Concordia University
Department of Economics

ECON 201 – INTRODUCTION TO MICROECONOMICS
Fall 2010

COMMON FINAL EXAMINATION AND ANSWERS VERSION 1

FIRST NAME: _____ **LAST NAME:** _____

STUDENT NUMBER: _____

Please read all instructions carefully.

1. This is a three-hour exam (180 minutes). The questions are worth 150 marks altogether. It is a good strategy to spend one minute per mark for your answers (150 minutes) and spend the remaining time (30 minutes) to review your answers.

2. The exam consists of two parts.
   (i) Part I: 35 multiple-choice questions (70 marks);
   (ii) Part II: Choose 5 out of 6 long questions (80 marks).

3. Write your answers for the multiple-choice questions on the computer scan-sheet with a **pencil**. For Part II, write all your answers on this exam. Do not use additional booklets.

4. You are allowed to use a non-programmable calculator and a dictionary. You may use either pen or pencil to provide your answers for Part II.

Grades:

Part I: _____

Part II: _____

Total: _____

Part I: Multiple Choice Questions. Write your answers on the computer sheet in PENCIL (Total=70 marks).

1. Which of the following statements is (are) normative?
   a) If income increases, sales of luxury goods will fall.
   b) When minimum wages are raised, unemployment rises.
   c) As the price of compact discs falls, people will buy more of them.
   d) All of the above.
   e) None of the above.

2. Several students are discussing the concept of price elasticity while standing in line at the campus bookstore. Which of the following quotations describes an inelastic demand for a product?
   a) "I think the higher prices are really going to cut my overall spending on school supplies."
   b) "A price increase really scares me. It wouldn't reduce my purchases of school supplies very much, but I know for sure that I'll end up spending a lot more than I was before."
   c) "Movie tickets are so expensive these days, I would rather wait for the DVDs to come out."
   d) "Since business at my job has slowed down, my income is a lot lower than it used to be. Consequently, I won't be able to buy as much even if prices don't rise."
   e) "An increase in price will cause me to buy fewer school supplies, but I don't expect to see any change in my overall spending, one way or the other."

3. Production efficiency is achieved
   a) when all goods and services desired by consumers can be produced in the economy.
   b) when producing inside the production possibilities frontier.
   c) when the ability is gained to produce goods and services that are desired beyond the PPF boundary.
   d) when producing one more unit of one good cannot occur without producing less of some other good.
   e) None of the above.

4. The principle of increasing opportunity cost leads to
   a) a production possibilities frontier (PPF) that is bowed inward from the origin.
   b) a production possibilities frontier (PPF) that is bowed outward from the origin.
   c) an inward shift of the production possibilities frontier (PPF).
   d) an outward shift of the production possibilities frontier (PPF).
   e) both b & d are correct.

5. On Saturday morning, you rank your choices for activities in the following order: go to the library, work out at the gym, have breakfast with friends, and sleep late. Suppose you decide to go to the library. Your opportunity cost is
   a) working out at the gym, having breakfast with friends, and sleeping late.
   b) working out at the gym.
   c) zero because you do not have to pay money to use the library.
   d) not clear because not enough information is given.
   e) none of the above.

6. Which of the following is an example of a normative statement?
   a) Household consumption is the largest component of spending.
   b) Government spending rose in the 1990s.
   c) The business sector is the primary source of jobs.
   d) Households should save more.
   e) Both c & d are correct.

7. Goods A and B are complementary goods (in consumption). The cost of a resource used in the production of A decreases. As a result,
   a) the equilibrium price of B will fall and the equilibrium price of A will rise.
   b) the equilibrium price of B will rise and the equilibrium price of A will fall.
   c) the equilibrium prices of both A and B will rise.
   d) the equilibrium prices of both A and B will fall.

e) the equilibrium price of B will fall by more than the rise in the equilibrium price of A.

8. The price will rise and the equilibrium quantity might increase, decrease, or stay the same when the
   a) demand and the supply of a good both increase.
   b) **demand for a good increases and the supply of it decreases**.
   c) demand for a good decreases and the supply of it increases.
   d) demand and the supply of a good both decrease.
   e) demand for a good decreases by more than the increase in its supply.

9. The demand for hot dogs is given by $Q_D = 8000 - 7000P$, where Q_D is the quantity demanded and P is the price in dollars. The supply for hot dogs is given by $Q_S = 4000 + 1000P$, where Q_S is the quantity supplied and P is the price in dollars. Given these supply and demand relationships,
   a) at the equilibrium, the price = $0.50 and the quantity = 4500 hot dogs.
   b) at a price of $1, there is a shortage of 4000 hot dogs.
   c) at a price of $1, there is a surplus of 4000 hot dogs.
   d) both answers A and C are correct.
   e) none of the above.

10. Blue pens and black pens are close substitutes. The cross elasticity of demand for black pens with respect to the price of blue pens is _____.
   a)positive.
   b)negative.
   c)equal to 1.
   d)zero.
   e)not enough information to answer.

11. Pizza Hut pizza has more close substitutes than does food in general. The price elasticity of demand for Pizza Hut pizza is _____ the price elasticity of demand for food in general.
   a) not comparable to
   b) greater than
   c) less than
   d) the same as
   e) could be greater than, less than or equal to

12. The demand for movies is unit elastic if
   a) a 10 percent decrease in the price leads to an infinite increase in the quantity demanded.
   b) a 10 percent increase in the price leads to a 10 percent decrease in the quantity demanded.
   c) a 10 percent increase in the price leads to a 10 percent increase in total revenue.
   d) any increase in the price leads to a 1 percent decrease in the quantity demanded
   e) a 10 percent increase in the price leads to a 10 percent increase in the quantity demanded.

13. Suppose the price of good A falls and the consumption of good B rises. Assuming the law of demand holds, we can conclude that
   a) A and B are complements in consumption.
   b) A and B are substitutes in consumption.
   c) A and B are luxury goods.
   d) A and B are necessity goods.
   e) none of the above.

14. If total utility is increasing, then marginal utility must be
   a) decreasing at an increasing rate.
   b) negative.
   c) positive.
   d) increasing.
   e) increasing at an increasing rate.

15. If money income is reduced by half, and the prices of all goods consumed by the household are

reduced by half, the household's budget line will
a) shift outward.
b) become flatter.
c) become steeper.
d) shift inward.
e) not change.

16. If total product is at a maximum, then
a) average product must be falling and be equal to zero.
b) average product must equal marginal product.
c) marginal product must be greater than zero and must be falling.
d) average product must be rising and must lie above marginal product.
e) marginal product must be falling and be equal to zero.

17. If factor prices decrease,
a) a firm will move to a lower point on its long-run average cost curve only.
b) there will be no change in the cost curves in the long run.
c) there will be a downward shift in the long-run average cost curve but not in the short-run average cost curve.
d) both the long-run and short-run average cost curves will shift downward.
e) a firm will move to a lower point on both its long-run and short-run average cost curves.

18. Which of the following statements about the relationship between marginal product and average product is correct?
a) When average product exceeds marginal product, marginal product must be rising.
b) Average product equals marginal product when marginal product is at its maximum.
c) When marginal product is falling, average product is falling.
d) Average product equals marginal product at marginal product's lowest point.
e) When marginal product exceeds average product, average product must be rising.

19. If the average-product curve is rising, then the marginal-product curve
a) must lie above the average-product curve over this range.
b) can be either above or below the average-product curve, although it must be rising over the entire range.
c) must lie below the average-product curve over this range.
d) must be falling.
e) must lie above the average-product curve over this range and must also be rising.

20. Terri decides to play the lottery. She has a 1% probability of winning $10,000 and a 99% probability of winning zero. The average or 'expected' value of this game is:
a) $1,000.
b) $100.
c) $11.
d) $10.
e) $1.

21. 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. One can infer that:
a) Bryan is risk averse and Regis is risk neutral.
b) neither Regis nor Bryan are risk averse.
c) both Regis and Bryan are risk loving.
d) both Regis and Bryan are risk averse.
e) Regis is risk averse and Bryan is risk neutral.

22. Suppose demand is Qd=12-2P and supply is Qs=P. The value of consumer surplus is
a) $4
b) $8

c) $12
d) $16
e) $18

23. Sarah's demand curve for whiskey has the same slope as Pete's; however, it lies to the right of Pete's. An increase in the price of whiskey will cause
a) Sarah to incur a greater loss of consumer surplus than Pete will.
b) Pete to incur a greater loss of consumer surplus than Sarah will.
c) Sarah and Pete to incur the same loss of consumer surplus.
d) Sarah's demand curve to shift closer to Pete's.
e) nothing to change.

24. 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 ≥ AVCmin, it can minimize it losses.
c)profits are positive.
d)fixed costs are avoidable in the short run.
e)none of the above.

25. If a profit-maximizing firm's marginal revenue is less than its marginal cost, the firm
a)must be making an economic profit.
b)will decrease its output.
c)will increase its output.
d)must be experiencing excess profit.
e)will close down.

26. If firms enter a competitive industry, the
a)the new firms make negative profit.
b)**industry supply curve shifts outward.**
c)price of the product rises.
d)output of the industry decreases.
e)profits of the old firms stay the same.

27. The perfectly competitive firm's short run supply curve is the upward-sloping part of its
a)average variable cost curve, at all points above the point of AVCmin.
b)marginal cost curve, at all points above the point of AFCmin.
c)marginal revenue curve, at all points above the point of minimum average revenue.
d)marginal revenue curve, at all points above the point of minimum average total cost.
e)marginal cost (MC) curve, at all points above the point where MC = AVC.

28. In the short run, a monopolist with a loss of $50, along with marginal revenue of $20, and marginal cost of $15, should
a) shut down.
b) expand output and raise price.
c) expand output and cut price.
d) cut output and raise price.
e) behave like a perfect competitor.

29. Inefficiency results from monopoly because
a)there is no competition to force down costs.
b)high monopoly prices are not equitable.
c)a monopoly underproduces relative to the ideal at which society's marginal cost=marginal benefit.
d)it makes quality products that cost a lot.
e)all of the above.

30. A price-discriminating monopoly airline company would charge the highest price to
a)commercial users since they have lower price elasticity of demand than all.

b)industrial users because they are more price sensitive.
c)household users since they travel less on business.
d)students since they have a very high price elasticity of travel demand.
e)government employees since they don't pay for it from own pocket.

31. Monopolization of an industry typically occurs as a result of
a)existence of barriers to entry into the industry.
b)greed by the seller.
c)lack of interest by potential competitors.
d)lack of profit to be made.
e)inadequate regulation by government.

32. 'Excess Capacity' in a monopolistically competitive equilibrium is caused by
a) rival firms entering the industry and reducing the demand for the products of the firms already in the industry.
b)the fact that each firm attempts to maximize profits.
c)cost curves being higher than they are under perfect competition.
d)the waste associated with many slightly differentiated products serving almost the same purpose.
e)**the fact that each firm faces a demand that is not perfect elastic.**

33. Under monopolistic competition, long-run economic profits tend toward zero because of
a)economic inefficiency.
b)product differentiation.
c)the downward-sloping demand curve facing each firm.
d)the lack of barriers to entry.
e)excess capacity.

34. In a strategic choice situation, a 'dominant strategy' is one
a)that ensures the minimum cost of production.
b)that ensures the maximum cost of production.
c)that yields the best profit, regardless of the opponent's strategy.
d)that yields the lowest profit to the opponent.
e)that yields equal profit to the opponent.

35. For the following question, assume that in the U.S. the opportunity cost of coal is 1/2 barrel of oil and the opportunity cost of oil is 2 tons of coal. Assume that in China the opportunity cost of coal is 1/3 barrel of oil and the opportunity cost for oil is 3 tons of coal. Who has the comparative advantage in producing coal and who has the comparative advantage in producing oil?
a) China has comparative advantage in producing coal and the U.S. has the comparative advantage in producing oil.
b) China has comparative advantage in producing coal and also has the comparative advantage in producing oil.
c) The U.S. has comparative advantage in producing coal and China has the comparative advantage in producing oil.
d) The U.S. has comparative advantage in producing coal and the U.S. also has the comparative advantage in producing oil.
e) None of the above.

Part II: Answer FIVE of the following SIX questions. If more than five questions are answered, only the first five will be marked (Total=80 marks).

Question # 1(16 marks)

Suppose the prices of two goods are Px = $6 and Py = $8, and we observe the consumer to purchase exactly six units of good X and five units of good Y.

(i) Graph the resulting budget constraint on a diagram (with good Y on the vertical axis and good X on the horizontal axis), with intercepts clearly marked, explaining how you arrive at the answers. What is the consumer's total income? (4 marks)

Ans: Income = 6*$6 + 5*$8 = $76. Intercepts are y = 76/8 = 9.5; x = 76/6 or 12.67.

(ii) What is the slope of the budget line? What does it mean? (2 + 2 marks)

Ans: Px/Py = 6/8 = 3/4 = .75.

It means that to purchase one more unit of X the consumer needs to give up ¾ or .75 unit of good Y.

(iii) Now suppose the government puts a tax on good X of $2 per unit, resulting in increasing its price by the same amount. Do you expect the new equilibrium MRS to change from the equilibrium MRS in question (ii)? Why? (2 + 2 marks).

Ans: The new MRS is, 8/8 = 1. Slope of budget is now steeper & equals 1. 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. Therefore, I expect that MRS increases with this change.

(iv) Instead of the tax on X, suppose that the government increases the consumer's income by $10. Carefully illustrate on a diagram a possible new equilibrium where the first equilibrium is also illustrated (4 marks).

Ans: An equilibrium above and to the right on a higher indifference curve. Income now is $86, but prices are unchanged. Thus the new budget line is parallel and to the right of the old one.

Question #2(16 marks)

The demand function for amalgamated widgets is

$$P = 50 - \frac{Q}{2},$$

and the supply function is

$$P = \frac{Q}{2}.$$

(i) Find the equilibrium price and quantity; graph your solution, labeling the intercepts. (3 marks)

P = 25 and Q = 50

(ii) Find consumer surplus, producer surplus and the total social welfare. (3 marks)

CS =(50-25)*50/2=625

PS =25*50/2=625

TW = 1250

Suppose the government now decides to provide a subsidy of $5 per unit to the suppliers of widgets.

(iii) Find the new equilibrium quantity, the price paid by consumers, the payment per unit received by producers (including the subsidy and what consumers pay). (3 marks)

Q = 55

Price paid by consumers = 22.5

Payment per unit received by producers = 27.5

(iv) Given such a subsidy policy, find the new consumer surplus, producer surplus, the cost to the government and the deadweight loss. (4 marks)

CS = (50-22.5)*55/2=756.25

PS = 27.5*55/2=756.25

Costs to the government = 275

DWL = change in consumer surplus + change in produce surplus + change in government funds= 131.25+131.25-275=12.5

(v) Now assume that instead of subsidy the government has imposed a 50% ad-valorem tax to be paid by the suppliers? Find out the new equilibrium price and quantity. (3 marks)

Q = 40

P = 30

Question #3(16 marks)

You have $2000 to invest and are considering buying some combination of the shares of two companies, Bear Inc. and Lion Inc. Shares of Bear Inc. will pay a 5 percent return if the Liberals are elected, an event you believe to have an 80 percent probability; otherwise the shares pay a zero return. Shares of Lion Inc. will pay 8 percent if the Conservatives are elected (a 20 percent probability), zero otherwise. Either the Liberals or the Conservatives will be elected.

Round all of your answers to the nearest cent.

(i) If your only concern is maximizing your average expected return, with no regard for risk, how should you invest your $2000? (4 marks)

Bear Inc. pays 5% with an 80% probability, zero otherwise. The expected average return is 80% times 5%, or 4.00%.
Lion Inc. pays 8% with 20% probability, zero otherwise, an expected average return of 1.60%.
To maximize expected return, invest all your funds in Bear Inc.

(ii) Devise an investment strategy that guarantees at least a 3.0 percent return, no matter which party wins the election. (6 marks)

To achieve a guaranteed 3.0% return, you need a strategy that guarantees you at least $60.00 no matter who wins the election. Say, you invest X in Bear Inc. and 2000-X in Lion Inc.

If Liberals win, then 60< .05X, thus X should be greater than or equal to 60/.05=1200.
If Conservatives win, then 60<(2000-X)(.08), thus X should be smaller than or equal to 1250.
So, X should be smaller than or equal to 1250, but bigger than or equal to 1200. If you invest $1250 in Bear Inc. and $750 in Lion Inc, your return will be $62.50 (5% of $1250) if the Liberals win and will be $60.00 (8% of $750) if the Conservatives win.

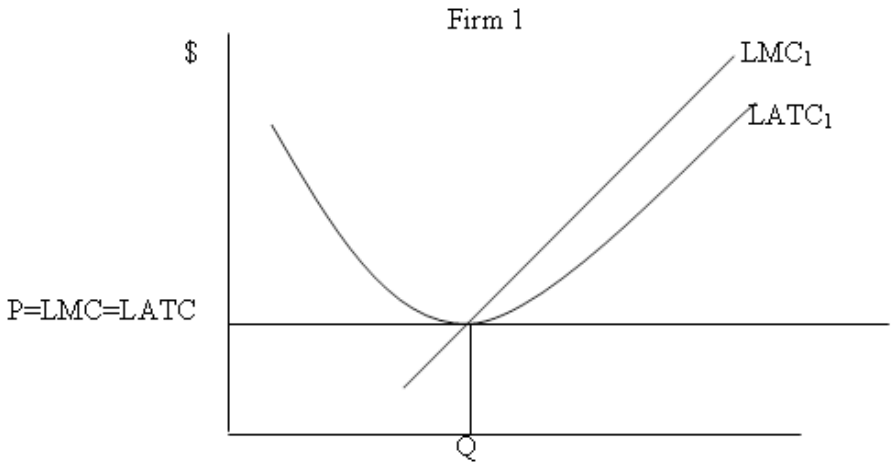
(iii) Devise an investment strategy that is riskless, that is, one in which the return on your $2000 does not depend at all on which party wins. (6 marks)

Let *D* be the number of dollars you invest in Bear Inc. and $2000 - *D* be the number of dollars you invest in Lion Inc.
If the Liberals win you receive a dollar return of 5% × *D*.
If the Conservatives win you receive a dollar return of 8% × ($2000 - *D*).
You want these two returns to be equal, so set 5% × *D* = 8% × ($2000 - *D*).
Manipulating this formula, we get *D* = (0.08 × 2000) / (0.08 + 0.05) = $1,230.77.
So invest $1,230.77 in Bear Inc. and $769.23 in Lion Inc. to guarantee the same return of $61.54 no matter who wins.

Question #4(16 marks)

The market for candles in the City of Montreal is characterized by perfect competition. Firms and consumers are price takers and there is free entry and exit. The total cost (TC) and marginal cost (MC) functions for each (identical) firm are given by $TC = (Qs)^2 + 2Q_s + 81$ and $MC = 2Qs + 2$. They can produce using only one size of plant that is described by these cost functions.

(i) Individual firm: Let P be unknown for now. Illustrate the long run equilibrium for a representative firm by drawing the MC, the ATC and the equilibrium price. (2 marks)



(ii) Individual firm: Let P be unknown for now. Solve for the individual firm's Qs. (2 marks)

Set MC=ATC, where ATC=TC/Q, this will yield Q=9.

(iii) Individual firm: Let P be unknown for now. Find the individual firm's MC at the equilibrium output. (1 mark)

Plug Q=9, MC=$20.

(iv) Individual firm: Let P be unknown for now. Find the individual firm's ATC at this output. (1 mark)

ATC=MC=$20.

(v) Individual firm: Find the identical P that each firm will charge. (2 marks)

P=MC=ATC=$20.

(vi) Industry: Given your P in (v), and the industry demand curve $P = 560 - Q_D$, find the industry equilibrium $Q_S=Q_D$. (2 marks)

$P=560-Q_D$, so $\$20=560-Q_D$, so $Q_D=Q_S=540$.

(vii) Given all of your answers above, how many firms are there in the industry? (2 marks)

Since we know each firm supplies Q=9, and total QS=540, so there are 60 firms.

(viii) What is the value of industry profits? (2 marks)

Since P=ATC, profits=$0.

Now, suppose that the popularity of candles falls.

(ix) In the short run, will the firms in the market earn profits, earn losses, or break even? Describe what will happen, no need for calculations. For simplicity, assume that the cost curves will not change. (1 mark)

Demand shifts inward, and in the short run, fixed costs cannot be avoided. Therefore, the existing firms will earn negative profits.

(x) In the long run, will the number of firms in the market increase or decrease? Explain. (1 mark)

Some firms in (ix) will exit, hence there will be fewer than 60 firms in the market.

Question #5(16 marks)

The market demand curve for an industry product is given by $P = 180 – (1/3)Q$ and marginal costs for each firm in the industry are constant at MC = $20.

(i) If the members of the industry decided to form a cartel and subsequently act like a monopolist, how much output would be produced in total and at what price would it be sold? What would be the industry profit? (4 marks)

MR=MC, $180-2Q/3=20$, so Q=240. Plug in demand, $P=180-240/3=100$.

Profit=(P-ATC)Q=(100-20)*240=19200.

(ii) Instead, suppose that there are but two firms who compete on the basis of the Cournot model. The reaction functions of these firms A and B are given respectively by $Q_A = 240 – (1/2)\ Q_B$, and $Q_B = 240 – (1/2)\ Q_A$. Solve for the profit maximizing output of each firm and the price in the market place. (6 marks)

By symmetry Qa=Qb, so Qa=240-Qa/2=160=Qb=Qa. Total output is Q=Qa+Qb=160*2=320.
So the price will be P=180-320/3=73.33

(iii) Compute each firm's profit in (b) above. Compute the DWL in the duopoly case. (6 marks)

$Profit_i$=(P-ATC)*Qi=(73.33-20)*160=8532.8
DWL=53.33*(480-320)/2=4266.4

Question #6(16 marks)

The domestic demand for coffee makers is given by P = 72 – 0.3Q. Domestic supply is given by P = 9 + 0.4Q. International supply is given by P = 30.

(i) Illustrate the market on a diagram, and compute the market equilibrium and the amounts supplied by domestic and foreign suppliers. (6 marks)

Demand: vertical intercept=72, horizontal intercept=240
Supply: vertical intercept=9, slope=.4
At P=30, Qd=140, Qs=52.5, imports=87.5

(ii) A tariff of $3 is now imposed by the domestic government on foreign supply. Illustrate graphically how the market changes and compute the new amounts supplied by the domestic and foreign suppliers. (6 marks)

New P'=33, Qd=130, Qs=60, imports=70.

(iii) On a new diagram illustrate the tax revenue resulting from the $3 tax, and compute its amount. (4 marks)

Tax revenue=3*70=210.

The End