Economics 102   Name _____
Summer 2016
First Midterm
Thursday, June 30, 2016

This exam consists of three parts: I) five binary choice questions worth 2 points each; II) twenty multiple choice questions worth 3 points each; and III) three short answer problems worth 30 points total. All answers should be clearly and legibly recorded on the exam booklet: any answer that is not legible will be counted as a wrong answer. All answers should be presented in a neat, logical fashion in the short answer portion of the exam.

Honor Code Statement:

I, _____, understand that it is important for me to do my own work. It is also important that I not provide help, either intentionally or unintentionally, to my fellow students. Therefore I will keep my answers covered and I will not provide answers to my classmates or take answers from my classmates. I also acknowledge that on this exam I may not have access to a calculator or a cellphone.

_____(Signed)

    I.   Binary Choice Questions (out of a possible 10 points) _____
    II.   Multiple Choice Points (out of a possible 60 points)   _____
    III.   Problems

        1. Problem 1 (out of a possible 10 points)   _____

        2. Problem 2 (out of a possible 10 points)   _____

        3. Problem 3 (out of a possible 10 points)   _____

TOTAL (out of a possible 100 points)   _____

I. Binary Choice Questions: (5 Questions worth 2 points each)

1. The official unemployment rate that is reported in newspapers in the United States has in recent years:
a. Overstated the level of unemployment due to its inclusion of discouraged workers.
b. Understated the level of unemployment due to its failure to consider marginally attached workers.

2. Consider a market for a good that is initially in equilibrium. Suppose that the population in the economy increases at the same time that people's incomes fall. The good under consideration is a normal good. Holding everything else constant, you predict that:
a. Both the equilibrium price and the equilibrium quantity in this market will be indeterminate.
b. That the equilibrium price will increase while the equilibrium quantity is indeterminate.

3. A small economy decides to close one of its markets to trade. If prior to this decision the world price of the good was greater than the domestic price for this good, then the decision to close this market will:
a. Benefit domestic consumers.
b. Benefit domestic producers.

4. In 2016 Roger remodels the house he bought as a new home in 1990. He spends $120,000 on the remodel. In addition, in 2016 Roger hires a handyman to do some odd jobs: tree trimming, yard clean-up, and raking. He pays the handyman $420 in cash and there is no receipt for the services rendered. Roger also gives his daughter 500 shares of Coca Cola stock this year: the value of this gift is $120 per share of stock. In making the gift to his daughter he uses a stockbroker and she charges Roger 5% of the value of the stock as a commission for her services. Given this information and holding everything else constant, Roger's activities affect GDP for 2016 by:
a. $120,000 for the remodeling job plus $6000 for the stockbroker for a total of $126,000.
b. $123,000 in all.

5. Josie earns $200 a week as a babysitter. She does not report this money on her tax forms. She works 50 weeks a year. These transactions cause GDP for the year to:
a. Increase by ($200 per week)(50 weeks a year) or $10,000.
b. Be unchanged since this is not activity that is going through legal markets.

II. Multiple Choice Questions: (20 Questions worth 3 points each)

Use the following information to answer the **next three (3)** questions.

You have been asked to use the following data to answer this set of questions. Etown uses a CPI based upon a market basket composed of 4 units of bread and 6 units of pens. Etown collected the following data about production and prices for bread and pens for 2014, 2015, and 2016.

	Prices in 2014	Quantities in 2014	Prices in 2015	Quantities in 2015	Prices in 2016	Quantities in 2016
Bread	$1	4	$2	8	$1	6
Pens	$1	5	$1	10	$4	6

6. If 2014 is used as the base year, what is the value of the CPI in 2015 using a 100-point scale?
a. 288
b. 71
c. 140
d. 200

7. Using 2014 as the base year for the CPI, what is the annual rate of inflation based upon the CPI between 2015 and 2016?
a. 10%
b. 200%
c. 140%
d. 100%

8. If the base year for the CPI is 2015, what is the annual rate of inflation based upon the CPI between 2014 and 2015?
a. It is the same rate of inflation as you would get if the base year for the CPI is 2014.
b. The annual rate of inflation between these two years will be greater if the base year is 2015 instead of 2014.
c. The annual rate of inflation between these two years will be smaller if the base year is 2015 instead of 2014.
d. The appropriate base year for this kind of calculation would be the most recent year in the data set: in this case 2016.

<u>Work Space: Do NOT remove this page from your exam booklet!</u>

9. Consider the market for pencils. Suppose this market is initially in equilibrium and then government officials decide to provide a subsidy to all students purchasing pencils. At the same time the raw materials used to produce pencils increase in price. Given these changes and holding everything else constant, which of the following statements is true? Relative to the initial equilibrium,

a. The equilibrium price of pencils will increase while the equilibrium quantity of pencils will be indeterminate.

b. The equilibrium price of pencils will decrease while the equilibrium quantity of pencils will be indeterminate.

c. The equilibrium price of pencils may increase, decrease or remain the same while the equilibrium quantity of pencils will increase.

d. The equilibrium price of pencils may increase, decrease or remain the same while the equilibrium quantity of pencils will decrease.

10. Consider a market in which there are eight firms that produce the good. Each of these firms are identical and their individual supply curves for the product are exactly the same where P is the price per unit and q is the number of units supplied by the firm. You are told that the market supply curve is given by the following equation:

Market Supply Curve: $Q = 80 + 8P$

Given this information, what is the equation for an individual firm's supply curve? In the following answers q is the quantity supplied by the firm and P is the market price.

a. $q = 10 + (4)P$

b. $q = 20 + (1/4)P$

c. $q = 10 + P$

d. $q = 20 + (4)P$

11. Suppose in 2015 Nancy earns $20,000 and she pays $400 in taxes. In 2016 she earns $25,000 and her taxes increase by 25% from their level in 2015. If we define the tax rate as the amount of taxes paid divided by income, then in 2016 Nancy's tax rate is equal to:
a. 25%
b. 2%
c. 2.5%
d. 20%

Use the following information to answer the next **two (2)** questions.

Consider the market for recliners in Smudgeville, a small closed economy. Currently the domestic demand and supply curves for recliners are given by the following equations where Q is the quantity of recliners and P is the price of recliners:

Domestic Demand: $Q = 200 – (2/5)P$
Domestic Supply: $Q = (2/3)P – (200/3)$

The current world price for recliners is $300.

12. Given the above information which of the following statements is true?
a. Domestic suppliers are in favor of opening this market to trade while domestic consumers are against opening this market to trade.
b. If this market opens to trade domestic consumer surplus will be larger than it was when the market was closed to trade.
c. If this market opens to trade there will be fewer jobs for domestic producers of recliners.
d. If this market opens to trade there will be a deadweight loss.

13. Suppose this market opens to trade. Given this information and holding everything else constant, which of the following statements is true?
a. Opening this market to trade will benefit domestic consumers of recliners while hurting domestic producers of recliners.
b. Opening this market to trade will increase Smudgeville's total surplus while reducing Smudgeville's producer surplus.
c. Opening this market to trade will decrease Smudgeville's consumer surplus in this market.
d. Everyone in Smudgeville will be in favor of opening this market to trade since all the residents know that open trade is beneficial.

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Use the following information to answer the next **three (3)** questions.

Below you are provided the three linear PPFs for Jay, Oscar, and Charlie who produce cookies (C) and doughnuts (D).
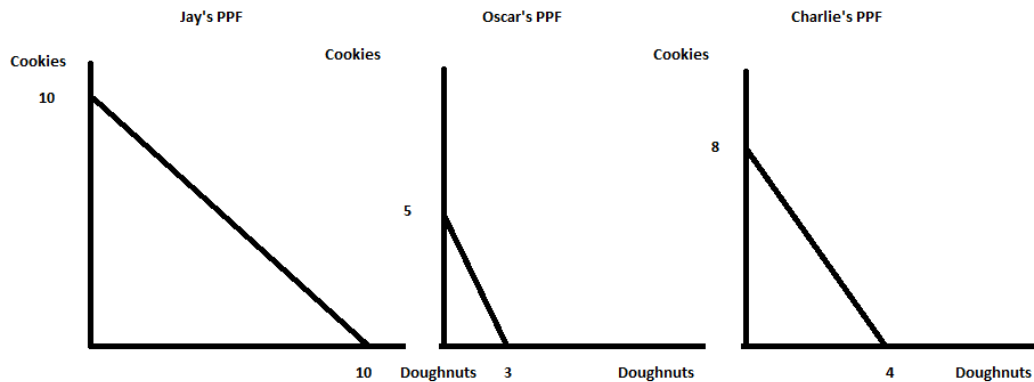
14. Given the above PPFs, which of the following statements is true?
   I. Charlie's opportunity cost of producing cookies is greater than Oscar's opportunity cost of producing cookies but less than Jay's opportunity cost of producing cookies.
   II. Charlie is willing to trade 1 cookie for any price that is equal to or greater than 1/2 doughnut.
   III. Oscar is willing to trade 1 cookie to Jay for any price that is equal to or greater than 3/5 doughnut.
a. Statement II is a true statement.
b. Statements II and III are both true statements.
c. Statement III is a true statement.
d. Statements I, II, and III are all true statements.

15. Given the above PPFs, which of the following statements is true? If you construct the joint PPF for these three individuals,
a. If Jay is already producing doughnuts and there is need for more doughnuts, then Charlie would the next person sent off to make doughnuts.
b. Suppose Charlie and Oscar are making cookies while Jay is making doughnuts. If these three decide they need more doughnuts then Charlie should help Jay out.
c. If all three individuals are only producing doughnuts and they decide they want some cookies, Charlie will be the first person sent off to make the cookies.
d. Suppose everyone is making cookies when they suddenly decide they need some doughnuts. It is best if Oscar stops what he is doing and makes the doughnuts.

16. Which set of equations below describes the joint PPF for these three individuals? Remember that C is cookies and D is doughnuts.

a. C = 23 - D for D ≥ 13
C = 30 - (5/3)D for 8 ≤ C ≤ 13
C = 35 - 2D for C ≤ 8

c. C = 23 - D for C ≥ 13
C = (89/3) - (5/3)D for 8 ≤ C ≤ 13
C = 34 - 2D for C ≤ 8

b. C = 17 - D for D ≥ 13
C = (89/5) - (3/5)D for 8 ≤ C ≤ 13
C = 46 - 2D for C ≤ 8

d. C = 17 - D for D ≥ 13
C = 18 - (3/5)D for 8 ≤ C ≤ 13
C = 46 - (1/2)D for C ≤ 8

17. Economist Jane and Economist Bob are having a heated argument about the correct economic policy given today's economic issues. Jane argues for a jobs policy to promote the creation of better jobs in order to address the mismatch between people's skill sets and the jobs they are able to find while Bob argues for the implementation of tax rate reductions on high income earners since he argues that these are the "job creators" in the economy. Both agree that they will accept the other economist's position if there is credible data to support the position. So, if Jane can show that there is a skills mismatch in the labor force, Bob will agree that her policy is appropriate. And, if Bob can show that high income earners in the economy create most jobs (they both agree that "most" will be defined as 70% or more) than Jane will agree that his policy is appropriate. Given this information we can conclude that:
a. Jane's position is a normative one while Bob's position is a positive one.
b. Jane's position is a normative one and Bob's position is a normative one.
c. Jane's position is a positive one and Bob's position is a positive one.
d. Jane's position is a positive one while Bob's position is a normative one.

18. Which of the following scenarios is an example that illustrates the concept of structural unemployment?
a. A bio-technician is currently not getting paid due to a labor-management dispute that has resulted in the bio-technicians not working.
b. Morgan and Heidi have stayed at home tending their families for the past ten years and they are now both looking to find jobs that match their skills and talents.
c. Swim instructors in Madison, WI find that they are out of work October through late May.
d. Harry and Mary decided to not work due to the increase they receive in benefits from the new welfare program.

Use the information below to answer the next **two (2)** questions.

Milton is an economy that has two firms: Provides, Inc. manufacturers intermediate goods that are used by Final Product, Inc. to make final goods and services. The following table provides information about these two firms as well as the general economy in Milton for 2016.

	Provides, Inc.	Final Product, Inc.	
Wages	$50	$100	
Consumption Spending			$210
Investment Spending			$20
Rent	$20	$40	
Profits	$20	$40	
Government Spending			$40
Net Exports			B
Interest	$10	A	

19. Given the above information, which of the following statements is true about Milton in 2016?
   I. The value of B is $10 less than the value of A.
   II. The value of A is $10 less than the value of B.
   III. If GDP for Milton in 2016 is equal to $350, then the value of B is $80.
a. Statements I and III are true statements.
b. Statements II and III are true statements.
c. Statement I is a true statement.
d. Statement II is a true statement.

20. Suppose that you are told that the value of B is $20. Given this information and holding everything else constant, then GDP for Milton in 2016 is equal to _____ and total interest payments are equal to _____.
a. $310: $30
b. $290; $20
c. $300; $20
d. $280: $10

21. Suppose that in a hypothetical economy there are a <u>TOTAL</u> of 400 people who have jobs and 100 <u>OTHER</u> people who are at least 16 years old that do not have jobs. You also know that within this same economy and these same 500 people there are 90 people who are looking for a job: some of these 90 people are unemployed and some of them are currently employed but looking for a better job. Finally, you know that in this population of people, there are 20 people who do not have jobs and have stopped looking for jobs. Given this information, how many of these people are unemployed?
a. 70 people
b. 80 people
c. 90 people
d. 100 people

Use the following information to answer the next **two (2)** questions:

Kernersville has a population of 20,000 people. 20% of these people are less than sixteen years old. Of those who are at least sixteen years old, there are 2000 people who are not in the labor force. Everyone else is in the labor force. In Kernersville 60% of the labor force are employed full-time; 2000 people are employed part-time but wish to be employed full-time; 800 people are employed part-time and are happy with their jobs. The rest of the labor force is not employed. Of the people who are not in the labor force but who are at least sixteen years old, 2000 people are discouraged workers.

22. Given the above information, the **employment** rate in Kernersville is approximately:
a. 30%
b. 70%
c. 20%
d. 80%

23. The government of Kernersville decides to change their definition of the unemployment rate so that it now includes discouraged workers as well as the usual definition of unemployed workers. Calculate the unemployment rate in Kernersville given this new definition. Given this change, by what percentage did the unemployment rate in Kernersville increase by relative to the initial unemployment rate?
a. 30%
b. 15%
c. 33%
d. 50%

24. Jon is currently taking Econ 101 at his University. He knows that his grade is based on **four exams** that are all given the same weight in the final grade calculation. On the first exam he made a 35 out of a possible 40 points; on the second exam he made a 60 out of a possible 75 points. Given these grades, approximate the highest average he can earn in the class measured on a 100 point scale. (Don't forget to include values for the last two exams in your calculation.) The highest average grade he can earn is approximately:
a. 87.5
b. 80
c. 92
d. 90

25. Consider the market for bicycles in Newport. Currently there are two suppliers of bicycles and their individual supply curves are given by the following equations where P is the price per bicycle and Q is the quantity of bicycles:

Firm A: $P = 200 + 4Q$

Firm B: $P = 4Q$

In Newport there are ten consumers of bicycles. Five of these consumers (those in Group 1) have individual demand curves for bicycles that can be described by the following equation:

Individual demand curve for each of five individuals in Group 1: $P = 1000 – 2Q$

The other five consumers (those in Group 2) have individual demand curves for bicycles that can be described by the following equation:

Individual demand curve for each of five individuals in Group 2: $P = 500$

Given the above information, which of the following statements is true when this market is in equilibrium?

I. Individuals in Group 1 will end up consuming 75 bicycles per person.

II. Individuals in Group 2 will end up consuming a total of 75 bicycles.

III. Individuals in Group 2 have consumer surplus equal to $3125.

IV. The equilibrium price in this market will be above $500 per bicycle.

V. The equilibrium quantity in this market will be greater than 200 bicycles.

a. Statements I, II, III, IV and V are all true statements.
b. Statements I, II, IV and V are true statements.
c. Statements I and II are true statements.
d. Statements I, IV and V are true statements.

Part III: Short Answer Problems (three worth a total of 30 points)

1. (Worth a total of 10 points) Suppose that Frank and Sally both make books and zippers. They each work 20 hours a week at these tasks. You are told that Frank can make either 40 zippers and no books or 20 books and no zippers or any other combination of these two goods that lies on his linear production possibility frontier. Sally can make either 10 zippers and zero books or 20 books and no zippers or any other combination of these two goods that lies on her linear production possibility frontier.

a. (1 point) Given the above information and holding everything else constant, how many hours does it take Frank to make 4 zippers?

b. (1 point) Given the above information and holding everything else constant, how many hours does it take Sally to make 2 books?

c. (4 points) In the space below draw the joint PPF for Sally and Frank. In your graph, measure zippers (Z) on the vertical axis and books (B) on the horizontal axis. Make sure that you include all intercept values as well as any values for "kink points".

d. (2 points) For each of the following determine the range of acceptable trading prices.

      i. 1 book will exchange for a trading price between

      _____

      ii. 6 zippers will exchange for a trading price between

      _____

      iii. 8 books will exchange for a trading price between

      _____

      iv. 3 zippers will exchange for a trading price between

      _____

e. (2 points) For each of the (Books, Zippers) combinations given below determine whether the combination lies on the joint PPF, above the joint PPF, or below the joint PPF.

i. (Books, Zippers) = (2, 48) _____

ii. (Books, Zippers) = (25, 32) _____

iii. (Books, Zippers) = (31, 18) _____

iv. (Books, Zippers) = (37, 5) _____

2. (Worth a total of 10 points) Suppose the small, closed economy of Kavia's market for mangoes can be described by the following domestic demand and supply equations where P is the price of a unit of mangoes and Q is the number of units of mangoes:

Domestic Demand: $P = 100 - (1/10)Q$
Domestic Supply: $P = 20 + (1/30)Q$

a. (2 points) In the space below calculate the value of consumer surplus (CS) and producer surplus if this market is closed to trade.

b. (2 points) Suppose this market opens to trade and Kavia exports 400 units of mangoes. What is the world price given this information and holding everything else constant? **Show in a well-ordered and explained manner how you found your answer.**

c. (2 points) Suppose this market opens to trade and Kavia imports 600 units of mangoes. What is the world price given this information and holding everything else constant? **Show in a well-ordered and explained manner how you found your answer.**

d. (2 points) Suppose this market opens to trade and at the world price Kavia would import 600 units of mangoes. (See (c).) Now, the government opens the market to trade but restricts the amount of imports to 400 units of mangoes. What will be the price of a unit of mangoes given this import restriction? **Show in a well-ordered and explained manner how you found your answer.**

e. (2 points) Given the import restriction described in (d), calculate the deadweight loss from the imposition of this import restriction. **Show in a well-ordered and explained manner how you found your answer.**

3. (Worth a total of 10 points) Suppose you are given the following information about production in Hopland:

	Price in 2014	Quantity in 2014	Price in 2015	Quantity in 2015
Containers of Cottage cheese	$4.00 per container	10 containers	$5.00 per container	10 containers
Packages of Ham	$5.00 per package	20 packages	$4.00 per package	15 packages

a. (1 point) In the space below provide a general formula for calculating nominal GDP. This formula should not reference specific goods but should instead provide a formula that someone could use in calculating nominal GDP.

b. (2 points) In the space below calculate nominal GDP for 2014 and nominal GDP for 2015 from the provided data. Once you have calculated your answers and shown your work, put your answer in the provided table.

Year	Nominal GDP
2014	
2015	

c. (1 point) Write a general formula for calculating real GDP. This is a general formula and not one specific to this data set.

d. (2 points) Calculate real GDP for Hopland based upon the given data using 2015 as the base year. Show all your work in finding this answer and then summarize your answer in the provided table.

Year	Real GDP with 2015 base year
2014	
2015	

e. (2 points) Calculate the GDP deflator for 2014 and for 2015 given the work you have done in parts (a) through (d). Calculate the GDP deflator based on a **200 point scale and using 2015 as your base year**! Make sure you show any formula that you use and all your work in finding your answer. **You may round to the NEAREST WHOLE NUMBER IN YOUR ANSWER!**

f. (2 points) Between 2014 and 2015 what is happening to the level of production in this economy? What is happening to the level of prices in this economy during this time period based upon the GDP deflator? Use complete sentences in your answer.

END OF EXAM!