NATIONAL UNIVERSITY OF SINGAPORE

EC2101 MICROECONOMIC ANALYSIS I

(SEMESTER I : AY2007-2008)

Time Allowed : 2 Hours

INSTRUCTIONS TO CANDIDATES

1. This examination paper contains 23 (20 Multiple Choice Questions and 3 Short Answer Types) questions and comprises 7 printed pages.

2. Answer ALL questions.

3. Use Bubble Form for the Multiple Choice Questions and the Answer Booklet for the Short Answer Types.

4. This is a CLOSED BOOK examination.

5. Each Multiple Choice Question is worth 2 marks; so (20 x 2) 40 Marks for MCQ and 20 Marks for Short Answer Types.

6. Total Marks for the paper is 60.

MULTIPLE CHOICE QUESTIONS

1. From 1970 to 1993, the real price of a college education increased, and total enrollment increased. Which of the following could have caused this increase in price and enrollment?
   a. A shift to the right in the supply curve for college education and a shift to the left in the demand curve for college education.
   b. A shift to the left in the supply curve for college education and a shift to the right in the demand curve for college education.
   c. A shift to the left in the supply curve for college education and a shift to the left in the demand curve for college education.
   d. None of the above.

2. Along any downward sloping straight-line demand curve:
   a. both the price elasticity and slope vary.
   b. the price elasticity varies, but the slope is constant.
   c. the slope varies, but the price elasticity is constant.
   d. both the price elasticity and slope are constant.

3. If X and Y are perfect substitutes, which of the following assumptions about indifference curves is not satisfied?
   a. completeness.
   b. transitivity.
   c. more is preferred to less.
   d. diminishing MRS.
   e. none of the above (All of the above assumptions are satisfied).

4. If indifference curves are concave to the origin, which assumption on preferences is violated?
   a. Diminishing marginal rates of substitution.
   b. Transitivity of preferences.
   c. More is preferred to less.
   d. Completeness.

5. Envision a graph with meat on the horizontal axis and vegetables on the vertical axis. A strict vegetarian would have indifference curves that are:
   a. vertical.
   b. horizontal.
   c. diagonal straight lines.
   d. right angles.
   e. upward sloping.

6. Consider two goods X and Y available for consumption. Assume that the price of X changes while the price of Y remains fixed. For these two goods, the price-consumption curve illustrates the
   a. relationship between the price of X and consumption of Y.
   b. utility-maximizing combinations of X and Y for each price of X.
   c. relationship between the price of Y and the consumption of X.
   d. utility-maximizing combinations of X and Y for each quantity of X.

7. Which of the following is true regarding income along a price consumption curve?

   a. Income is increasing.
   b. Income is decreasing.
   c. Income is constant.
   d. The level of income depends on the level of utility.

8. What is the advantage of the standard deviation over the average deviation?

   a. Because the standard deviation requires squaring of deviations before further computation, positive and negative deviations do not cancel out.
   b. Because the standard deviation does not require squaring of deviations, it is easy to tell whether deviations are positive or negative.
   c. The standard deviation removes the units from the calculation, and delivers a pure number.
   d. The standard deviation expresses the average deviation in percentage terms, so that different choices can be more easily compared.
   e. The standard deviation transforms subjective probabilities into objective ones so that calculations can be performed.

9. John Brown's utility of income function is $u = \log(I + 1)$, where I represents income. From this information you can say that

   a. John Brown is risk neutral.
   b. John Brown is risk loving.
   c. John Brown is risk averse.
   d. we need more information before we can determine John Brown's preference for risk.

10. The difference between the utility of expected income and expected utility from income is

    a. zero because income generates utility.
    b. positive because if utility from income is uncertain, it is worth less.
    c. negative because if income is uncertain, it is worth less.
    d. that expected utility from income is calculated by summing the utilities of possible incomes, weighted by their probability of occurring, and the utility of expected income is calculated by summing the possible incomes, weighted by their probability of occurring, and finding the utility of that figure.
    e. that the utility of expected income is calculated by summing the utilities of possible incomes, weighted by their probability of occurring, and the expected utility of income is calculated by summing the possible incomes, weighted by their probability of occurring, and finding the utility of that figure.

11. If price is between AVC and ATC, the best and most practical thing for a perfectly competitive firm to do is

    a. raise prices.
    b. lower prices to gain revenue from extra volume.
    c. shut down immediately, but not liquidate the business.
    d. shut down immediately and liquidate the business.
    e. continue operating, but plan to go out of business.

12. Relative to the Nash equilibrium in the Cournot model, the Nash equilibrium in the Bertrand model with homogeneous products

    a. results in the same output but a higher price.
    b. results in the same output but a lower price.
    c. results in a larger output at a lower price.
    d. results in a smaller output at a higher price.
    e. any of the above may result.

13. The relationship between pure-strategy Nash equilibrium and dominant-strategy equilibrium is that

    a. dominant-strategy equilibrium is a special case of pure-strategy Nash equilibrium.
    b. pure-strategy Nash equilibrium is a special case of dominant-strategy equilibrium.
    c. they are the same.
    d. there may not be a dominant-strategy equilibrium, but there always is a pure-strategy Nash equilibrium.
    e. they are mutually exclusive and exhaustive, in that a dominant-strategy equilibrium is the same thing as a mixed-strategy Nash equilibrium.

14. If the Battle of the Sexes game were played sequentially,

    a. one of the two pure strategy equilibria would become the only equilibrium.
    b. the two pure strategy equilibria would alternate in being the equilibrium seen in each round of the game.
    c. only the mixed strategy equilibrium would exist.
    d. only the dominant strategy equilibrium would exist.
    e. the equilibrium would not change.

Scenario 1 Consider the following game:

It costs each firm lakeside $1,500 per period to use filters that avoid polluting the lake. However, each firm must use the lake's water in production, so it is also costly to have a polluted lake. The cost to each firm of dealing with water from a polluted lake is $1000 times the number of polluting firms.

		Nessie, Corp.	
		Pollute	Don't Pollute
Lago, Inc.	Pollute	-$2,000, -$2,000	-$1,000, -$2,500
	Don't Pollute	-$2,500, -$1,000	-$1,500, -$1,500

15. Refer to Scenario 1. What kind of game is being played by Lago and Nessie?

    a. Battle of the Sexes.
    b. Prisoner's Dilemma.
    c. Beach Location.
    d. Stackelberg Output Choice.
    e. Cournot Output Choice.

16. Refer to Scenario 1. The equilibrium of this game, if played only once, is that

    a. both firms pollute.
    b. only Lago pollutes.
    c. only Nessie pollutes.
    d. neither firm pollutes.

17. La Tortilla is the only producer of tortillas in Santa Teresa. The firm produces 10,000 tortillas each day and has the capacity to increase production to 100,000 tortillas each day. La Tortilla has made a large profit for years, but no other firm has chosen to compete in the Santa Teresa tortilla market. La Tortilla has been able to deter entry because if other firms were to enter the market it would greatly step-up production and reduce price.

    a. La Tortilla's behavior is inconsistent with economic theory.
    b. La Tortilla has been successful because of its credible threat.
    c. La Tortilla behaves like a Stackelberg firm.
    d. La Tortilla must have other barriers to entry to protect its monopoly power.

18. A bumper-to-bumper warranty on a used car is a signaling device that

    a. identifies a high-quality car as a high-quality car, because putting such a warranty on a low-quality car would be prohibitively costly.
    b. disguises a low-quality car as a high-quality car, and thus makes it easier to sell.
    c. is necessary in order to sell a low-quality car at all. Without it no one would risk buying the car.
    d. isn't necessary if there is a mix of high-quality and low-quality cars in the market.
    e. helps sellers determine whether the buyer is truly looking for a high-quality car.

Scenario 2 Consider the information below:

For Group A the cost of attaining an educational level y is

$$C_A(y) = \$6,000y$$

and for Group B the cost of attaining that level is

$$C_B(y) = \$10,000y.$$

Employees will be offered \$50,000 if they have y < y*, where y* is an education threshold determined by the employer. They will be offered \$130,000 if they have y >y*.

19. Refer to Scenario 2. If the threshold educational level y* is set at 10,

a. only individuals in Group A will attain it.
b. only individuals in Group B will attain it.
c. individuals in both groups will attain it.
d. no individuals will attain it.
e. some fraction of individuals in each group will attain it.

20. Refer to Scenario 2. If the threshold educational level y* is set at 7,

a. only individuals in Group A will attain it.
b. only individuals in Group B will attain it.
c. individuals in both groups will attain it.
d. no individuals will attain it.
e. some fraction of individuals in each group will attain it.

SHORT ANSWER TYPES FOLLOW (SEE NEXT PAGE)

SHORT ANSWER TYPES

1. A firm's demand curve is given by P = 500 - 2Q. The firm's current price is $300 and the firm sells 100 units of output per week.

   a. Calculate the firm's marginal revenue at the current price and quantity using the expression for marginal revenue that utilizes the price elasticity of demand.

   [4]

2. Consider two identical firms (no. 1 and no. 2) that face a linear market demand curve. Each firm has a marginal cost of zero and the two firms together face demand:

   $$P = 50 - 0.5Q, \text{ where } Q = Q_1 + Q_2$$

   a. Find the Cournot equilibrium Q and P for each firm.
   b. Find the equilibrium Q and P for each firm assuming that the firms collude and share the profit equally.
   c. Contrast the efficiencies of the markets in (a) and (b) above.

   [4]+[2]+[2]=[8]

3. Two individuals, Dave and Bob, consume two goods, X and Y. The utility functions for the two individuals are given as:

   Bob's utility function:

   $$U_B = 30X^{0.25}Y^{0.75}$$

   Dave's utility function:

   $$U_D = 50X^{0.5}Y^{0.5}$$

   Bob is currently consuming 5 units of X and 10 units of Y. Dave is currently consuming 12 units of X and 8 units of Y. The current prices of X and Y are $10 and $15, respectively.

   a. Determine the marginal rate of substitution for each individual.
   b. In light of the information given above, have the two individuals achieved competitive equilibrium? Would it be possible to make one individual better off without harming the other?

   [3]+[5]=[8]

— END OF PAPER —