

Concordia University  
Department of Economics

ECON 201 - INTRODUCTION TO MICROECONOMICS  
Winter 2017

COMMON FINAL EXAMINATION - VERSION 1

FIRST NAME: \_\_\_\_\_ LAST NAME: \_\_\_\_\_

STUDENT NUMBER: \_\_\_\_\_

Please, read all instructions carefully:

1. The exam consists of two parts:
  - (i) Part I: 50 multiple-choice questions (100 marks);
  - (ii) Part II: Choose 4 out of 5 long questions (100 marks).
2. Write your name, student ID and answers for the multiple-choice questions on the computer scan-sheet with a **pencil**. Please, also write the **version** of the exam on the computer scan-sheet. For Part II, write all your answers on this exam. Do not use additional booklets.
3. You are allowed to use a non-programmable calculator and a paper dictionary, provided that they are approved by the invigilator(s). You may use either pen or pencil to provide your answers for Part II.
4. You are not allowed to tear any pages out of this exam.

Grades:

Part I: \_\_\_\_\_

Part II:

Problem #1: \_\_\_\_\_

Problem #2: \_\_\_\_\_

Problem #3: \_\_\_\_\_

Problem #4: \_\_\_\_\_

Problem #5: \_\_\_\_\_

**Total:** \_\_\_\_\_

**Part I: Multiple Choice Questions. Write your answers on the computer sheet in PENCIL.(Total=100 marks)**

1. Which of the following could cause Canada's current production possibilities frontier to shift inward?
  - (a) **A big wave of Canadians reaching the age of 65 and going into retirement.**
  - (b) The government raising sales taxes to pay for health care expenses.
  - (c) A decrease in the percentage of after-tax income Canadians save every month.
  - (d) All of the answers are correct.
  
2. Suppose you are deciding whether you should rent or buy. Your current rent per month is \$800, which includes all utilities and taxes. You have saved up \$200,000, which is earning you an interest income of \$400 a month. With a \$200,000 house, you would need to pay \$300 a month on property tax, and utilities for \$200. For simplicity, assume that you break even when you sell the house one day. Should you rent or buy?
  - (a) Buy, because you save \$100 per month.
  - (b) Buy, because you save \$300 per month.
  - (c) Rent, because you save \$300 per month.
  - (d) **Rent, because you save \$100 per month.**
  
3. An economy has 50 workers. Each worker can produce 4 cars or 25 shirts. How many cars can this economy produce?
  - (a) 100.
  - (b) 150.
  - (c) **200.**
  - (d) 50.
  
4. Which of the following statements is CORRECT about a production possibilities frontier (PPF)?
  - (a) If an economy is producing at an output level that is higher than  $Y_{capacity}$  ( $Y_c$ ), this economy is producing at a point inside its PPF.
  - (b) **If an economy sees an improvement in its technological level, both the size and shape of its PPF can change.**
  - (c) Only macroeconomics, but not microeconomics, studies PPFs.
  - (d) If the opportunity cost of producing more of one good in terms of the other good is constant, the PPF is concave.
  
5. Suppose a particular basket of goods contains just food and clothing. The prices of a unit of food for the years 2010 and 2011 were \$20 and \$25, respectively. The prices per unit of clothing for the years 2010 and 2011 were \$24 and \$32, respectively. Assume that 2010 is the base year. What is the approximate value of the nominal price index for food in 2011?

- (a) 110.
  - (b) **125.**
  - (c) 115.
  - (d) 120.
6. Which of the following would be considered as longitudinal data?
- (a) **The annual mortgage payments of Anna, Ben and John between 2005 and 2010.**
  - (b) The income and gasoline consumption of 1,000 residents in Montreal in 2012.
  - (c) Inflation rates between 1990 and 2010.
  - (d) The rise in the cost of living over the past five years.
7. Which of the following has a slope of infinity or undefined?
- (a) Vertical line.
  - (b) **Horizontal line.**
  - (c) A curved line.
  - (d) None of the answers is correct.
8. Suppose the demand equation is given by  $P=12-2Q$  and the supply equation is given by  $P=2+3Q$ . If the quota quantity is set at  $Q=1$ , what is the price that this unit will sell for?
- (a) \$8.
  - (b) **\$10.**
  - (c) \$5.
  - (d) Cannot be determined without more information.
9. Continue with question 8: In order for the firms to supply  $Q=1$ , what minimum price do they have to receive?
- (a) \$8.
  - (b) **\$5.**
  - (c) \$10.
  - (d) Cannot be determined without more information.
10. If the supply equation changes from  $P=5+2Q$  to  $P=3+2Q$ , which of the following statements is CORRECT?
- (a) The supply of this product has decreased, which is a shift to the right.
  - (b) The supply of this product has decreased, which is a shift to the left.
  - (c) **The supply of this product has increased, which is a shift to the right.**

- (d) The supply of this product has increased, which is a shift to the left.
11. If the demand equation changes from  $P=25-6Q$  to  $P=25-8Q$ , which of the following statements is CORRECT?
- (a) **The demand for this product has decreased, which is a pivot to the left.**
  - (b) The demand for this product has increased, which is a pivot to the right.
  - (c) The demand for this product has increased, which is a pivot to the left.
  - (d) The demand for this product has decreased, which is a pivot to the right.
12. For a quota to be effective, the quantity has to be set to the \_\_\_\_ of the free market equilibrium quantity, and the resulting price for the consumers will \_\_\_\_.
- (a) Right; rise.
  - (b) Left; fall.
  - (c) Right; fall.
  - (d) **Left; rise.**
13. Suppose your income increases from \$50,000 to \$55,000, and your quantity demanded of a good increased from 2 to 4. What type of good must this be?
- (a) Necessity good.
  - (b) Normal good.
  - (c) Inferior good.
  - (d) **Luxury good.**
14. If beef and pork are substitutes, a rise in the price of beef is represented by \_\_\_\_\_ the demand curve for beef and a \_\_\_\_\_ the demand curve for pork.
- (a) **Movements along; rightward shift in.**
  - (b) A rightward shift in; movement along.
  - (c) Movements along; leftward shift in.
  - (d) A leftward shift in; movement along.
15. If the government puts a \$10 per unit tax on a product and the consumer price rises by \$8, which of the following statements is CORRECT?
- (a) The drop in the quantity purchased must be very large because of the price increase.
  - (b) The supply of this product is necessarily inelastic.
  - (c) The demand for this product is necessarily elastic.
  - (d) **None of the above.**

16. If we move along a linear downward-sloping demand curve, the price elasticity of demand (in absolute value)
- (a) Is constant and equal to zero.
  - (b) Is constant and equal to unity.
  - (c) Is constant but not necessarily equal to unity.
  - (d) **Rises when the price rises.**
17. If the government imposes a percentage tax on consumers, the more inelastic the supply curve, the
- (a) The lower the tax revenue.
  - (b) Larger the deadweight loss.
  - (c) **Smaller the drop in equilibrium quantity.**
  - (d) All of the answers are correct.
18. A homeowner who keeps his sidewalk neatly shoveled creates a \_\_\_\_\_ externality to his neighbours. Without any government policies, the number of homeowners who would keep a clean sidewalk will be too \_\_\_ compared to the efficient equilibrium. To correct this problem, the government can use a corrective \_\_\_\_\_.
- (a) **Positive; low; subsidy.**
  - (b) Negative; high; tax.
  - (c) Negative; low; subsidy.
  - (d) Positive; high; tax.
19. Without any taxes, suppose the equilibrium price is \$4 and the equilibrium quantity is 10 units. The government then imposes a \$2 per unit tax on the consumers. The resulting equilibrium price is \$5 and the equilibrium quantity is 8 units. What is the value of the government revenue?
- (a) \$12.
  - (b) \$8.
  - (c) **\$16.**
  - (d) \$14.
20. Continue with question 19: How much of the tax do consumers pay?
- (a) \$4.
  - (b) \$2.
  - (c) **\$1.**
  - (d) \$3.

21. Which of the following is (are) CORRECT about an indifference curve?
- (a) **Higher indifference curves correspond to higher levels of total utility.**
  - (b) The midpoint of an indifference curve yields a higher utility level than those points closer to the horizontal or vertical axis.
  - (c) As the consumer consumes more of one good and less of the other good along an indifference curve, the overall level of total utility falls.
  - (d) All of the answers are correct.
22. Suppose Helen consumes only good A and good B. Which of the following conditions is consistent with her maximizing her utility?
- (a)  **$MU_a/MU_b = P_a/P_b$ .**
  - (b)  $P_a/MU_b = P_b/MU_a$ .
  - (c)  $MU_a/P_b = MU_b/P_a$ .
  - (d)  $P_a/P_b = MU_b/MU_a$ .
23. Suppose Darren pays \$10 to eat at an All-you-can-eat dessert buffet. He was very hungry, and so he finds the 1st dessert very satisfying. The 2nd dessert is still very good, and the 3rd is just good. By the time he finishes his 4th dessert, he is feeling full. He insists on eating the 5th dessert, and he starts to feel uncomfortable. Which of the following describe(s) his actions?
- (a) Diminishing marginal utility applies to his consuming the five desserts.
  - (b) His total utility from consuming four desserts is higher than from consuming five.
  - (c) The marginal utility from the 5th dessert is negative.
  - (d) **All of the answers are correct.**
24. When economists study the behavior of the firm, what do they assume as the primary goal of the firm?
- (a) The firm maximizes the benefits of its workers.
  - (b) The firm maximizes advertising in an attempt to build a larger customer base.
  - (c) The firm maximizes total revenue.
  - (d) **The firm maximizes profits or minimizes any losses.**
25. What does it mean when a business has unlimited liabilities?
- (a) The bondholders of the firm are liable for the firm's debt.
  - (b) Its profits are unlimited.
  - (c) **If the firm loses money, the owners are personally responsible for its debt.**
  - (d) Its costs are unlimited.

26. Which of the following is (are) way(s) to target the principal-agent problem?
- (a) Reward the principal with bonuses.
  - (b) **Offer the agent stock options.**
  - (c) Offer the principal stock options.
  - (d) All of the answers are correct.
27. If a firm has  $TFC = \$500$ , and  $TC = \$800$  when output is 20 units, how much is the AVC per unit of output?
- (a) \$25.
  - (b) \$65.
  - (c) **\$15.**
  - (d) \$16.
28. Which of the following best describe(s) the very long run?
- (a) Technology may change.
  - (b) The capital stock may change.
  - (c) The total labour supply may change.
  - (d) **All of the answers are correct.**
29. What is marginal revenue for a perfectly competitive firm?
- (a) The profit from selling a unit of the product.
  - (b) The price multiplied by the quantity of product produced.
  - (c) Total revenue divided by the price.
  - (d) **The price of the product.**
30. Which of the following best describe(s) the concept of long run for a perfectly competitive industry?
- (a) Outside firms can enter the industry.
  - (b) Input costs, such as rent and wages, can change.
  - (c) Demand for the product can change.
  - (d) **All of the answers are correct.**
31. What is the value of the deadweight loss created by a perfectly competitive industry?
- (a) Equal to the industry's normal profit.
  - (b) **Equal to zero.**
  - (c) Cannot be determined.

- (d) Equal to the one created by a non-discriminating monopolist.
32. The output level that will maximize a firm's profit is given by what condition?
- (a)  $P=MR$ .
  - (b)  $P=ATC$ .
  - (c)  **$P=MC$ .**
  - (d)  $P=AFC$ .
33. In the short run, the maximum loss that a perfectly competitive firm will endure is equal to \_\_\_\_\_.
- (a) Its total variable costs.
  - (b) **Its total fixed costs.**
  - (c) Zero.
  - (d) Its total marginal costs.
34. Suppose a monopolist faces two groups of consumers. Group 1 has a demand given by  $P_1 = 50 - 2Q_1$  and  $MR_1 = 50 - 4Q_1$ . Group 2 has a demand given by  $P_2 = 40 - Q_2$  and  $MR_2 = 40 - 2Q_2$ . The monopolist faces  $MC=AVC=ATC=\$10$  regardless of which group he supplies to. We can infer from the demand equations that Group \_\_\_ is the inelastic group because the demand is \_\_\_\_\_ than that of the other group.
- (a) 1; flatter.
  - (b) **1; steeper.**
  - (c) 2; flatter.
  - (d) 2; steeper.
35. Which of the following statements is CORRECT about a monopolist?
- (a) The monopolist has a horizontal supply curve.
  - (b) The monopolist has an upward-sloping supply curve.
  - (c) **The monopolist need not have a unique relationship between price and quantity supplied.**
  - (d) The monopolist has a vertical supply curve.
36. If the monopolist faces the demand curve given by  $P = 10 - 2Q$ , what is the quantity intercept value?
- (a) **5.**
  - (b) 10.
  - (c) 20.
  - (d) 15.

37. Which of the following examples best describe(s) an oligopoly market structure?
- (a) Mobile phones: Apple, Samsung and Nokia.
  - (b) Automobile: Ford, Toyota and Volkswagon.
  - (c) Beer: Labatt's, Molson and Heineken.
  - (d) **All of the answers are correct.**
38. What is a dominant strategy?
- (a) The strategy that a player chooses to minimize the other player's payoff.
  - (b) The strategy that a player chooses depends on what the other player does.
  - (c) The strategy that a player chooses maximizes joint payoffs for both players.
  - (d) **The strategy that a player chooses is independent of what the other player does.**
39. Suppose a monopolistically competitive firm has  $MC=4Q+5$ . Its demand is  $P=145-3Q$  and marginal revenue is  $MR=145-6Q$ . What is its profit-maximizing output level?
- (a) 15.
  - (b) 16.
  - (c) 17.
  - (d) **14.**
40. Why do economists discount future values?
- (a) Because people do not care about the future.
  - (b) **Because money in the future is worth less than money today.**
  - (c) Because people can earn higher income in the future.
  - (d) All of the answers are correct.
41. Comparing a perfectly competitive market with a single-price monopoly with the same costs, we see that
- (a) the monopoly market is always more efficient in the use of resources.
  - (b) the monopoly market achieves efficiency in resource use while perfectly competitive market does not.
  - (c) both markets are equally efficient in their use of resources.
  - (d) **the perfectly competitive market achieves efficiency in resource use while the monopoly market does not.**
42. What is human capital?
- (a) The experience an individual has accumulated.

- (b) The education an individual has accumulated.
  - (c) The wisdom that comes with getting older.
  - (d) **All of the answers are correct.**
43. Which of the following pricing practices could signal that the firm may be practicing predatory pricing?
- (a) Two groups of buyers are paying the same price for a particular product.
  - (b) Older patrons are charged less than prime-aged patrons for theater tickets.
  - (c) **The seller is selling below marginal cost.**
  - (d) All of the answers are correct.
44. An industry has a decreasing cost structure. The demand for the product is given by  $P = 60 - Q$  and the marginal revenue equation is given by  $MR = 60 - 2Q$ . The marginal cost MC is constant at \$10, and average cost  $ATC = 125/Q + 10$ . There is no difference between the short run and long run. What is the monopoly output level for this industry?
- (a) 20.
  - (b) 45.
  - (c) **25.**
  - (d) 50.
45. A cartel is most likely occur in
- (a) perfect competition as firms compete by reducing cost.
  - (b) oligopoly as firms compete to lower price and increase their own profit.
  - (c) monopolistic competition where firms collude to increase profits.
  - (d) **oligopoly as firms act together to raise prices and increase profits.**
46. If we impose a tariff on imports, this will \_\_\_\_\_ the domestic price of imports and it will create a \_\_\_\_\_ for the overall economy.
- (a) Decrease; deadweight loss.
  - (b) Decrease; net benefit.
  - (c) **Increase; deadweight loss.**
  - (d) Increase; net benefit.
47. Why is predatory dumping a valid argument for trade protection?
- (a) Predation encourages too much competition in the long run that the domestic firms will incur losses.
  - (b) **Consumers will pay a much higher price in the long run if predation succeeds.**

- (c) Consumers will have fewer sources of imports to choose from in the short run.
  - (d) Consumers will lose in the short run due to higher prices.
48. Which of the following is (are) example(s) of non-tariff barrier(s)?
- (a) Country-of-origin requirements.
  - (b) Language labeling requirements.
  - (c) Content labeling requirements.
  - (d) **All of the answers are correct.**
49. Why are smaller economies more likely to trade?
- (a) The consumers are limited to few choices if they have to purchase everything domestically.
  - (b) The domestic firms can mass produce and export in order to drive down their production costs.
  - (c) The domestic markets are too small to reap economies of scale.
  - (d) **All of the answers are correct.**
50. According to the principle of comparative advantage, if Canada exports natural gas and India exports clothing, which of the following statements would be INCORRECT?
- (a) Not everyone within Canada or India will benefit from trade.
  - (b) Canada can consume more of both goods with trade.
  - (c) **The production possibilities frontiers of Canada and India will shift out because of trade.**
  - (d) India can consume more of both goods with trade.

**Part II: Answer FOUR of the following FIVE questions. If more than four questions are answered, only the first four attempted will be marked.(Total=100 marks)**

1. Assume the demand curve is given by  $P = 20 - (2/5)Q$  and the supply curve is  $P = (2/5)Q$ .

(a) Find the equilibrium price and quantity. Calculate the price elasticity of demand at the point of equilibrium. (5 marks)

**$Q^* = 25$  units,  $P^* = \$10$ ,  $\epsilon_D = -1$ .**

(b) Fill in the gaps in the following table (5 marks):

Price elasticity (absolute value)	Change in price	Change in Total Expenditure
2.0	upward	<b>negative</b>
1.0	downward	<b>none</b>
<b>1.0</b>	upward	none
0.0	downward	<b>negative</b>
0.6	<b>upward</b>	positive

(c) Assume a price floor imposed by the government at  $P_F = \$15$ . What is the quantity demanded at this price? What is the quantity supplied? Is there an excess supply/demand in the market at this price? What is the magnitude? (5 marks)

**$Q_D = 12.5$  units,  $Q_S = 37.5$  units. Excess Supply ( $Q_S - Q_D$ ) = 25 units.**

(d) Assume a price ceiling at  $P = \$5$ . What is the quantity demanded at this price? What is the quantity supplied? Is there an excess supply/demand in the market at this price? What is the magnitude? (5 marks)

**$Q_D = 37.5$  units  $Q_S = 12.5$  units, Excess Demand ( $Q_D - Q_S$ ) = 25 units.**

(e) Calculate the change in consumer surplus in case of the price floor. Calculate the change in consumer surplus in case of the price ceiling. In which case does the consumer lose more? Why? (5 marks)

**Change in C.S. in case of price floor = 93.75. Change in C.S. in case of price ceiling = 31.25.**

**The consumer loses more in case of a price floor. This is because, the price floor is set at a higher level than the price ceiling. Given that the actual quantity bought and sold in the market i.e.  $[\min(Q_D, Q_S)]$  is the same in both cases, a higher price implies a smaller distance under the demand curve and the price. Thus C.S. in case of the price floor is much smaller compared to the C.S. in case of the price ceiling. The loss in C.S, starting from a situation of market equilibrium, is thus higher.**

2. Imagine you have a budget of \$30 per month to spend on two kinds of chocolate bars, Snickers and Wonderbar. Your marginal utility schedule is given below.  $Q_S$  and  $Q_W$  are the quantities of Snickers and Wonderbar respectively.

Snickers ( $Q_s$ )	MUs (utils)	Wonderbar ( $Q_w$ )	MU <sub>w</sub> (utils)
1	20	1	40
2	18	2	36
3	16	3	32
4	14	4	28
5	12	5	24
6	10	6	20
7	8	7	19
8	6	8	18
9	4	9	17
10	2	10	16

- (a) Initially the price of Snickers ( $P_S$ ) equals \$3 and price of Wonderbars ( $P_W$ ) equals \$3, per bar. You are consuming 2 Snickers and 8 Wonderbars per month. What is your utility from the 2nd Snicker and the 8th Wonderbar? What is your total utility from 2 Snickers? What is your total utility from 8 Wonderbars? (5 marks)

**MUs from the 2nd Snicker = 18 utils; MU<sub>w</sub> from the 8th Wonderbar = 18 utils.**

**TUs from 2 Snickers = 38 utils; TU<sub>w</sub> from 8 Wonderbars = 217 utils.**

- (b) If you transfer \$3 of spending from Wonderbars to Snickers, what is your reduction in utility from losing the 8th Wonderbar? What is your gain in utility from gaining the 3rd Snicker? Will you make this transfer? Why or why not? (5 marks)

**Reduction in Utility from losing the 8th Wonderbar = 18 utils; Increase in Utility from gaining the 3rd Snicker = 16 utils.**

**You do not make this transfer since loss in utility is greater than gain in utility. Total utility falls by 2 utils.**

- (c) If you transfer \$3 of spending from Snickers to Wonderbars, what is your reduction in utility from losing the 2nd Snicker? What is your gain in utility from gaining the 9th Wonderbar? Will you make this transfer? Why or why not? (5 marks)

**Reduction in Utility from losing the 2nd Snicker = 18 utils; Increase in Utility from gaining the 9th Wonderbar = 17 utils.**

**You do not make this transfer since loss in utility is greater than gain in utility. Total utility falls by 1 util.**

- (d) Given your answers to (a), (b) and (c), which combination of Snickers and Wonderbars will you choose? (2 marks)

**You choose 2 Snickers and 8 Wonderbars, Since other combinations reduce total utility. At this combination,  $MUs / MU_w = 18/18 = 1$  and  $P_s / P_w = 3/3 = 1$ .**

- (e) Now, if the price of Snickers falls to \$2 and the price of Wonderbars rises to \$4, what has happened to the opportunity cost of a Snicker bar? You change to buying 3 Snickers and 6 Wonderbars. What is your utility from the last two Snickers? What is your utility from the sixth Wonderbar? (3 marks)

**Opportunity cost of one Snicker Bar falls from  $P_s / P_w = 3/3 = 1$  to  $P_s / P_w = 2/4 = 0.5$ .**

**Utility from the last two Snickers =  $18 + 16 = 34$  utils; Utility from the sixth Wonderbar = 20 utils.**

- (f) If you now transfer \$4 of spending from Wonderbars to Snickers, how much utility do you lose from Wonderbars? How much utility do you gain from Snickers? Will you make this transfer? From your answers to (e) and (f) which combination of Snickers and Wonderbars will you choose as the optimal? (5 marks)

**\$4 transfer reduces number of Wonderbars from 6 to 5; increases number of Snickers from 3 to 5. Utility lost from 6th Wonderbar = 20 utils; Utility gained from 4th and 5th Snicker =  $14 + 12 = 26$  utils. You make this transfer since TU increases by  $26 - 20 = 6$  utils.**

**You choose (f), i.e. 5 Snickers and 5 Wonderbars since  $MU_s / MU_w = 12/24 = 0.5$  and  $P_s / P_w = 2/4 = 0.5$ .**

3. Assume the short run total costs of a firm to be  $TC = 30 + 3Q + Q^2$  where Q is the output of the commodity and TC is the total cost. Now, fill in the following table. (25 marks - 1 marks for each blank)

Q	TVC	TC	ATC	MC
0	<b>0</b>	30	-	-
1	<b>4</b>	<b>34</b>	34	4
2	10	40	<b>20</b>	<b>6</b>
3	<b>18</b>	<b>48</b>	<b>16</b>	8
4	<b>28</b>	<b>58</b>	14.5	<b>10</b>
5	<b>40</b>	70	<b>14</b>	<b>12</b>
6	<b>54</b>	<b>84</b>	<b>14</b>	<b>14</b>
7	70	<b>100</b>	14.3	<b>16</b>
8	<b>88</b>	<b>118</b>	<b>14.8</b>	18

4. Let the market demand and supply for XBOX2 be given by  $P = 1000 - 2Q$  and  $P = 100 + Q$ , respectively. Assume that the market is a perfectly competitive one.

- (a) Illustrate graphically the market demand and supply curves and determine the market equilibrium price and quantity. (5 marks)

**$Q_e = 300$ ,  $P_e = 400$ .**

Let the market above be served by only one firm with marginal revenue,  $MR = 1000 - 4Q$  and marginal cost,  $MC = 100 + Q$ .

- (b) Determine the quantity of XBOX2 units that the monopolist would produce and the price it would charge its customers. (5 marks)

**$Q_m = 180$ ,  $P_m = 640$ .**

- (c) Determine the value of the deadweight loss (DWL) associated with producing the profit maximizing output and show it on your graph. (5 marks)

**$DWL = 21,600$ .**

- (d) Let average total cost be equal to the marginal cost at the monopolist's chosen output level. Determine the monopolist's total cost and profits. (5 marks)  
**TC = 50,400, Profit = 64,800.**
- (e) Let the industry become a monopolistically competitive one, can the monopolist's profits continue indefinitely? Explain. (5 marks)  
**Profits plus freedom of entry will see new firms take some of this firm's market share, and therefore reduce profit.**
5. The domestic demand for office desks is given by  $P = 300 - 2Q$  while the domestic supply by  $P = 90 + 3Q$ . The foreign supply is given by  $P = 150$ .
- (a) Illustrate the domestic (without trade) market equilibrium on a diagram and determine the domestic (without trade) market equilibrium price and quantity. (5 marks)  
**Pe = 216 , Qe = 42.**
- (b) Solve for the equilibrium quantity purchased in a country open to trade and illustrate and find the amounts supplied by domestic and foreign suppliers. (5 marks)  
**Q purchased = 75, Domestic supply = 20, Foreign supply = 55.**
- (c) If the government now imposes a tariff of \$15 per unit on the foreign made office desks, illustrate the impact and determine the domestic quantity produced and quantity imported. (5 marks)  
**Domestic supply = 25, Foreign supply = 42.5.**
- (d) Illustrate on your graph the area representing tariff revenue and find how much it is. (5 marks)  
**Tariff revenue = 637.5.**
- (e) Illustrate graphically and find the deadweight losses associated with the imposition of the tariff. (5 marks)  
**DWL = 93.75.**