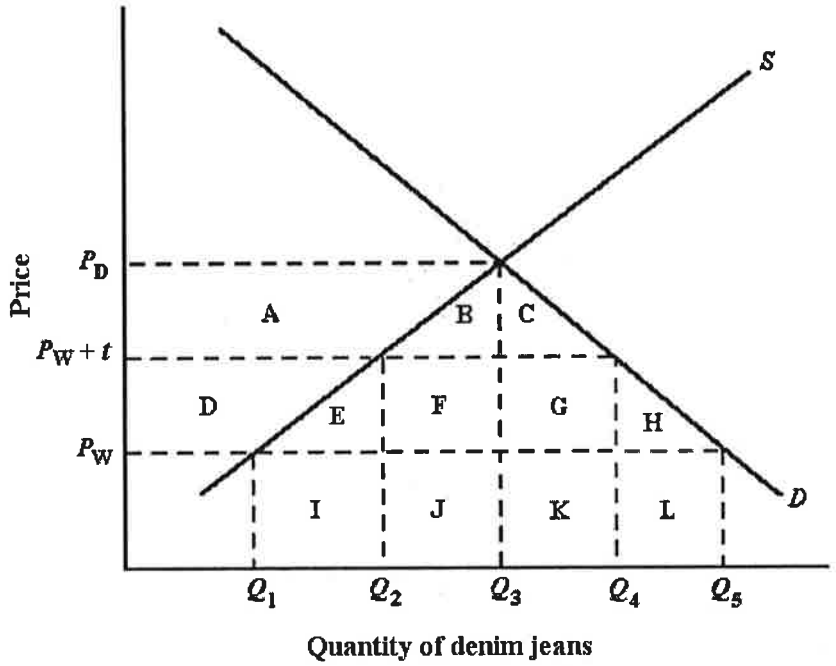


FIGURE 34–2

40) Refer to Figure 34–2. Suppose Canada has free trade in jeans and then imposes a tariff of $\$t$ per pair. Canada's production will then be at the quantity

A) Q_1 B) Q_2 C) Q_3 D) Q_4 E) Q_5

Part B: True/False/Uncertain Questions [20 marks]

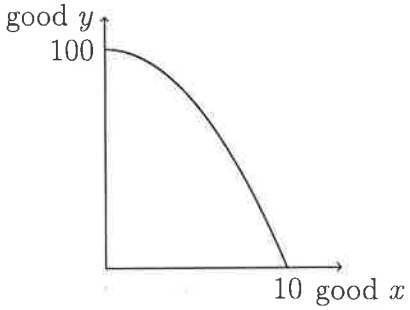
Answer **FOUR** of the **SIX** questions. Each question is worth 5 marks.

Explain why the following statement is True, False, or Uncertain according to economic principles. **Use diagrams** where it is appropriate. No credit will be given for unsupported answers.

B1. If a monopoly can perfectly price discriminate, there is allocative efficiency.

B2. A tax on cigarettes food will be more effective at discouraging smoking if the demand for cigarettes is less elastic.

B3. Suppose a country's production possibility boundary (PPB) is shown in the following diagram. For any production point on the PPB, the slope of the PPB is $-x$. If the world price of good x is 5 units of good y, then the country should completely specialize in producing good x. *Hint: resketch the diagram and explain why this is or is not the optimal production point.*



B4. If the price of an inferior good increases, the quantity demanded by a household must increase.

B5. If the wage rate increases, then households decrease their labour supply.

B6. In the following payoff matrix, row's payoff is the first entry and column's payoff is the second entry.

		Column		
		Left	Middle	Right
Row	Up	10,2	5,6	9,12
	Down	8,4	7,8	11,2

The Nash equilibrium is for the row player to choose *up* and the column player to choose *right*.

Part C: Problem Solving Questions [20 marks]

Answer **ONE** of the following **TWO** questions.

Read each part of the question carefully. Answer all parts of the question and show all the steps of your calculations to get full credit. Use diagrams when required.

C1. Suppose the demand and supply curves for milk in Canada are given by
$Q_D = 500 - 2P$
$Q_S = P - 50$

a) Calculate the equilibrium price (P^*) and the equilibrium quantity (Q^*). Graph the supply and demand curves and identify the equilibrium values in a diagram (label all axes and curves, identify the P and Q intercepts). [4]

b) Calculate the elasticity of demand at the equilibrium point in part (a). If the supply of milk increased, would total expenditure on milk rise or fall? Explain. [3]

c) Suppose the government imposes a quota of 150 units ($\bar{Q} = 150$). What is the new price? Show the change in consumer surplus from this policy (relative to the free market equilibrium in part (a)) in your diagram. [5]

Now suppose the world price for milk is $P_W = 50$.

d) If the economy (as described in part (a)) opens to trade, does Canada import or export milk? What quantity of milk is traded? Sketch a diagram and identify the consumer surplus (CS) and producer surplus (PS) with free trade. [4]

e) Now suppose the government imposes a tariff of $t = 10$ on each unit of milk imported. Sketch a diagram and identify i) the **deadweight loss** (DWL) from the tariff relative to free trade and ii) the **tariff revenue**. [4]

C2. Suppose a natural monopoly's total cost and marginal cost are given by
$C = 1050 + 20Q$
$MC = 20$

and it faces (inverse) demand and marginal revenue given by
$P = 400 - 2Q$
$MR = 400 - 4Q$

a) Calculate the monopoly price, the monopoly output, and the monopoly profits. [4]

b) Calculate the average total cost at the monopoly output. Graph the demand, marginal revenue (MR), average total cost (ATC), and marginal cost (MC) curves (label all axes and curves). Add the monopoly price and monopoly output from part (a) to the graph. [6]

c) Calculate the deadweight loss (DWL) from the monopoly. Identify the area of the deadweight loss on your graph. [4]

d) If the government regulates the monopoly with marginal-cost pricing, what is the price and output? Compare this output to the monopoly output without regulation. Does this policy result in allocative efficiency? Explain. Will the monopoly produce in the long-run? Explain. [6]