

Econ 2010 (Morey)
Second midterm: Fall 2013
Version A

There are 44 questions on this exam, so make sure you have all 44 questions.

We will grade this question out of 40 points (rather than 44 points) so if you get all 44 questions correct you will get 110% on the exam.

Don't answer a question incorrectly simply because you failed to read it carefully. The T.A.s and I choose our words very carefully.

Experts on test taking often suggest that one should first answer the "easy" questions, and then go back to the ones you skipped over.

Since the new material since the first exam builds on the material from before the first midterm, there is more to know and understand.

I comment on two types of questions: the ones that people had the most trouble with, and some that are simply educational.

1. Ingrid, when she is in Sweden, and not skiing for CU, consumes only pickled herring and Aquavit (a Swedish type of booze). She loves pickled herring: the more the better, but is indifferent to the amount of Aquavit she drinks. Consider her indifference curves with Aquavit on the vertical axis and herring on the horizontal axis
 - A) Ingrid's indifference curves are upward sloping
 - B) Ingrid's indifference curves are downward sloping
 - C) Ingrid's indifference curves are flat (horizontal lines)
 - D) Ingrid's indifference curves are vertical lines

2. Consider a world of only two commodities: X and Y; both are bads. George's indifference curves must slope downward.
 - A) True
 - B) False

3. Consider the set of bundles that an individual can afford, her "feasible set". If that set expands, (Choose the answer that is both correct and most informative.)
- A) The expansion will make the individual better off.
 - B) The expansion cannot make the individual worse off because the individual can still choose the bundle she chose before the expansion.
 - C) The expansion cannot make the individual worse off but the reason why is not one of the reasons in the other possible answers.
 - D) The expansion cannot make the individual worse off because there are bundles that the individual can afford now that she could not afford before.
4. Suppose Justin's Candy Factory currently employs five workers who produce candy. With these five workers, the average production of candy is 8 candies per worker. Upon hiring one additional worker, the average production of candy per worker increases to 9 candies. What is the marginal product of the new worker?
- A) 54
 - B) 9
 - C) Not enough information to determine the answer
 - D) 14
5. In the longrun, which statement best describes how the competitive firm chooses the input combination it will use to produce its chosen level of output. Choose the answer that is both correct and most informative.
- A) It is determined by its chosen level of output
 - B) It is determined by the isoquant map
 - C) It is determined by the state of technical knowledge for producing its output and the constraints imposed on the firm by the market.
 - D) It is determined by the input prices
6. If there are no fixed costs, then the firm's average cost curve and its average variable cost curve are the same curves.
- A) True
 - B) False

7. Fabian wants to get exactly 70% on the final. Fabian produces the exam score using two inputs: hours of study time and milligrams of a drug that helps him to concentrate. Which of the following statements is both necessarily correct and most informative
- A) Fabian will get a 70% score on the exam
 - B) His isoquant for producing a 70% result identifies all those combinations of study hours and milligrams of drugs that will just get him a score of 70%.
 - C) His isoquant for producing the 70% score identifies all the different ways he would like to achieve a 70% score.
 - D) His isoquant for producing a 70% result is the rate at which he can substitute study hours for milligrams of drugs in the production of the 70% score
8. George is a competitive firm making 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
9. "The marginal product of labor in the production of good x , all expressed in percentage changes rather than in terms of quantities," is the same thing as the "labor elasticity of production for good x ."
- A) True
 - B) False
10. As compared to state-of-the world A, in state-of-the-world B, everyone has at least as much of every market good, and more of some. Given this, B is necessarily preferred to A.
- A) True
 - B) False
11. Bubbarina (a small, female Bubba) did not do well on the first midterm because she did not study. She studied a lot for this midterm. She hopes that
- A) the study-time elasticity of her exam score is negative and highly inelastic.
 - B) the exam-score elasticity of her study time is negative and highly elastic.
 - C) the exam-score elasticity of her study time is positive and highly inelastic.
 - D) the study-time elasticity of her exam score is positive and highly elastic.

12. If currently Willy's marginal utility for candy canes is greater than his marginal utility for chocolate bars, then he should:
- A) Buy more chocolate bars and less candy canes
 - B) There is not enough information provided
 - C) Buy more candy canes and less chocolate bars
 - D) Buy equal amounts of both candy canes and chocolate bars

I was surprised that there were problems with this question. The answer is B. What if the marginal utility of chocolate bars is 1 and the marginal utility of candy canes is 100, but chocolate bars cost a penny, and candy canes cost two dollars? The marginal utility you get from the last penny you spend on candy canes is .5 and the marginal utility you get from the last penny you spend on chocolate is 1. It would be crazy to buy more candy canes.

13. The isocost line in producer theory is analogous to which of the following from consumer theory?
- A) Isoquant
 - B) Budget constraint
 - C) Indifference curve
 - D) None of the above

The isocost line is analogous to the budget line. They both identify combinations of things (inputs for isocost lines, and good for budget lines) that can be purchased for a given amount of money. If I ask this again I will say "budget line" rather than "budget constraint."

The answers were all over the map, indicating that many of your do not understand what these different lines represent.

14. I'm trying to predict whether or not my roommate will buy more or less milk this week than last week. All he tells me is that his Oreo-price elasticity of demand for milk is always positive. I also know that the price of milk is the same as it was last week. In fact, everything is the same as it was last week, except that the price of Oreos is lower. Given all this, I know, for sure, that
- A) My roommate will buy less milk because milk and Oreos are substitutes.
 - B) My roommate will buy less milk.
 - C) My roommate will buy more milk.
 - D) There is not enough information to determine whether my roommate will buy more or less milk.

We know that the Oreo-price elasticity of demand for milk (the % change in the demand for milk divided by the % in in the price of Oreos) is always positive. This means that if the price of Oreos goes up the demand for milk goes up.

So, if the price of Oreos goes down, his demand for milk will go down, meaning that neither C nor D is correct.

I indicated that B is the correct answer, because my thought was that there was not enough information to determine whether mile and Oreos are substitutes.

However, this depends on how one defines substitutes. The T.A.s tell me that they told you that goods X and Y are substitutes if the cross-price elasticity is always positive. If so, A is a correct answer and “more” informative than answer B.

More than you want to know: While their definition of a substitute gets it right most of the time, it is a definition not without issues. For an individual, how easily two goods “substitute” for each other is a matter of degree, and that is determined only by the individual’s preferences. When one reacts to a price change (e.g. an increase in the price of Oreos) by purchasing less milk, there is both a substitution effect and an income effect. The Oreo-price elasticity of the demand for milk reflects a combination of both the substitution effect and the income effect, so its sign is not a perfect indicator of it whether milk and Oreos are substitutes in the pure sense of the word. Keep in mind that when the price of Oreos falls there is an income effect (the budget set is now larger). The influence of this income effect depends on the income-elasticity of demand for both Oreos and milk, and by itself could cause the demand for milk to increase or decrease. **Like I said, more than you want to know.**

If you answered: “My roommate will buy less milk because milk and Oreos are substitutes.” Inform your T.A. and they will give you credit for the question. There are not many people in this category.

Many got this question incorrect because they did not accept the fact that his elasticity is positive. Rather they implicitly assumed that milk and Oreos are compliments. That might be true for many people, but it is not true for the roommate.

15. Assume the price elasticity of demand for oil is negative. If at the current price, the price elasticity of demand for oil is ___ than ___, marginally lowering the price will ___ OPEC's total revenue from the sale of oil.
- A) greater, -1, decrease
 - B) less, -1, increase
 - C) less, -1, decrease
 - D) more than one of the other answers is correct

The answer is “more than one of the answers is correct.” If the price-elasticity of demand is greater than -1 (between zero and -1), then demand is inelastic and lowering the price will decrease total revenue. If the price-elasticity is less than -1 (a number more negative than -1) then demand is elastic and lowering the price will increase total revenue.

The problem might be confusion about the following. -5, for example, is a number that is less than -1, not a number that is greater than -1.

16. An individual's budget constraint is affected by his or her preferences.
- A) True
 - B) False
17. There are only two goods: designer jeans and jewelry (nose rings, belly-button rings, etc.). Fredwina, your adolescent relative, is maximizing her utility given her budget constraint. The price of jewelry falls. After this price decrease, Fredwina buys more jeans.
- A) Yes
 - B) Maybe
 - C) No
18. Consider the statement, "The slope of an indifference curve for goods A and B indicates the rate at which the individual substitutes good A for Good B. The slope of a budget line for goods A and B indicates the rate at which the market substitutes good A for Good B." This statement is
- A) False
 - B) There is not enough information to determine whether it is true or false.
 - C) True
19. To maximize its profits, a competitive firm will always want to minimize costs.
- A) No
 - B) Yes

20. For a competitive firm, the price of what it sells is
- A) Endogenous
 - B) Exogenous
21. An isocost lines identifies all those combinations of inputs that can be purchased for a given amount of the money
- A) True
 - B) False
22. Which of the following can be a constraint?
- A) The amount of calories an individual needs to consume per-day to survive.
 - B) The amount of money an individual has to spend on goods.
 - C) The amount of time a consumer has in a day (24 hours).
 - D) All of the above can describe constraints
23. 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
24. In the theory of the firm, we use "isoquants". Breaking down the term we have "quant" as in "quantity," and "iso" as in "one," meaning every point on an isoquant corresponds to the same quantity. The analogous concept in regards to consumer theory is_____.
- A) An indifference curve
 - B) Utility
 - C) Preferences
 - D) A budget line

25. Consider a world with only two commodities: beer and bibles. For Wilma, beer is a good, but for Wilma bibles start off as a bad but eventually turns into a good. Consider Wilma's indifference curves with beer on the horizontal axis. Which statement is both correct and most informative?
- A) Her indifference curves are shaped like an inverted U (increasing beer consumption from zero, first the slope is positive but then switches to negative)
 - B) Her indifference curves are all upward sloping
 - C) Her indifference curves are all downward sloping.
 - D) Her indifference curves are U-shaped (increasing beer consumption from zero, first the slope is negative but then switches to positive)

The answer was supposed to be A, but I messed up, and A is not correct. Because of this everyone will get full credit for this question. (we will add 2.5% to your machine-graded score)

A would have been the correct answer if I had said bibles were on the horizontal axis.

The correct answer (with beer on the horizontal axis and bibles on the vertical axis) is that an indifference curve looks like the letter “C” but facing the wrong direction.

In explanation: more beer is always preferred to less beer (it is a good), but bibles start as a bad and then turn into a good. That means that if one increases bible consumption from zero, holding beer consumption constant, utility initially decreases, but after one gets to a certain number of bibles, increasing bibles, holding beer consumption constant, increases utility.

The question is what does this mean for Wilma’s indifference curves? At low levels of bible consumption the indifference curve is positive (to put up with more bibles (a bad) one needs more beer), but at some level of bibles, increases bibles increase utility, so as the number of bibles in the bundle increases past this point, the amount of beer in the bundle must decrease to keep Wilma indifferent.

Many of you answered D. This might have been caused by a confusion between the indifference curve and a graph of utility as a function of bible consumption, holding beer consumption constant.

26. Consider two different indifference curves, the latter for a higher level of utility than the former. While not likely, it is possible that these two indifference curves intersect.
- A) True
 - B) False

27. 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.
- A) True
 - B) False
28. 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 fact that when a price changes the individual makes substitutions
 - C) The change in an individual's demand for a good due to the relative price of that good changing, holding utility constant.
 - D) 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.
29. Justin is in college and has \$16 a day to spend on food. Given his allergies and intolerance to lactose, he can consume only pesto pizza without cheese, and seaweed salad. The pizza costs \$2 a slice and the salad \$4 a bowl. Justin belongs to the Church of Skinny which allows one to consume no more than 800 calories per day. Justin is a devout member. Each slice of pizza has 200 calories and each bowl of seaweed has 100 calories. In addition, Justin's mother instructed him to waste no more than one hour a day eating, and Justin obeys his mother. It takes Justin 10 minutes to eat a slice of pizza and 15 minutes to knock back a bowl of seaweed salad. If Justin always consumes 800 calories a day (the religious limit), then, per day
- A) There is no 800 calorie combination of pizza and salad that Justin can afford in terms of time and money.
 - B) Justin can consume 3 slices of pizza and two salads
 - C) Justin can consume a 6 slices of pizza and no salad
 - D) Justin can consume 4 dishes of salad, and no pizza
 - E) Justin can consume 4 slices of pizza, and no salad

Note that both B and E are correct. I messed up. Both B and E have 800 calories. Bundle B takes 60 minutes and E takes 40 minutes. B costs \$14 and E costs \$8. So both are affordable on all fronts. This was picked up before the exams were graded, so either answer was graded correct.

30. To produce 10 deep-fried cats one **must** operate on the isoquant for 10 deep-fried cats.
- A) True
 - B) **False**

The isoquant for 10 deep-fried cats is all of the input combinations that are **just capable** of producing 10 deep-fried cats.

As I noted and discussed in class last week, the firm could produce 10 deep-fried cats in a stupid and wasteful manner, using an input combination to the right of the isoquant.

Sometimes it pays to come to class.

31. When the price of a Lady Gaga concert ticket in Boulder is \$100 per seat, the ticket office can sell 10,000 tickets. When the price of a ticket is \$150 per seat, they can sell 8,000 tickets. Which of the following statements is true?
- A) The demand for this ticket is income inelastic, and so an increase in the price of the ticket will decrease the total revenue of the ticket seller.
 - B) The demand for this ticket is price inelastic, and so an increase in the price of the ticket will increase the total revenue of the ticket seller.
 - C) The demand for this ticket is price inelastic, and so an increase in the price of the ticket will decrease the total revenue of the ticket seller.
 - D) The demand for this ticket is income inelastic, and so an increase in the price of the ticket will increase the total revenue of the ticket seller.
32. Seth produces and sells widgets. The competitive market price is \$10. It is the short-run and he has fixed costs. Seth has two short-run options: produce nothing or produce and sell 1,000 widgets. If he produces 1,000 widgets his average variable cost is \$7 and his average fixed cost is \$4. What should Seth do?
- A) Produce and sell 1,000 widgets, making a profit because price is greater than AVC.
 - B) Produce and sell 1,000 widgets, even though his profits will be negative
 - C) Produce and sell zero widgets, even though his profits will be negative
33. 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

34. Suppose Alice consumes only wine and cheese. Alice's income increases, the price of wine decreases, and the price of cheese increases. Consider Alice's budget line with wine on the vertical axis and cheese on the horizontal axis. What will happen to the slope of Alice's budget line?
- A) There is not enough information to tell.
 - B) It necessarily remains the same.
 - C) It becomes steeper.
 - D) It becomes flatter.

The decrease in the price of wine, ceteris paribus, makes the budget line steeper.

The increase in the price of cheese, ceteris paribus, makes the budget line steeper.

So it gets steeper.

35. Assume everyone has the same preferences and same state of knowledge for producing food, and the same income. Meals are produced with labor and meat. In Country A the price of meat is high relative to the price of labor. In country B the price of meat and labor are about the same. And, in Country C the price meat is low relative to the price of labor. Assume everything else about these three countries is the same. Which of the following statements is correct?
- A) If the relative price of meat in a country reflects its relative scarcity, then to be efficient in production, meals in Country C will have the most meat.
 - B) Meal production in country C wastes meat--uses meat inefficiently--because they use more meat to produce each meal than do the other two countries.
 - C) Meal production in Country A wastes time--uses time inefficiently--because more time is spent preparing meals than one needs to spend.

The efficient way to produce a meal depends on the relative prices of the inputs, so one would expect the efficient way to produce meals to vary across countries if the relative prices of inputs vary across countries.

For example, if labor is scarce in the U.S. but meat abundant, as compared to, for example, China, efficient meal production in China will be more labor intensive (less meat intensive) than meal production in the U.S.

36. Consider a world of two inputs vegetables and butter. The people of Vegland produce vegetables, but must buy their butter from Bovland. Meals in Vegland are vegetables with butter. Meals are the only good consumed. Their meals always consist of some butter and some vegetables. For people in Vegland their isoquants for producing meals (Veg on the vertical axis) are negatively sloped, decreasing in slope as the amount of the butter input increases.
- Bovland suffers a bovine-virus outbreak causing a lot of cows to die, so the price of butter to rise. The outbreaks have no influence on the price of vegetables in Vegland. Elections in Vegland are coming up, and to assure their reelection, the government gives each household in Vegland some money, just enough for the household to produce the utility they got from meals before the price of butter increased. Given all this, choose the answer that is both correct and most informative.
- A) Meals in Vegland will be produced with more butter and less vegetables
 - B) There is not enough information to determine how meals will be prepared in Vegland.
 - C) How meals are produced in Vegland and the number produced will be unaffected.
 - D) Meals in Vegland will be produced with less butter and more vegetables

The answer is D. Picture an isoquant for producing meals with vegetables on the horizontal axis and butter on the vertical. At the original input prices Veggies will produce meals using some amount of butter and some amount of vegetables. They minimize the cost of producing whatever number of meals they choose to produce.

Then the relative price of butter increases, so the original input combination is no longer the cost-minimizing input combination. Give the shape I imposed on the isoquants, the cost-minimizing combination is now less butter intensive.

37. Chuck spends all his income on two goods: tacos and milkshakes. His income is \$100, the price of tacos is \$10, and the price of milkshakes is \$2. If the price of each good doubles and Chuck's income doubles, which of the following statements is correct?
- A) Chuck's budget line will shift in.
 - B) Chuck will now be able to buy more of both goods.
 - C) Chuck's budget line will shift out.
 - D) Chuck's budget line will be unaffected.
38. Can a competitive firm produce its profit-maximizing level of output, and not be maximizing its profits?
- A) No
 - B) Yes

39. 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

Why is the answer to this false?

40. What is the muscle-tone elasticity of time-working-out?
- A) The percentage change in the time one works out divided by the percentage change in one's muscle tone.
 - B) The percentage change in muscle tone divided by the percentage change in the amount of time one works out.
41. (Sam B) Given his currently low income, Joe uses all of his money to buy hot dogs and hot dog buns. After the first hot dog, adding more hot dogs to the same bun has no effect on his utility. And, after surrounding a hot dog with a bun, adding more buns to the meal does not increase his utility. Joe gets a raise at his job and makes an additional \$40 a week. Keeping everything else constant what will happen to Joe's indifference curves for hot dogs and buns (buns on the vertical axis) _____ What do his indifference curves look like? _____
- A) not enough information to tell
 - B) They keep the same shape but shift (each indifference curve now corresponds to a higher level of utility); They look like the letter "L"
 - C) Nothing happens to them; They are downward-sloping straight lines.
 - D) Nothing happens to them; They look like the letter "L"

Nothing happens. Changing income does not change preferences. Why would increasing your income change your ranking of bundles? B cannot be correct.

The indifference curves are L shaped. Draw an L shaped indifference curve (it does not matter whether buns on the vertical or horizontal axis). Given the information provided about Joe's preferences, why do they have to look like this?

42. Assume China and the U.S. currently have the same levels of pollution, but the U.S. is much richer in terms of goods. Also assume everyone has the same preferences. Which statement is more likely to be correct? (When answering this question it might be useful to picture indifference curves with goods on the vertical axis and pollution on the horizontal axis.)
- A) Willingness-to-pay for goods in terms of increased pollution is lower in China
 - B) More than one of the other three answers is correct.
 - C) The marginal-rate-of-substitution of pollution for goods is higher in China.
 - D) Willingness-to-pay for goods in terms of increased pollution is higher in China.

The key says that B is the correct answer. But this is wrong. The only correct answer is D.

WTP for goods in terms of pollution is how much more pollution you would accept to get more goods. Since China is poorer than the U.S., I would expect the Chinese to have a higher WTP for goods in terms of increased pollution. That is, they would accept more pollution, than us, in return for the same amount of additional goods. So D is correct, and A is incorrect.

WTP g for p is the change in p divided by the change in g , holding utility constant.

Draw an indifference curve with goods on the horizontal axis and pollution on the vertical axis. The indifference curves have positive slopes.

The slope of this curve is the change in p divided by the change in g . The negative of this is the MRS of g for p .

That is, WTP for goods in terms of pollution is the MRS of goods for pollution.

So if WTP of g for p is higher in China then MRS of g for p is higher in China.

WTP of g for p and MRS of g for p are two different ways of saying the same thing.

In C I meant to say “ g for p ” but I incorrectly said “ p for g .” So as written, C is an incorrect answer.

Sorry. Either way this question was too difficult. We gave everyone credit for this question.

43. In lecture, professor Morey presented an example where he pays his daughter, Fred, a \$1 for every mile she skis. Fred's only cost is the value of her time, always \$3 an hour. In order to maximize her profit (net benefit), Fred will ski up the point where her marginal cost equals \$3.
- A) True
 - B) False
44. At my current consumption levels, My wtp for a Diet Coke in terms of chocolate bars is 3. Let d denote diet Cokes and c denote chocolate bars. Therefore my $MRS_{dc}=1/3$ and, with chocolate on the vertical axis and Diet Cokes on the horizontal axis, the slope of my indifference curve at my current level of consumption is $-1/3$.
- A) True
 - B) False

The answer is false. My wtp for Diet Cokes in terms of chocolate bars is how many chocolate bars I would give up to get another Coke. My MRS of diet cokes for chocolate bars is how many chocolate bars I would give up to get another diet coke.

They are two ways of saying the same thing. So, one cannot be 3 and the other be $1/3$

Answer Key

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

