THE UNIVERSITY OF WESTERN ONTARIO
LONDON CANADA

G. Stirling **Economics 2150A – 003** **November, 2012**
Sample Mid-term #2

Part I: Multiple Choice (2 marks each)

1. Diminishing marginal returns occur when the total product function is
   A) decreasing.
   B) increasing at a decreasing rate.
   C) increasing at a constant rate.
   D) increasing at an increasing rate.
   E) decreasing at an increasing rate.

2. The slope of the isoquant can be expressed as
   A) the ratio of the input prices.
   B) the ratio of the inputs.
   C) the ratio of the marginal productivities of the inputs.
   D) the sum of the marginal productivities of the inputs.
   E) the product of the marginal productivities of the inputs.

3. If capital cannot easily be substituted for labour, then the elasticity of substitution is
   A) close to zero.
   B) negative.
   C) close to one.
   D) approaching infinity.
   E) any positive number

4. Suppose over time that a firm's production process undergoes capital-saving technological progress. This implies
   A) the isoquants corresponding to any particular level of output will shift outward from the origin and the $MRTS_{L,K}$ along any ray from the origin will increase.
   B) the isoquants corresponding to any particular level of output will shift outward from the origin and the $MRTS_{L,K}$ along any ray from the origin will decrease.
   C) the isoquants corresponding to any particular level of output will shift inward toward the origin and the $MRTS_{L,K}$ along any ray from the origin will increase.
   D) the isoquants corresponding to any particular level of output will shift inward toward the origin and the $MRTS_{L,K}$ along any ray from the origin will decrease.
   E) the isoquants corresponding to any particular level of output will shift outward toward the origin and the $MRTS_{L,K}$ along any ray from the origin will remain constant

5. With a linear production function, the $MRTS_{L,K}$
   A) declines as the firm substitutes labour for capital.
   B) is diminishing.
   C) implies upward-sloping, straight-line isoquants.
   D) is undefined.
   E) remains constant as the firm substitutes labour for capital.

6. If a good is an inferior good
   A) A consumer would not purchase it.
   B) The good would not enter the utility function.
   C) The income effect reinforces the substitution effect.
   D) The income effect works in the opposite direction to the substitution effect.
   E) There is only a substitution effect from a price change.

7. For a lender, an increase in the interest rate

   A) has a substitution effect greater than the income effect.
   B) has an income effect greater than the substitution effect.
   C) has an income effect that works in the opposite direction to the substitution effect.
   D) has an income effect that works in the same direction to the substitution effect.
   E) has a only a substitution effect.

8. If a consumer's preferences for two goods, say food and clothing, are such that as income decreases, consumption of food increases but consumption of clothing decreases, we can say that
   A) food and clothing are inferior goods.
   B) food is a normal good and clothing is an inferior good.
   C) food and clothing are both normal goods.
   D) food is an inferior good and clothing is a normal good.
   E) food is a necessary good and clothing is a luxury good.

9. Suppose when the consumer's income rises by 100%, the consumer's consumption of good x falls by 1%. We can infer that the consumer's income elasticity for good x is
   A) –1
   B) –100
   C) 1
   D) 0.01
   E) –0.01

10. Identify the truthfulness of the following statements.
    I. It is possible for an Engel curve to be positively sloped for a certain region of income and negatively sloped for another region.
    II. The income elasticity of demand for a normal good is negative.
    A) Both I and II are true.
    B) Both I and II are false.
    C) I is true; II is uncertain.
    D) I is false; II is true.
    E) I is true; II is false.

11. The substitution effect graphically is always denoted
    A) by movement along the original indifference curve, whereas the income effect is represented by a rotation of the budget line.
    B) by moving in the direction of the item that is becoming relatively more expensive.
    C) by moving in the direction of the item that is becoming relatively cheaper and the income effect is always denoted by a rotating budget line.
    D) by movement along the original indifference curve, whereas the income effect is represented by a parallel shift of the budget line.
    E) by movement along the original budget line, whereas the income effect is a movement along the indifference curve

12. Suppose the consumer's utility function is given by U(x,y) = xy + y ,and where
    A) Then the consumer must always consume both goods.
    B) The utility function is quasi-linear.
    C) The indifference curves are straight lines.
    D) Good x is a normal good.
    E) All of the above.

13. Let $U(x,y) = \sqrt{xy}$ with $MU_x = \frac{\sqrt{y}}{2\sqrt{x}}$ and $MU_y = \frac{\sqrt{x}}{2\sqrt{y}}$. Let I = \$100, P_x = \$5 and P_y = \$10 be the initial set of prices and income. Now, let P_x rise to \$10. What are the (approximate) substitution and income effects of this change in prices?
    A) Income effect = -3.1; Substitution Effect = -1.9
    B) Income effect = -2.1; Substitution Effect = -2.9
    C) Income effect = -1.3; Substitution Effect = -2.7
    D) Income effect = -2.7; Substitution Effect = -1.3
    E) Income effect = -1.3; Substitution Effect = -1.7

14. Consider a market with $Q^d = 240 - 6P$ and $Q^s = 2P$. What is the consumer surplus in this market?
A) 1,000
B) 500
C) 750
D) 300
E) 1,500

15. Consider a market with $Q^d = 240 - 4P + 2I$ and $Q^s = 6P$. Suppose that initially income is I = 60, and that income then increases to I = 80. What is the increase in consumer surplus from this increase in income?
A) 1300
B) 1368
C) 1421
D) 1472
E) 1468

16. Compensating variation is
A) the change in income necessary to hold the consumer at the final level of utility as price changes.
B) always the area under the demand curve and above the price paid.
C) the change in income necessary to make the consumer better off.
D) the difference in the consumer's income between the purchase of the original basket and the new basket at the old prices.
E) the change in income necessary to restore the consumer to the initial level of utility.

17. Let $U(x,y) = \sqrt{xy}$ with $MU_x = \frac{\sqrt{y}}{2\sqrt{x}}$ and $MU_y = \frac{\sqrt{x}}{2\sqrt{y}}$. Let I = \$100, P_x = \$10 and P_y = \$10 be the initial set of prices and income. Now, let P_x fall to \$5. What is the approximate compensating variation for this change in prices?
A) 29
B) 30
C) 36
D) 40
E) 44

18. We can derive a market demand curve for an item by
A) multiplying each individual's demand curve by the number of consumers in the marketplace.
B) subtracting the price of an item from the supply curve.
C) looking at how the equilibrium changes when we shift each individual's supply curve.
D) summing all of the quantities that would be demanded by individual consumers at different prices for that good and plotting the total quantities against price.
E) maximizing aggregate utility given aggregate income.

19. For a simple graph of a production function with Q on the y-axis and L on the x-axis, which of the following statements is true?
A) The slope of the production function at a specific point equals the marginal product of labor whereas the average slope of the production function equals the average product of labor.
B) The average product of labor is equal to the slope of the ray from the origin to the apex of the production function for all values of L.
C) The slope of the production function at a specific point equals the marginal product of labor whereas the slope between the origin and a specific point on the production function equals the average product of labor.
D) The average product of labor is never equal to the slope of the ray from the origin to the apex of the production function.
E) The slope of the production function must never be negative.

20. An isoquant represents
A) all combinations of inputs that produce a given level of output at the same cost.
B) all combinations of inputs that produce a given level of output.
C) all combinations of output that require the same levels of inputs.
D) all combinations of inputs that cost the same amount.
E) all combinations of inputs that produce the same cost.

21. Consider a production function of the form $Q = K^2L^2$ with marginal products $MP_K = 2KL^2$ and $MP_L = 2K^2L$. What is the marginal rate of technical substitution of labor for capital at the point where K = 5 and L = 5?
A) 5
B) 25
C) 50
D) 1
E) 15

22. Consider a production function Q = 3K + 4L, when L is graphed on the x-axis and K is graphed on the y-axis, the marginal rate of technical substitution is equal to
A) 4/3 and the isoquant is convex to the origin.
B) 4/3 and the isoquant is a straight line.
C) ¾ and the isoquant is a straight line.
D) 12 and the isoquant is convex to the origin.
E) 4/3 and the isoquant is concave to the origin.

23. Returns to scale refers to
   A) the increase in output that accompanies an increase in one input, all other inputs held constant.
   B) a change in a production process that enables a firm to achieve more output from a given combination of inputs.
   C) the number of units of increase in output that can be obtained from an increase in one unit of input.
   D) the percentage by which output will increase when all inputs are increased by a given percentage.
   E) a change in output due to a change in the type of inputs used.

24. Assuming a firm uses capital and labor to produce output, which of the following is not always a true statement?
   A) Assuming the marginal products of labour and capital are greater than zero, doubling the inputs of capital and labour will lead to greater output.
   B) Assuming the marginal products of labour and capital are less than zero, doubling the inputs of capital and labour will lead to less output.
   C) Assuming the marginal products of labour and capital are greater than zero, doubling the inputs of capital and labour will lead to double the output.
   D) Assuming the marginal products of labour and capital are greater than zero, doubling the input of capital and keeping the input of labour constant will lead to greater output.
   E) Assuming the marginal products of labour and capital are greater than zero, doubling the input of labour and keeping the input of capital constant will lead to greater output.

25. If leisure is a normal good, when the wage increase if the income effect is greater than the substitution effect
   A) The supply of labour is upward sloped.
   B) The demand for labour is upward sloped.
   C) The individual values their time less highly.
   D) The supply of labour is constant
   E) The supply of labour is downward sloped.

26. With a linear production function, the MRTS
   A) declines as the firm substitutes labour for capital.
   B) remains constant as the firm substitutes labour for capital.
   C) implies upward sloped isoquants.
   D) cannot be defined.
   E) is increasing along any ray through the origin.

27. Suppose a firm's production function can be specified as $Q = 10KL$. This exhibits
   A) Constant returns to scale.
   B) Decreasing returns to scale.
   C) Increasing returns to scale.
   D) Upward sloped isoquants.
   E) Linear isoquants.

28. The income effect associated with a change in price describes
   A) The change in the level of consumption as a result of the consumer's change in utility, holding price constant.
   B) The change in the level of consumption, holding utility constant.
   C) The change in income needed to continue to consume at the same levels.
   D) The change in consumption due to a change in relative prices.
   E) The change in consumption due to change in the budget constraint.

29. Under what circumstances is the demand curve upward-sloping?
   A) When the good is normal.
   B) When the good is inferior and the substitution effect dominates the income effect.
   C) When the good is inferior and the income effect dominates the substitution effect.
   D) When the good is normal and the substitution effect dominates the income
   E) When the good is normal and the income effect dominates the substitution effect.

30. Consumer surplus is defined as
   A) The difference between the discounted price and the original price.
   B) The difference between the actual cost and the original price.
   C) The difference between the consumers' income and the original price.
   D) The difference between the income effect and substitution effect.
   E) The difference between the maximum amount a consumer is willing to pay and the amount they must actually pay.

Sample Midterm 2 solutions **Nov 201#**

1. B
2. C
3. A
4. C
5. E
6. D
7. C
8. D
9. E
10. E
11. D
12. B
13. B
14. D
15. B
16. E
17. A
18. D
19. C
20. B
21. D
22. A
23. D
24. C
25. E
26. B
27. A
28. A
29. C
30. E