Concordia University
Department of Economics

ECON 201 – INTRODUCTION TO MICROECONOMICS
Fall 2012

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: 35 multiple-choice questions (35 marks);
   (ii) Part II: Choose 5 out of 6 long questions (65 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:

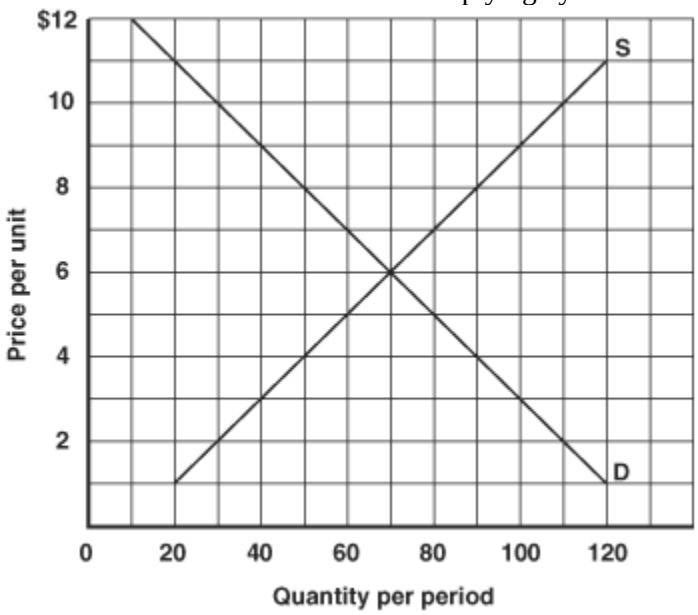
Part I: _____

Part II: _____

Total: _____

Part I: Multiple Choice Questions. Write your answers on the computer sheet in PENCIL (Total=35 marks).

1. With an infinitely elastic supply curve, the incidence of a specific tax on a good will
   a) be greater on the consumer if the demand curve is elastic.
   b) be greater on the consumer if the demand curve is inelastic.
   c) will be greater on the consumer if the D curve is moderately elastic.
   d) will have the same incidence regardless of the demand elasticity.
2. A basket of goods in 1987 cost $783, while the value of the same basket in 1997 was $1133. The value of this price index in 1997, based on 1987 = 100, was:
   a) 144.7.
   b) 242.
   c) 69.1.
   d) 117.4.
3. When economists compute the real value of an economic variable denominated in dollars, they do so by:
   a) dividing the nominal value by 100.
   b) multiplying the nominal value by the price level.
   c) dividing the nominal value by the price index.
   d) subtracting the price level from the nominal value and multiplying by 100.



4. In the figure above, if there is a shortage of 40 units, what does this mean?
   a) Price will fall.
   b) Price must be $8.
   c) The quantity traded is 40.
   d) Buyers would be willing to pay an additional $4 per unit for the quantity that they are now buying.
5. In the figure above, assume that the market was at equilibrium and that demand increases by 20 units. What will be the new equilibrium price and quantity?
   a) Price will rise by $2 and quantity traded will rise by 20 units.
   b) Price will fall by $2 and quantity traded will fall by 20 units.
   c) Price will rise by $1 and quantity traded will rise by 10 units.
   d) Price will fall by $1 and quantity traded will fall by 10 units.
6. If goods J and K are substitutes, an increase in the price of J causes:
   a) quantity demanded of J to fall and the demand curve for K to shift toward the origin.
   b) a decrease in quantity demanded for J and an outward shift of K's demand curve.
   c) quantity demanded of J remains constant, but the demand for K decreases.
   d) the demand curve for both J and K shift.
7. Assume that spinach is a normal good. Assume further that medical research has proven that eating spinach will reduce risks of cancer. Due to economic recession:
   a) there will be a leftward shift of the demand curve.
   b) there will be a rightward shift of the demand curve.

c) the demand curve may remain the same or may shift to the right or may shift to the left.
d) there will be lower price of spinach.

8. We can say with certainty that a rise in the minimum wage will increase the total dollar earnings of those workers affected by it if
   a) the demand for labor is elastic.
   b) the demand for labor is inelastic.
   c) the supply of labor is elastic.
   d) the supply of labor is inelastic.
9. An improvement in overall technology that allows more output to be produced with the same inputs causes:
   a) a movement up the supply curve, resulting in both a higher equilibrium price and quantity.
   b) a leftward shift of the supply curve so that less is offered for sale at every price.
   c) no movement of the supply curve but a fall in price and an increase in quantity supplied.
   d) a rightward shift of the supply curve so that more is offered for sale at every price.
10. The opportunity cost of attending college is likely to be highest for a high school graduate:
   a) who has access to student loans.
   b) whose family is extremely wealthy.
   c) who will attend a more expensive college.
   d) who started a successful business in high school.

Food		**Films**	
Workers	Output	Workers	Output
4	25	0	0
3	22	1	9
2	17	2	17
1	10	3	24
0	0	4	30

11. Use the production possibilities described in the table above, the cost of each additional film in terms of food:
   a) remains constant.
   b) falls as more films are produced.
   c) increases as more films are produced.
   d) is meaningless because the cost of films cannot be expressed in terms of food.
12. In the table above the opportunity cost of increasing food output from 17 to 22 is:
   a) 17 films.
   b) 9 films.
   c) 26 films.
   d) 8 films.
13. Considering two straight-line demand curves through the same intersection point with a supply curve, which of the following statements is correct?
   a) The greater the elasticity of demand, the greater will be the consumer surplus.
   b) The greater the elasticity of demand, the smaller will be the consumer surplus.
   c) The greater the number of substitutes for a product, the greater will be the consumer surplus.
   d) The smaller the elasticity of demand, the smaller will be the consumer surplus.
14. A reduction in economic surplus in the society corresponds to:
   a) an increase in happiness in the society.
   b) a decrease in happiness in the society.
   c) a decrease in scarcity in the society.
   d) a decrease in money in the society.
15. A market failure/inefficiency exists when:
   a) the price established in the market equals the marginal cost of production.
   b) resources are optimally allocated.
   c) the price established in the market does not equate the marginal social benefit of a good and the marginal social cost of production.
   d) competitive markets' clearing price equals both the marginal social cost and marginal social benefits.

16. What does the law of diminishing marginal utility state?
    a) The amount of additional utility increases as successive units of a product are consumed.
    b) That the amount of total utility decreases at an increasing rate.
    c) That the amount of total utility decreases at a decreasing rate.
    d) The amount of additional utility decreases as successive units of a product are consumed.
17. If total utility is falling, what is also true?
    a) Marginal utility must be negative.
    b) Marginal utility must also be falling.
    c) Marginal utility must be greater than total utility.
    d) Marginal utility must be rising.
18. Which of the following statement is false?
    a) If total utility increases at a diminishing rate, it means that MU is diminishing.
    b) If the total utility reaches a point of maximum value, it means that MU is zero at that point.
    c) As long as MU is positive, it implies that the total utility is not at a maximum.
    d) If total utility is increasing, it must mean that MU is increasing.
19. If you are a risk-lover and have the chance to play a game where the odds of winning $1,000 are 0.3 and the odds of losing $1,000 are 0.7:
    a) you will be willing to play the game because of the uneven odds.
    b) you will be willing to play the game only if the game's odds are made even.
    c) you will be willing to play the game because the utility gained from playing is greater than the utility lost from losing on average.
    d) you may or may not play the game, depending on how you balance the love of risk with the probability of loss on average.
20. For the following gamble, with a probability of 20% that one wins $100 and an 80% probability of losing $25, Regis takes the gamble and Bryan rejects it. Which of the following is a possibility:
    a) both Regis and Bryan are risk-averse.
    b) both Regis and Bryan are risk-loving.
    c) Regis is risk-averse and Bryan is risk-neutral.
    d) Bryan is risk-averse and Regis is risk-neutral.
21. One explanation of risk aversion is that:
    a) the marginal utility of an extra dollar increases as more income is earned.
    b) there will always be some individuals willing to take risks while others will be unwilling to assume risks regardless of the payoff.
    c) the marginal utility of an extra dollar decreases as more income is received.
    d) the marginal rate of substitution between winning and risk is constant.
22. The law of diminishing returns:
    a) is a law about the technology of production.
    b) shows that output can always be expanded by adding more of the variable input.
    c) states that after a point, each additional unit of a variable input produces less than the previous unit.
    d) more than one of the above.
23. When marginal product of labour equals average product of labour at a given (positive) labour, then the average product of labour:
    a) is at a maximum.
    b) is positive and rising.
    c) is falling.
    d) negative but rising.
24. Which of the following statements is true?
    a) MC equals additional fixed costs due to additional output.
    b) MC equals ATC when ATC is at its minimum.
    c) As long as ATC is decreasing, MC must be increasing.
    d) MC equals ATC when ATC is at its maximum.
25. A perfectly competitive firm will produce output in the short run even if P<ATC because
    a) As long as P≥MC, it can minimize it losses.
    b) As long as P≥min AVC, it can minimize it losses.
    c) Fixed costs are avoidable in the short run.

d) Profits are positive.

26. All of the following statements are false except:
    a) the competitive firm's short-run supply curve is derived from its average total cost curve.
    b) a competitive firm will produce where the marginal cost of production is greater than average variable cost.
    c) the competitive firm's supply curve is that segment of the marginal cost curve lying above average variable cost.
    d) the competitive firm does not supply any output if it is making short-run losses.
27. Perfect competition can give rise to resources allocation efficiency because the economy is producing the goods at which
    a) P=ATC.
    b) P=MC.
    c) P=AFC.
    d) Profits are maximized.
28. Which of the following is the best example of a monopoly?
    a) A convenience store in downtown Winnipeg.
    b) The only gas station in a remote town.
    c) The manufacturer of Ivory soap.
    d) A Burger King in downtown Toronto.
29. At its current output a monopolist determines that its marginal cost is $25 and its marginal revenue is $30. The monopolist will maximize profits or minimize losses by
    a) Increasing price while keeping output constant.
    b) Decreasing price and increasing output.
    c) Decreasing both price and output.
    d) Increasing both price and output.
30. Which of the following is not an example of price discrimination?
    a) An electrician charging a higher hourly rate for customers who live in bigger houses.
    b) A taxicab charging more for longer trips.
    c) A movie theater charges a lower price to students and seniors.
    d) Hairdressers charge a higher price to women compared to men.
31. Which of the following is (are) true about oligopolists?
    a) They produce more and sell at a lower price than a monopolist when they act independently and do not collude.
    b) Set marginal revenue equal to marginal cost, even though marginal revenue depends on the other firms.
    c) They tend to produce the monopoly output and charge the monopoly price when they are able to collude.
    d) All of the answers are correct.
32. What is true at a Nash equilibrium?
    a) Output levels are produced at the levels where ATC is at its minimum.
    b) Both players are choosing the strategy that maximizes their joint payoffs.
    c) The players are colluding on their strategy.
    d) Neither player has an incentive to change strategies.
33. In a duopoly game, what characterizes a dominant strategy equilibrium?
    a) Both firms choose the same strategy.
    b) Both firms have a strategy that is best, no matter what their rival's strategy is.
    c) Each firm chooses the strategy of trying to dominate their rival.
    d) The firms' joint profits are maximized.
34. A non-tariff barrier includes which of the following?
    a) Quotas.
    b) Safety standards.
    c) Voluntary export restraints.
    d) All of the answers are correct.
35. Which of the following is not an argument that supports free trade?
    a) More likely that the Minimum Efficient Scale output can be produced and sold.
    b) Competition forces the firms to become more efficient.
    c) Competition offers the consumers more choices and lower prices.
    d) Free trade decreases the degree of sovereignty of a country.

Part II: Answer FIVE of the following SIX questions. If more than five questions are answered, only the first five attempted will be marked (Total=65 marks).

Question # 1 (13 marks)
Lucy loves to have chocolate bits and cookies as dessert. Suppose that the price of chocolate bit is 50 cents and the price of cookie is $1. An economist observes that Lucy usually has 8 chocolate bits and 6 cookies in a typical working day.

(i) Show Lucy's budget constraint for the consumption of chocolate bits and cookies in a day on a diagram (with chocolate bits on the vertical axis and cookies on the horizontal axis), with intercepts clearly marked, explaining how you arrive at the answers. What is Lucy's daily budget on dessert? (4 marks)
Ans: Income = $0.5*8 + 6*$1 = $10. Intercepts are Chocolate bits = 10/0.5 = 20; Cookies = 10/1 = 10.

(ii) What is the slope of the budget line? What does it mean? What would the MRS be in equilibrium (assume a positive amount of both goods is consumed)? (3 marks)
Ans: -P(Cookies)/P(Choco bits) = -1/0.5 =- 2.
It means that to purchase one more unit of cookies the consumer needs to give up 2 units of chocolate bits. At the optimum MRS = Slope of the budget line=-2.

(iii) Now suppose the dessert shop adjusts the prices of cookies and chocolate bits so that the price of cookies is now 90 cents and the price of chocolate bits is now 40 cents. What happens to the equilibrium MRS after the price changes in both products? Why? (3 marks).
Ans: The new MRS is, -90/40 = -2.25. Slope of budget is now steeper & equals- 2.25. MRS, the slope of IC, must therefore increase to become equal to the slope of the new budget line, if we have an optimum choice. MRS must have increased with these changes.

(iv) Instead of the price changes, now suppose that the government increases the consumer's income tax by 10%. Assume that Lucy will adjust her dessert budget in proportion to the tax change (i.e. to decrease the budget by 10%). Carefully illustrate on a diagram a possible new equilibrium where the first equilibrium is also illustrated (3 marks).
Ans: An equilibrium below the original one on a lower indifference curve. If one good is inferior, its consumption would have risen, while consumption for the other one would have decreased. Income now is $9, but prices are unchanged. Thus the new budget line is parallel and to the left of the old one.

Question #2 (13 marks)
Suppose the market for vocational training in Montreal is given by the following demand and supply equations:
Demand $\rightarrow$ P = 100 – 2Q Supply $\rightarrow$ P = 20 + 3Q

(i) Calculate the equilibrium market price and quantity. (3 marks)
Ans: P=$68, Q=16.

(ii) Suppose now that the government decides to subsidize training so that for the same price consumers now can enjoy 10 more units of training (at each price level). This is equivalent to a $20 subsidy per unit. Calculate the new market equilibrium and illustrate graphically. (3 marks)
Ans: P=$80, Q=20.
P=100-2Q $\Leftrightarrow$ Q=(100-P)/2,$\Leftrightarrow$ with subsidy Q=(100-P)/2+10$\Leftrightarrow$P=120-2Q; AND P=20+3Q.

(iii) Compute the consumer and producer surpluses in the new market equilibrium. (3 marks)
Ans: PS=$600, CS=$400.

(iv) Now suppose there is no subsidy, but instead there is a price ceiling of P = $60. Assume, however, the government guarantees producers a price that will allow them to produce all quantity demanded at the price ceiling. Compute the producer and consumer surpluses and illustrate graphically. Compare your answer with part (iii). (4 marks)

Ans: PS=$600, CS=$400.

Question #3 (13 marks)

The market for hamburgers is characterized by perfect competition. We have 100 firms in the market. Assume that a typical purely competitive firm has the schedule of the average and marginal costs given in the table below:

OUTPUT	AFC	AVC	ATC	MC
1	$300	$100	$400	$100
2	150	75	225	50
3	100	70	170	60
4	75	73	148	80
5	60	80	142	110
6	50	90	140	140
7	43	103	146	180
8	38	119	156	230

(i) At a price of 80$, how many units of output the firm will produce in order to maximize its profit. (3 marks)

The firm profit maximizing condition in a perfect competition is: MR=MC or P=MC

This occurs at an output of 4 units.

(ii) Calculate the firm's economic profit at the price of 80$?(3 marks)

Profit = (P-ATC) * Q

= (80-148)* 4

= - 272

(iii) Will the firm break-even at this price? If not, what will be this firm's break-even price? (3 marks)

The firm is not break-even at this price, it is making a loss.

The firm break-even price is reached at the min of the ATC curve, this price is therefore equal to 140.

(iv) Calculate the profit at a price of 180$. Based on your answer what do you expect will happen in the long-run in this industry. Assume the long-run ATC is the same as given in the table above. (4 marks)

At P=180.

Profit=(P-ATC) * Q

= (180 – 146) * 7

= 238.

Since the firm is making economic profit, this will induce new entry. Supply will increase and as a result price decreases until economic profits are again o. This occurs at the minimum of the ATC, at a price of 140.

Question #4 (13 marks)

Suppose you have $50 000 in wealth to invest in one year. You have the choice to invest all your wealth in company A or in company B or to split your wealth in half between the 2 companies.

Suppose that both companies A and B are very risky, in one year each company will either gives a zero return or 60% return on investment with an equal probability.

(i) Suppose you invest the whole 50 000$ in one of the companies (A or B). What is the expected value of your return in one year. (3 marks)

E= 50000*0.6*0.5 + 50000*0*0.5

E= 15000$

(ii) Suppose you invest half of your wealth in company A and the other half in company B. Assume that each company's risk is independent of the other. Draw a table indicating the possible outcomes for returns and the corresponding probabilities. (3 marks)

Outcomes	**Probabilities**
O returns companies A and B or $0	**25% or 1/4**
Company A, 0 return and B 60% return or $15 000 (25 000 * 0.6 = 15 000)	**25% or 1/4**
Company B, 0 return and A 60 % return or $15 000 (25 000 * 0.6 = 15 000)	**25% or 1/4**
60 % returns companies A and B or 30 000 (50 000 * 0.6 = $30 000)	**25% or 1/4**

(iii) Continuing from (ii) what will be the expected value of returns in one year? (3 marks)

E= 25000 * 0 * 1/4 + 25000*0.6*1/4 + 25000*0.6*1/4 + 50000*0.6*1/4

E= 7500+7500

E=15000

(iv) Assume that you want to invest a certain amount of wealth X in company A, and you are not restricted to your original budget of $50 000. What should X be in order to ensure an expected return of 21 000$ in one year. (4 marks)

Expected return = X*0.6*0.5 + X*0*0.5

21000 = 0.3 X

X= 21000/0.3

X= 70000$

Question #5 (13 marks)
Consider the following:
Demand: $P=110-5Q^d$ Marginal Revenue: $MR=110-10Q^d$
Production Costs: MC=ATC=10 for all output levels

(i) Find the equilibrium price, quantity and profit for a monopolist (3 marks).
Ans: MR=MC, so Q=10, P=60, π=500.

(ii) Suppose there are two firms A and B and each firm produces output Q_1 and Q_2, respectively. In the duopoly game, each firm sets its quantity as follows:
Firm A: $Q_1=(100-5Q_2)/10$
Firm B: $Q_2=(100-5Q_1)/10$
Assume both firms have the same cost functions, and therefore are identical firms. Assume that if the firms collude, they jointly behave as a monopolist. Notice that $Q_1+Q_2=Q^d$, and $P_1=P_2=P$. (Hint: From now on correct answers might involve fractions.)

(a) Find $Q_1=Q_2$ for each firm in the absence of collusion (round off all values to 2 decimal places) (1 mark).
Ans: Qa=Qb=6.67

(b) Find $P_1=P_2=P$ for each firm (1 mark).
Ans: 43.33, make sure you put in Qa+Qb to find the P.

(c) Find $\pi_1=\pi_2$ for each firm (1 mark).
Ans: π=222.31 for each firm.

(iii) Compare their individual profits under (ii), part (c) with the π under collusion. Should they collude or not? Explain (4 marks).
Ans: If they compete with each other, each earns $222.31. If they cooperate and split the monopoly profits (by cutting back output), then they split $500, which would yield them $250, hence incentives to collude. Collusion means both firms collectively behave as one firm, i.e., as a joint monopolist. Use your results from (i).

(iv) Would you expect these firms to be able to collude and behave like a monopolist, given that explicit written contracts to cut output and raise prices are illegal in Canada? Show that one firm can gain by cheating on the other firm by increasing its own output by 0.1 unit. Eventually, what quantities would the firms produce? (3 marks)
Ans: Let Qa=5.1, Qb=5, so firm A is cheating. P=59.5, Q=10.1, and πa=252.45, which means firm A will have incentives to cheat. Replace A with B, firm B will also have incentives to cheat. Notice that as both Q's rise due to cheating, they eventually go back to each producing 6.67 units.

Question #6 (13 marks)

Following a prolonged battle for market share, the 'notebook' industry had come down just to two rivals, Tosima & Gell, who make essentially a very similar line of products. If they each produce small output, a higher (average) price can be assured, which leads to higher profit than is obtainable by producing a larger volume.

More precisely, if each produces the 'smaller' volume, profit to each is 200, and if they each produce 'large', profit plummets to 60 for each. However if Toshima produces large while Gell has a small output, Gell is earning just 50, while Toshima gets away with a profit of 250, and vice-versa, if the share of output is the other way around.

(i) Set up the profit (or, pay-off) matrix in the chart below. (3 marks)

		Toshima	
		Small Quantity	Large Quantity
Gell	Small Quantity		
	Large Quantity		

(ii) Does each player have a dominant strategy? Explain. (3 marks)

(iii) Is there Nash equilibrium for this game? Explain fully. (3 marks)

(iv) Would a collusive agreement (as in a cartel) be beneficial to both parties? What level of output would they target in such a case? (4 marks)

Solution

(i)

		Toshima	
		Small Quantity	Large Quantity
Gell	Small Quantity	**200** / **200**	**250** / **50**
	Large Quantity	**50** / **250**	**60** / **60**

(ii) Yes, {large, large} is DSE. {For example, if Gell were to choose small, its profit is either {200 or 50} vis-à-vis {250, 60} by playing large, and vice-versa for Toshima.

(iii) Here (large, large) is also a Nash equilibrium. To see this, let Toshima produce small, Gell then faces {200, 250} by following the two actions respectively; it would choose large. When one of the players chooses large, the other follows suit. Hence there appears to be only one Nash equilibrium in pure strategies.

(iv) Evidently it is profitable to collude, and each to produce 'small' so that each earns 200 rather than just 60 as in parts (ii) & (iii). But there are incentives to cheat, which we do not have to go into at this stage.

The End