

This was a difficult exam. That said, some people did very well.

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1. The french-fry consumption elasticity of percent body fat is (choose the correct answer that is most informative)
  - A) The percent change in one's consumption of french fries divided by the percent change in one's body fat
  - B) The percent change in one's body fat divided by the percent change in one's consumption of french fries
  - C) The percent change in one's consumption of french fries divided by the percent change in one's body-fat percentage.
  - D) The percent change in one's body-fat percentage divided by percent change in one's consumption of french fries

The answer is D. This elasticity is a measure of how responsive **one's percent body fat** is to an increase in **one's consumption of french fries**.

So it is the percentage change in one's percent body fat divided by the percent change in one's consumption of french fries.

It is how responsive, in percentage terms, one's percent body fat is to a 1% increase in one's french fry consumption.

For example if it is 1.2. It would say a 1% increase in one french fry consumption will increase one's percent body fat by 1.2% (the percent change in a percentage)

Note the difference between B and D.

If it 6, I would avoid french fries.

2. Given Frank's demand schedule for chocolate bars per week:

Price(\$)	Quantity Demanded
1	15
2	12
3	9
4	6
5	3

What is Frank's price elasticity of demand when price increases from \$2 to \$4?

- A) -1  
B) -3  
C) -1/3  
D) -2
3. George makes candy bars. Inputs are chocolate,  $c$ , and sugar,  $s$ . The constant  $MRTS_{cs} = 3/4$ . George will use both chocolate and sugar to produce his candy bars
- A) Unlikely  
B) Likely

Unlikely (it is very unlikely he will use both inputs)

We discussed this question in the review session and it was on a previous exam. Since the MRTS is a constant, the inputs are perfect substitute in the production of candy. That is, the isoquants are straight lines. So, the firm will likely use only one input, the one that is cheaper in productivity terms.

Draw a representative isoquant and find the cost minimizing input combination for different sets of input prices. You will get a corner solution (use only one input) unless the isocost lines have the same slope as the isoquant, in which case it does not matter which input combination one uses.

We spent a lot of time in the review session discussing the comparable case for a consumer. That is, a situation where the two good are perfect substitutes (straight line indifference curves).

The majority of got 3 wrong, a shame since it was on a previous exam.

4. Assuming no technical progress, at every level of output, no point on a short run average cost curve can lie below the corresponding point on the long run average cost curve.
- A) True
  - B) False

True

See the graphs at the end of the notes on the theory of the firm.

Put simply, in the LR one has more flexibility in terms of how to produce a given amount of product: one can vary the levels of all the inputs. In contrast, in the SR one can vary the levels of only some of the inputs. When one has fewer ways of doing something, it cannot be cheaper to do it than when has more ways of doing it.

Said another way, giving you additional ways to accomplish a goal can't make it more costly for you to achieve this goal.

My example in class was studying for this exam and being able to choose how many hours you can spend on old exams. Being able to choose how many hours you spend on old exams cannot make it more expensive to achieve a given grade compared to a situation where you were required to spend a specific number of hours studying old exams.

5. Economists have found that in the historical price range for gasoline, the price elasticity of demand for gasoline in the short term is \_\_\_\_\_. However, in the long run people have more time to adjust more to a price change, meaning the long run price-elasticity of demand for gasoline is more \_\_\_\_\_ than the short run elasticity.
- A) inelastic; elastic
  - B) inelastic; inelastic
  - C) elastic; inelastic
  - D) elastic; elastic
6. Assume a world of only two goods: hamburgers and hot dogs. At Mabel's current consumption levels, the maximum amount of hot dogs she would be willing to give up in order to obtain one more hamburger is her
- A) Marginal rate of substitution of hot dogs for hamburgers
  - B) Marginal rate of substitution of hamburgers for hot dogs

B. the marginal rate of substitution of hamburger for hot dogs is how many hot dogs Mabel will give up to get one more hamburger.

The marginal rate of substitution of hot dogs for hamburgers is how many hamburgers she would give up to get another hot dog.

These two MRS are the inverse of each other. That is if the first one is 3 (she would give up 3 hot dogs to get another hamburger), she would give up a third of a hamburger to get another hot dog.

7. A competitive firm is maximizing its profits at the output level where (choose the answer that is both correct and most informative)
- A) Total revenue minus total cost takes its largest value.
  - B) Price equals marginal cost
  - C) Total revenue minus total cost takes its largest value, a value that could be positive, negative, or even zero.
  - D) The firm is doing the best it can, given its constraints.

The answer is C. A is correct but not as informative as C. The same for D. B is correct but only if profits are maximized at a positive amount of output, so not always true at the profit maximizing level of output.

8. So, you live in the socialist state of Sweden where everyone consumes the same bundle of goods, so it is impossible for you to increase or decrease your consumption of goods. You also have HIV -- you should not have taken that sex trip to Thailand. The good news is that there is medicine that will eliminate all of your symptoms and extend your life. You need to take it every day and the dose is 10 drops a day. If you take more the medicine is ineffective and if you take less it is ineffective. The medicine has no taste and no side effects. You choose to take the medicine in the proper dose. The government pays for it: there is socialized medicine. Are all of the following statements correct?
- I. Given that you live in Sweden, your utility can only take two levels.
  - II. The medicine, in its proper dose, is a good.
  - III. Thinking about your preferences and not your constraints, with goods on the vertical axis and medicine dosage on the horizontal axis, your indifference curves are horizontal lines except at bundles that include medicine in doses of 10 drops.
  - IV. Thinking about your preferences and not your constraints, with goods on the vertical axis and medicine dosage on the horizontal axis, your indifference curves are horizontal lines except at bundles that include medicine in doses of 10 drops. In addition, when a bundle includes medicine in a dose of 10 drops, that bundle is separated from all of the other bundles it is indifferent with; that is, there is a gap between it and the other bundles it is indifferent with.
- A) No
  - B) Yes

Yes (with a qualification I need to fix wrt I.)

This is a difficult question, but a question we discussed in class. I drew an indifference curve on the overhead.

Your indifference curves are horizontal lines with a gap at 10 drops, so III. is correct.

II. is definitely correct. If taking was not a good, you would not have taken it.

One can experience only two states of the world (with or without the correct dose) and in both you have HIV, So I. is correct; utility can take only two levels.

What about IV.? When you take the meds in a dose of 10 drops, your utility, holding goods consumption constant, jumps—you are better off. So that bundle is on a different indifference curve than all the other bundles with the same amount of goods. So, to be on the same indifference the bundle with 10 drops has to have less goods. So, IV. Is correct.

Draw a representative indifference curve.

You have no choice over the bundle of goods you consume so your utility is only affected by whether you take the medicine in a dose of 10 drop or do not take in a dose of 10 drops (which includes zero drops). So I. is correct, your utility can take only two levels. Or, at least, that is the way I interpreted things. I assumed Sweden was producing the maximum amount they could and then equally dividing it amongst its citizens, so the level of goods was fixed. A student pointed out to me that one did not have to assume consumption of goods was always the same, and, in that case, I is not correct. I will fix this by eliminating I. as an option.

9. If all prices change by the same proportion (all increase or decrease by the same percent), income remaining constant, there will be an "income effect" but no "substitution effect."  
A) True  
B) False

True

The slope of the budget line does not change (relative prices are unchanged), so there is no substitution effect. But your budget line shifts out (in) if all prices proportionally decline (increase).

For example if you income stays the same in dollar terms but all prices increase by 10% your real income falls (you will end up on a lower indifference curve) while relative prices remain the same.

You will react to this and change your bundle, not because relative prices have changed (they have not) but because your real income (purchasing power) has dropped.

10. Assume a world of only two goods, x and y, and assume x and y are perfect substitutes (the marginal rate of substitution between them is a constant). George has a positive income and no control over the prices of x and y. If the price of good y decreases, George will buy more of good y.
- A) There is not enough information given to determine whether he will buy more of good y.
  - B) Definitely true
  - C) Definitely false

X and y are perfect substitutes, so the indifference curves are straight lines. This question is basically the same as question 3, but in terms of consumption rather than production, and what we discussed in detail at the review session.

The individual will consume only one of the two good, not both. If George is already consuming only good y and its price decreases he will continue to consume all y, just more of it.

If he is currently consuming all x because x give him more utility per dollar spent, then if the price of y decreases, but not much, he will likely still consume only x.

But if the price of y decreases a lot he will switch completely from x to y.

So, we do not know what will happen to the consumption of y unless we have a bunch more information.

11. If a competitive firm is producing its level of output at minimum cost, it is necessarily maximizing its profits.
- A) True
  - B) False

False, it might not be producing the profit maximizing level of output.

12. Given Joe's demand function for milk,  $Q^d = 40 - 2P$ , for prices less than \$19, Joe is, in elasticity terms, always more responsive to a \$1 price increase the higher the starting price.
- A) False
  - B) True

True

Note the difference between this question and the other Joe question. When price is \$20 demand is zero, so increasing the price above \$20 (e.g. from \$20 to \$21 or from \$24 to \$25) has no effect on demand. So at high prices the elasticity is zero.

But for initial prices below \$20, the elasticity increases (in absolute terms) as the initial price increases.

13. Which of the following best explains a single-payer health-insurance system?
- A) All health care is controlled by the government, which pays for all health care expenses and employs all health-care workers
  - B) The government provides a subsidy for those individuals who are not able to afford private health insurance
  - C) The government provides health insurance for all of its citizens
  - D) The government collects taxes to provide health insurance for those that pay taxes

C) As I said in class when we discussed Obamacare, I would ask about health-care systems.

A single-payer system is one where one party insures everyone, so pays all covered health-care expenses. Obamacare is not a single-payer system. Under Obamacare there will be many insurance companies. Obamacare simply requires everyone to have insurance.

For more details see the readings from the book on Health care. They are on my web page for the course. We discussed all of the above in class.

14. Assume for the purposes of this question, that people in China have the same preference as people in the U.S. Also assume the same state of technical knowledge in both countries. We observe that the production of meals in China uses relatively less meat than the production of meals in the U.S., so relatively more labor -- the production of Chinese food tends to be labor intensive. Which explanation is most correct and most explanatory?
- A) With meat on the vertical axis and labor on the horizontal axis, the isocost lines for meal production are flatter in China because meat is relatively more expensive than it is in the U.S. (labor is relatively cheaper). This causes the cost-minimizing input combination to be more labor intensive (less meat intensive).
  - B) Relative input prices differ between the two countries.
  - C) In China the price of meat relative to the price of labor is higher than it is in the U.S.
  - D) In the U.S. the price meat relative to the price of labor is higher than it is in the China.

There is an isoquant for producing meals, meat on the vertical axis and labor on the horizontal axis. Think about producing three meals a day, so, in each country, we want to produce the three meals at minimum cost. (Remember that preferences are the same in both countries.). Compared to the U.S., in China labor is relatively abundant, so the price of meat divided by the price of labor (the wage rate) will be much higher in China. Said another way, the isocost lines are much flatter in China. Therefore the cost minimizing input combination for producing a meal will be more labor intensive in China.

Putting it simply, we throw a big steak on the BBQ but in China they are more likely to spend a

bunch of time (labor) cutting a small piece of meat into a lot of pieces. Typical Chinese dishes are more labor intensive than typical American dishes. See the lecture notes for more details.

If I were to ask this question again, I would simplify it by adding one cares what they eat as long as they eat a meal. Adding this assumption does not affect the answer but might make the question easier to figure out.

15. In the Fred lectures, If Fred is being paid \$ $x$  a mile to ski, and currently it is costing her more than \$ $x$  to crank out her last mile, to increase her revenue she needs to ski more.
- A) True
  - B) False

One student said I was mean because I asked this question. It was on a previous exam; so, if I am mean, I am less mean than when I first asked it.

Note the question asks about revenue, not profits.

16. Price is on the vertical axis and quantity demanded is on the horizontal axis. There is a point on this demand curve where the price-elasticity of demand is -1. Given all this, all of the following statements are correct except
- A) On the part of the demand curve to the right of this point, the price-elasticity of demand is inelastic.
  - B) On the part of the demand curve to the left of this point, a price increase will decrease revenue from the sale of the product.
  - C) The slope of the demand curve varies, but the price elasticity of demand remains a constant.
  - D) On the part of the demand curve to the left of this point, the price-elasticity of demand is elastic.
  - E) The slope of the demand curve is a constant, but the price elasticity of demand varies.

17. "Adverse Selection:" Choose the answer that is both correct and most general
- A) The used-car market demonstrates adverse selection because the seller knows more about the quality of the car offered for sale than does the potential buyer, so one ends up with a market for "lemons."
  - B) Adverse selection is caused by asymmetric information between buyers and sellers (one side knows more than the other). It results in a market failure in that some efficiency increasing trades do not take place because of this informational asymmetry.
  - C) Adverse selection is what causes the free-market for health insurance to be inefficient (fail). The adverse selection results because potential buyers know more about their health status than do the insurance companies. K and W talk about how it leads to an "adverse-selection death spiral" for private insurance.

Most people got this one correct, so heard my discussion of healthcare. Then why did a lot of people get the other question about healthcare wrong???

18. Marc is a therapist in Boulder (most people in Boulder are either therapists, seeing a therapist, or both.). Marc is trying to help as many people as he can, but he also prefers more income to less income. The more he charges per hour, the fewer patients he will have. His wife has said he cannot work more than 60 hours a week: the rest of the time he needs to stay at home and take care of the kids while she goes skiing. Marc also can't make himself turn away any potential patient who is willing to pay his hourly rate. Given that he cannot turn away potential patients who are willing to pay his hourly rate, and given the constraint imposed by his wife, what hourly rate should he charge. (Choose the best answer.)
- A) None of the other answers.
  - B) The hourly rate at which the slope of the demand function for his services (rate on the vertical axis) is -1.
  - C) The maximum hourly rate at which only sixty hours of his time are filled a week. And, this rate might be on the elastic or inelastic part of the demand function for his services.
  - D) The hourly rate where the rate elasticity of demand for his services is -1.

I live on a street with about 12 houses. At one point, four therapists lived on my street.

19. All I care about is publishing research papers and going skiing; I like doing both. CU pays me \$100 a week (my income). Skiing costs \$10 a trip, and journals charge \$15 to publish my papers - they always accept them. It takes me 6 hours to do a ski trip and 4 hours to write a paper. I have 40 hours a week to allocate to writing and skiing, and can spend my whole \$100 on these two activities. Which of the following statements is both correct and most informative?
- A) I might ski 4 times and write 4 papers.
  - B) I might ski 3 times and write 6 papers.
  - C) I might ski 7 times
  - D) I might ski 1 time and write 7 papers

95% got this question correct.

20. Assuming the model (theory) of consumer behavior taught in class and in the book, and assuming all commodities are goods, reducing an individual's budget set will always make the individual worse off.
- A) True
  - B) False

False

Not necessarily. If initially I am only consuming good x and the budget set is reduced by increasing the price of good y, that price increase will not make me worse off.

21. Imagine that you have the same ranking of bundles that I do. Further assume that we face the same constraints. So, we have the same utility maximizing bundle. Given this, are we necessarily equally happy?
- A) No
  - B) Yes

22. You are in the business of skinning cats. In explanation, they sell for a good price to BBQ joints. It takes one cat with skin to produce one un-skinned cat. In addition, it takes knives (they come in different shapes and sizes, and, *ceteris paribus*, more is better) and labor to skin a cat. Holding constant the number of cats with skin, the current marginal rate of technical substitution of labor for knives is in the production of skinned cats is
- A) how much units one can reduce labor and still produce the same number of skinned cats when the number of knives are increased by one
  - B) how many knives one can give up and still produce the same number of skinned cats when labor is increased by one unit

This question is somewhat language gubbered. The issue is what one calls a cat without skin. Note that in the body of the question I refer to a cat without skin as an “un-skinned cat” which was my first confusing term for a cat without skin. But it could also be interpreted as a cat that as yet to be skinned. (Note that the T.A.s who used to be English majors in college missed this faux pas). In the answers I called cats without skin, “skinned cats” which is equally confusing.

Next time I will say “cats with skin” and “cats without skin.”

B)

The marginal rate of technical substitution of labor for knives is how many fewer knives one needs if one increases labor by one unit, holding constant the number of cats initially with skin. It is the absolute value of the slope of isoquant with labor on the horizontal axis and number of knives on the vertical axis.

There are three inputs but one is essential to produce one cat without skin, a cat with skin.

People are not clear about the difference between the  $MRTS_{lk}$  and the  $MRTS_{kl}$ . Ditto for  $MRS_{xy}$  and  $MRS_{yx}$

23. Wanda Sue works in downtown Denver, and does not like commuting: *ceteris paribus*, the longer her commute the worse off she is. But, she prefers to live in a big house: *ceteris paribus*, the bigger the better. Her wtp for a house that is a 100 square feet bigger is how many more minutes a day she would be willing to commute to get the additional 100 square feet. Given this wtp, she definitely will not live in downtown Denver.

- A) True
- B) False

False

If I ask this again, I will add that houses get larger as one moves farther from downtown.

She might live in downtown.

24. The demand for a good is perfectly price inelastic if (choose the alternative that is both correct and most informative):

- A) It is necessarily an essential good.
- B) It has many substitutes
- C) At every price the same amount is demanded.
- D) It has few substitutes.

25. Define, for the purposes of this question, "conservatives" as people who want less government intervention in the economy and "liberals" as people who want more intervention. Is the following statement a fair characterization of a difference between liberals and conservatives with respect to the market economy? "Liberals believe market failures are more significant and pervasive than do conservatives."

- A) True
- B) False

26. A fixed input is one:

- A) That can be used for one thing only.
- B) Whose quantity cannot be changed in the short run.
- C) That exists in nature and there is only so much of it.
- D) That can never produce more or less in any period.

27. Jim is a stalwart Republican; he works a steady job, has a wife and two kids, and lives in the suburbs. He hates Obamacare. Given this, for Jim, every state-of-the-world without Obamacare is ranked higher than every state-of-the-world with Obamacare. (Choose that answer that is both correct and most informative.)
- A) Definitely false
  - B) Possible, but highly unlikely.
  - C) Definitely true

B: It is possible but unlikely. If it were true it would mean that Obamacare was so bad that, for example starving but no Obamacare would be better.

If it were true, Jim would give up everything he values not to have Obamacare. Would you give up everything to not have Obamacare? Maybe but not likely.

The important phrase here is "Given this" Just because he hates Obamacare does not imply that every state-of-the-world without Obamacare is ranked higher than every state with it.

The wording on this question was too subtle. If I ask this question again I will modify it.

28. If a competitive firm is maximizing its profits, it is necessarily producing its chosen level of output at minimum cost.
- A) True
  - B) False

True, profit maximization implies that the profit maximizing level of output is produced at minimum cost. If it wasn't, total profits could be increased by producing it at a minimum cost.

29. You are a child prodigy in mathematics and economics, and you have been known to eat candy. Your parents leave you in a candy shop and give you enough cash for you to purchase however much candy your heart desires. The catch is that you must return all unspent money to your parents and you must eat all the candy you buy within the same day. Additionally, you may only purchase candy with this money. Your parents don't really care how much you spend or how much you eat. Would you necessarily spend all the money you have on candy? Why?
- A) No, because I may prefer choice bundles including other purchases in addition to candy.
  - B) No, because too much candy can potentially be a bad.
  - C) Yes, because my allowance is "use-it-or-lose-it," I might as well spend everything.
  - D) Yes, because the optimal choice is to exhaust my budget constraint if more is better.

30. Which of the following definitions best describes the substitution effect?
- A) The change in an individual's demand for a good due to the change in the price of that good.
  - B) The change in an individual's demand for a good due to the change in real income caused by the change in the price of that good.
  - C) The fact that when a price changes the individual makes substitutions
  - D) The change in an individual's demand for a good due to the relative price of that good changing, holding utility constant.

31. According to the consumer theory we have been learning in class, is it fair to say that, "An individual's choices are constrained by their preferences?"
- A) No
  - B) Yes

If preferences are exogenous (you have no control over them), then it is fair to say that you are constrained by your preferences.

32. Given Joe's demand function for milk is,  $Q^d = 40 - 2P$ , Joe is, in elasticity terms, always more responsive to a \$1 price increase the higher the starting price.
- A) False
  - B) True

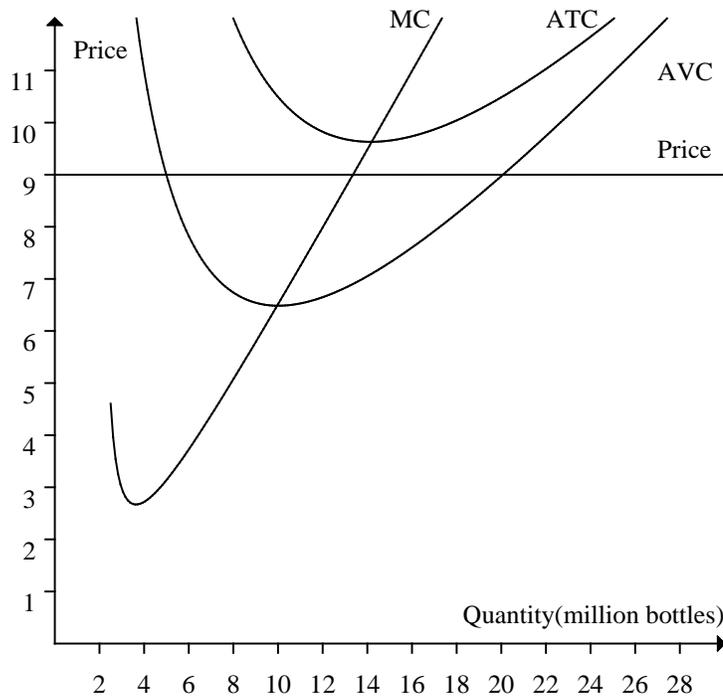
False, if, for example, price increases from \$22 to \$23 there is no affect. See the other Joe question.

33. Basic consumer theory, as we learned in class, assumes that individuals rank goods not bundles.
- A) True
  - B) False

False: Most of you got this correct, and I was pleased.

34. Everyone is rational in the economic sense of the word. Given this, if you and I have the same preferences and face the same constraints, we will both choose the same bundle.
- A) True
  - B) False

35. An international corporation that produces alcoholic beverages, Happy Hour Inc., has already invested in the capital to produce a new brand of mass-market wine, Château d'Eugène. The firm's cost structure is illustrated below. Due to heavy competition with other producers of similar wines, the price of Château d'Eugène is set by the market at \$9.00/bottle.



Analysts have forecasted that the mass-market wine market will continue to be highly competitive in the long run. *Ceteris paribus*, which of the following scenarios is the most likely to occur, given the information above?

- A) Happy Hour Inc. will suffer a loss on Château d'Eugène. However, they will continue to produce, but also discontinue the brand at some point in the future.
- B) Happy Hour Inc. will turn a profit on Château d'Eugène and expand the brand in the future.
- C) Happy Hour Inc. will immediately cease the production of Château d'Eugène.
- D) Happy Hour Inc. will break even on Château d'Eugène, neither turning a profit nor incurring a loss.

36. After years of saving Esteban achieves his life's dream of opening a gourmet pie bakery. He bakes the pies and sells them for \$25 each -- they are big and tasty pies. Initially, Esteban is the only employee and must do all of the baking. On his own Esteban can bake 20 pies every day. After several months Esteban's business is doing well enough that he is able to hire one more employee. Esteban is very pleased to discover that with himself and the second person, they, together, can bake 42 pies a day. Holding all else constant, what is the marginal product of labor associated with the second person. And, is the marginal product of labor increasing or decreasing? (Remember that pies sell for \$25 each.)
- A) 22 pies and decreasing
  - B) 550 dollars and decreasing
  - C) 22 pies and increasing
  - D) 550 dollars and increasing
37. "The marginal production of labor in the production of good x, all expressed in percentage terms," is the same thing as the "labor elasticity of production for good x."
- A) True
  - B) False
38. Which statement best describes how the competitive firm chooses the input combination it will use to produce, in the long run, its chosen level of output.
- A) It is determined by the state of technical knowledge for producing its output and the constraints imposed on the firm by the input markets.
  - B) It is determined by the isoquant map
  - C) It is determined by the input prices
  - D) It is determined by the price it can sell its output.
39. The prefix "iso" means "equal."
- A) True
  - B) False

40. Let's say you want to know how responsive Fred's miles skied are to a change in the number of hours she skis (her labor). From the following list which is the best measure.
- A) Her labor elasticity of miles skied
  - B) How much she needs to increase her time skied (labor) in percentage terms to increase her miles skied by 1%.
  - C) How much more time she needs to ski one more mile.
  - D) Her marginal product of labor in the production of ski miles

One wants to look at the percentage change in miles skied divided by the percentage change in the number of hours skied.

This is her **labor elasticity of miles skied**.

One could look at her marginal product of labor in the production of miles (which is not expressed in percentage terms) but as we noted in the discussion of elasticity this is an inferior measure of responsiveness because it change every time one changes the units in which labor or distance is measured.

I was surprised at how many people got this one incorrect.

41. Billy the bulldog has a \$30 coupon for Dogs'R'Us, a store that sells only two goods: puppy chow (\$5 per bag) and chew toys that look like economics professors (\$3 per toy). Billy can only use the coupon once and he must use his organic shopping bag to drag home whatever he buys. The bag can hold an unlimited number of chew toys, but at most three bags of chow. Billy will starve unless he buys at least one bag of chow. Which of the following bundles is in his choice set?
- A) 0 bags of food; 8 chew toys
  - B) 3 bags of food; 6 chew toys
  - C) 2 bag of food; 6 chew toys.
  - D) 4 bags of food; 2 chew toys

Only 4% got this one wrong.

42. When answering this question, keep in mind that elasticities are expressed as the "x elasticity of y." Some people enroll at C.U. in the hopes that studying at C.U. will improve their education (what they know). Their hopes will be more realized if
- A) The education elasticity of studying is elastic
  - B) The studying elasticity of education is elastic
  - C) The intelligence elasticity of education is elastic
  - D) The studying elasticity of education is inelastic

43. Assume the firm has no fixed costs. If, at the current level of output, average variable cost is increasing, this implies that, at this output level, average total cost is increasing as well.  
 A) True  
 B) False
44. Assuming the model (theory) of consumer behavior taught in class and in the book, and assuming all commodities are goods, increasing an individual's budget set will always make that individual better off.  
 A) True  
 B) False

False: If initially the individual is only consuming one of the goods and the price of the other good decreases, but not enough to make him switch from all of the other good, the individual will not be better off, even though her budget set has increased.

Use the following to answer question 45:

**Table: Labor and Output**

Quantity of Labor	Total Output
0	0
1	12
2	22
3	30
4	36
5	40
6	43
7	44

45. (Table: Labor and Output) Look at the table Labor and Output. The marginal product of the fifth worker is:  
 A) 40.  
 B) 8.  
 C) 4.  
 D) 3.
46. To identify one or more of an individual's indifference curves one must know their utility function because along an indifference curve utility is constant.  
 A) True  
 B) False

False

One needs to know the individual's preferences to identify his indifference curves: an indifference curve is made up of all of the bundles that are ranked the same.

This is enough information.

One does not need the utility function or even the concept of utility to identify the indifference curves.

One can use the utility function to identify indifference curves, but one does not need it to identify the indifference curves.

47. The standard model of consumer behavior assumes that a consumer wants to do the best she can given her constraints. But, economic models of the firm typically do not assume that firms want to do the best they can given their constraints.

- A) True
- B) False

48. Assume, consistent with the facts, that construction of housing in Europe involves more recycling of existing building than in the U.S. where most construction is new construction. So, Europeans are necessarily more efficient in the production of housing than we are here in the U.S. because they recycle old buildings more than we do.

- A) True
- B) False

It is efficient for Europeans to recycle more than us and it is efficient for us the recycle less than them. They are different ways of producing a good and the price of new materials is relatively cheaper here in the U.S. For example, we have a lot more trees so new lumber is cheaper in the U.S. than in Europe.

49. You have read a lot about how the marginal product of a variable input will eventually decline, the "law of diminishing marginal productivity. Now consider the case where the marginal productivity of the variable input, labor, is increasing in the current range. Which of the following options is correct and best explains an increasing marginal productivity?

- A) At the current level of labor, as more units of labor are added, there is more opportunity for each unit of labor to specialize in that aspect of production in which they have a comparative advantage.
- B) When there are only a few workers, each worker has to do everything.
- C) When only a small amount of labor is employed, adding an additional worker makes all of the workers more productive.
- D) The marginal product of labor always initially increases.

50. Suppose Justin's Candy Factory currently employs seven workers who produce candy. With these seven workers, the average production of candy is 10 candies per worker. Upon hiring one additional worker, the average production of candy per worker increases to 11 candies. What is the marginal product of labor?
- A) ten or less
  - B) 11
  - C) 18
  - D) there is not enough information to determine the marginal product of labor

C)

When there are 7 workers, 70 candies are produced (10 times 7)  
When there are 8 workers 88 candies are produced (11 time 8)  
The difference is 18

51. If OPEC wants to increase revenue, which of the following does not always serve their purpose.
- A) Decrease the price if at the current price the price-elasticity of demand is less than -1 (price elastic).
  - B) Decrease the price because doing so will increase the demand for their product.
  - C) Keep the price unchanged if at the current price, the elasticity is -1 (unitary elastic).
  - D) Increase the price if at the current price the price-elasticity of demand is between 0 and -1 (price inelastic).

B)

If OPEC is on the elastic part of its demand curve and it decreases (increases) its price its revenues will increase (decrease), so A is correct and revenue increasing.

If OPEC is on the inelastic part of its demand curve and it increases (decreases) its price it will increase (decrease) its revenue, so D is correct and revenue increasing.

If at the current price elasticity is -1, changing the price will decrease revenue. So keeping price at this level will maximize revenue – they cannot do better in terms of total revenue.

Decreasing price will not always increase revenue. It will if OPEC is on the elastic part of the curve but won't if OPEC is on the inelastic part of its demand curve.

52. Assume a world of only two goods: food and rental housing. Also assume that Rosalyn's preferences never change. Rosalyn lives in Denver and consumes a positive amount of both goods. A recession starts and real estate prices drop, so rents fall. Food prices remain unchanged and, luckily, Rosalyn keeps her job, so her income remains the same. Which of the following statements is correct?
- A) Rosalyn will definitely not be worse off, but, without more information all we can say about her new consumption bundle, compared to her original bundle, is that she will not consume less of both goods. .
  - B) Rosalyn will necessarily consume more food because she will have more money to spend on food because she needs to spend less on housing.
  - C) Rosalyn will definitely not consume more of both goods.
  - D) Rosalyn will necessarily consume more housing because its relative price has decreased.

## Answer Key

1. D
2. A
3. A
4. A
5. A
6. B
7. C
8. B
9. A
10. A
11. B
12. B
13. C
14. A
15. A
16. C
17. B
18. C
19. A
20. B
21. A
22. B
23. B
24. C
25. A
26. B
27. B
28. A
29. B
30. D
31. B
32. A
33. B
34. A
35. A
36. C
37. A
38. A
39. A
40. A
41. C
42. B
43. A
44. B

- 45. C
- 46. B
- 47. B
- 48. B
- 49. A
- 50. C
- 51. B
- 52. A