Economics 102	Name _____
Fall 2015	TA Name _____
November 16, 2015	Discussion Section #_____
Second Midterm	Student ID # _____

Version 1

**DO NOT BEGIN WORKING UNTIL THE INSTRUCTOR TELLS YOU TO DO SO.
READ THESE INSTRUCTIONS FIRST.**

You have 50 minutes to complete the exam, **including filling in your scantron**. The exam consists of **10 binary choice questions worth 2 points each** and **19 multiple choice questions worth 4 points each**. Please accurately and completely provide your **name**, **ID number**, **discussion section number, version number, and TA name** on the scantron sheet and the exam booklet. Writing all this information correctly is **worth 4 points**. Answer all questions on the scantron sheet with a #2 pencil. There are 18 printed pages in this exam, including this cover sheet. **DO NOT PULL THE EXAM APART OR REMOVE THE STAPLE**.

WARNING: NO COMMUNICATION OR CALCULATING DEVICES, OR FORMULA SHEETS ARE ALLOWED. NO CONSULTATION AND CONVERSATION WITH OTHERS ARE ALLOWED WHILE YOU ARE TAKING THE EXAM OR IN THE EXAM ROOM. ACADEMIC MISCONDUCT IS A SERIOUS OFFENSE AND PUNISHABLE TO THE FULLEST EXTENT. PICK THE BEST ANSWER FOR EACH QUESTION.

How to fill in the scantron sheet and other information:
1. Print your last (family) name and first (given) name, in the spaces marked "Last Name," and "First Name." Fill in the corresponding bubbles below.
2. Print your student ID number in the space marked "Identification Number." Fill in the bubbles.
3. Write **the number of the discussion section you've been attending under "Special Codes" spaces ABC**, and fill in the bubbles. The discussion numbers can be found at the bottom of this page.
4. Write the **version number** of your exam booklet under **"Special Codes" space D**, and fill in the bubble. The version number is at the top of this page.

- **If there is an error on the exam or you do not understand something, make a note on your exam booklet and the issue will be addressed AFTER the examination is complete. No questions regarding the exam can be addressed while the exam is being administered.**
- **When you are finished, please get up quietly and bring your scantron sheet and this exam booklet to the place indicated by the instructors.**

Gary Baker	**Saerang Song**	**Sandra Spirovska**	**Wenqi Wu**
372 Fri 11:00 AM Van Hise 399	**371** Thurs 3:30 PM Van Hise 474	**370** Thurs 2:25 PM Van Hise 367	**363** Thurs 3:30 PM Ingraham 224
368 Fri 12:05 PM Van Hise 486	**362** Fri 8:50 AM Social Sciences 5231	**366** Fri 12:05 PM Van Hise 491	**367** Fri 8:50 AM Social Sciences 6102
	369 Fri 1:20 PM Van Hise 391	**361** Fri 1:20 PM Ingraham 223	**365** Fri 11:00 AM Van Hise 475
		360 Fri 2:25 PM Ingraham 223	**364** 2:25 PM Ingraham 224

I, _____, agree to neither give nor receive any help on this exam from others. I understand that the use of a calculator or communication device on this exam is academic misconduct. I also understand that providing answers to questions on this exam to other students is academic misconduct, as is taking or receiving answers to questions on this exam from other students. Thus, I will cover my answers and not expose my answers to other students. It is important to me to be a person of integrity and that means ALL ANSWERS on this exam are my answers. Any violation of these guidelines will result in a penalty of <u>at least</u> receiving a zero on this exam.

Signed _____

Binary Choice (worth 2 points each)

1) Suppose the independent nation of Sealand increased its imports from the United States this year, and all other spending remains unchanged from the prior year. Given this information, Joseph reasons (by means of the expenditure approach) that Sealand's GDP has increased this year because of the additional spending on imports.

   Is Joseph's reasoning correct?

   a) Yes, Sealand's GDP has increased this year.
   b) No, Sealand's GDP has <u>not</u> increased this year.

2) In October 2009, the official unemployment rate (U3) in the US peaked at 10%. If the Bureau of Labor Statistics (BLS) counted discouraged workers as unemployed, then the unemployment rate in October 2009 would have been:

   a) Greater than 10%.
   b) 10%, because discouraged workers are already counted in U3.

3) The Simpsons borrowed money, that is took out a mortgage, in order to buy a house. At the time of the house purchase, the nominal interest rate on the mortgage was 10%, with an expected inflation rate of 7%. If the actual inflation rate is 5% over the period of time the Simpsons are repaying their house loan, how will this affect the Simpsons?

    a) The lower than expected inflation rate makes this mortgage more expensive in real terms for the Simpsons.
    b) The lower than expected inflation rate makes this mortgage less expensive in real terms for the Simpsons.

4) Kevin deposits $1000 in the bank and receives $1050 at the end of the year. If the inflation rate was 10% during this period, then what is the approximate average real return on Kevin's savings?

    a) 5%
    b) -5%

5) Suppose we know that the government computes the CPI using a basket of only apples and onions, but we do not know exactly how many apples and onions are in this fixed basket. Further, suppose that in 2014, the CPI was 100, and the price per apple was $1 and the price per onion was $1.

In 2015, the price of apples increased to $2 per apple, while the price of onions remained fixed at $1 per onion. The CPI for 2015 increased to 110. Given this information, are there more apples or onions in the CPI basket?

    a) There are more <u>apples</u> in the CPI basket.
    b) There are more <u>onions</u> in the CPI basket.

6) A large fraction of the labor force of Buggyland produces buggy whips. At the same time, Autoland invents the car and exports great numbers of cars to Buggyland. These exports put buggy whip manufacturers out of business in Buggyland and the buggy whip industry becomes obsolete.

Given this information and holding everything else constant, in Buggyland the unemployment rate increases while the natural rate of unemployment remains the same.

    a) True
    b) False

7) If output and employment in an economy are above the full-employment level, then this implies that:

    a) The natural unemployment rate has fallen.
    b) This economy is producing in the short-run above the long-run trend line of real GDP.

8) Suppose this year, Neverland experiences a major economic downturn. Because of this economic downturn, 20% of the labor force was laid off while the capital stock was unaffected. Assume that Neverland's aggregate production function has the usual properties of diminishing marginal returns and can be expressed as $Y = \alpha K^{1/2} L^{1/2}$. Given this information, and holding all else fixed:

    a) Neverland's total output falls by more than 20%.
    b) Neverland's total output falls by less than 20%.

9) Suppose Canada has recently seen an increase in its employment due to immigration. At the same time, Canada lost some of its productive capital due to a major fire (no people were harmed in this fire). Given this information and holding everything else constant, what can we say about the marginal product of capital and total output (real GDP) in Canada after the immigration and fire? (Assume that Canada's aggregate production function has the usual properties of diminishing marginal returns and can be expressed as $Y = \alpha K^{1/2} L^{1/2}$.)

    a) Total output <u>falls</u> and the marginal product of capital is <u>indeterminate</u>.
    b) Total output is <u>indeterminate</u>, and the marginal product of capital <u>increases.</u>

10) Financial analysts predict that the country of Guyana will have very high economic growth this year. This prediction improves consumers' confidence in the economy, making them more inclined towards consumption and less inclined towards savings. Based on this information, how will the interest rate in Guyana most likely react? Assume borrowing and lending takes place **ONLY** between residents of Guyana.

    a) The interest rate in Guyana will rise.
    b) The interest rate in Guyana will fall.

Multiple Choice (worth 4 points each)

11) Suppose a country experiences constant population growth, and thus labor force growth, but no capital growth (or depreciation) and no technology improvement. Given this information, which of the following statements must be <u>true</u>?

    a) Real GDP in this economy will remain constant.
    b) Labor productivity will increase.
    c) Capital productivity will decrease.
    d) Real GDP per capita will fall.

12) Suppose John invested $10 into some asset 10 years ago, and today that asset is worth $40. Given this information and holding everything else constant, what is the approximate annual rate of return on this asset (assume that the annual rate of return is constant over this ten-year period)?

    a) 7%
    b) 14%
    c) 40%
    d) 300%

13) In order to spur economic growth, the government of Luxembourg would like to see the population of Luxembourg double in 35 years. Each year in Luxembourg, for every 100 residents, one baby is born, but 2% of the population dies. In order to meet the 35-year population target, what must the annual immigration rate be for Luxembourg? Assume that all rates are constant over time in this problem.

    a) 1% a year
    b) 2% a year
    c) 3% a year
    d) 4% a year

14) The official unemployment rate in the US was 10% in October 2009, and it is currently 5.1%. Which of the following changes would **NOT** contribute to this fall in the unemployment rate?

   a) Holding everything else constant, the number of employed people increased, while the number of unemployed people remained the same.
   b) Holding everything else constant, the number of employed people increased, while the number of unemployed people decreased.
   c) Holding everything else constant, some discouraged workers started applying for jobs 4 weeks ago, but have not yet found jobs.
   d) Holding everything else constant, some of the unemployed people stopped applying for jobs 4 weeks ago, without having found a job.

15) The following table presents employment information for some small nation.

Civilian noninstitutionalized population, age 16+	1,500,000 people
Civilian noninstitutionalized Labor force participation rate	66.7%
Unemployment rate	10%

Given the above information, what is the number of employed people?

      a) 100,000 people
      b) 150,000 people
      c) 900,000 people
      d) 1,350,000 people

16) Use the following table to answer the next question. Assume that the Deflators are calculated using 2014 as the base year.

Year	Nominal GDP	Deflator
2013	$50,000	90
2014	-	-
2015	$60,000	150

Given the above information, which of the following statements is <u>true</u>?

      a) Real GDP increased from 2013 to 2015.
      b) The price level (as measured by the deflator) is higher in 2014 than in 2013.
      c) The value of nominal GDP in 2014 <u>must</u> be located between the nominal GDP of 2013 and 2015.
      d) Real GDP in 2014 is definitely higher than nominal GDP in 2014.

17) Suppose in 1990, <u>Real</u> GDP is $10,000 and the GDP deflator is 50. In 1991, <u>Nominal</u> GDP is $15,000 and the GDP deflator is 150. Given this information and holding everything else constant, what is the growth rate of Real GDP from 1990 to 1991?

      a) 0%
      b) 50%
      c) 100%
      d) 200%

Use the following information for the next two (2) questions.

Suppose we have the following information about prices for 2004 (the base year), 2005, 2006, and 2007:

Year	Cost of CPI Market Basket	CPI (scale factor = 100) with Base Year 2004	Annual Rate of Inflation
2004	$50		--------
2005			25%
2006			
2007		180	-10%

18) Given the above information, what was the cost of the market basket in 2006?

    a) $81
    b) $100
    c) $162
    d) $200

19) Suppose we compute a new CPI based on the above data, but use 2005 as the base year. What is the CPI for 2004 if 2005 is the base year?

    a) 75
    b) 80
    c) 120
    d) 125

20) Which of the following statements about the CPI and GDP Deflator are true?

I)   Both the CPI and the GDP Deflator can be used as measurements of the aggregate price level.

II)   Percent changes in the aggregate price level computed using the CPI do *not* depend on the choice of base year.

III)   Percent changes in the aggregate price level computed using the GDP deflator *do* depend on the choice of base year.

a) Only (I) is a true statement.
b) (I) and (III) are true statements.
c) Only (II) is a true statement.
d) (I), (II), and (III) are all true statements.

Use the following information for the next <u>two (2)</u> questions.

In May 2010, there were 10,000,000 people aged 16 or older in the civilian noninstitutionalized labor force living in Gruyovia. The dictator of Gruyovia insists that the economy is doing well because the labor force participation rate is at 80%. However, his opponents argue that 1/4 of those people are working only part-time, and another 1/2 of these people are still looking for jobs (assume both the dictator's and his opponents' data are correct).

21) Based on the opponents' arguments and the provided information, what is the unemployment rate in Gruyovia?

    a) 25%
    b) 50%
    c) 75%
    d) We cannot calculate the unemployment rate from the information given.

22) After hearing the opponents' arguments, 1,000,000 people who were not employed and were not actively searching for work leave the country. Additionally, of those individuals who did not initially have a job and were actively searching for a job, 1,000,000 decide to leave the country, while another 1,000,000 become depressed about the economic situation and stop searching for a job. Assume these changes occur between May and the end of June 2010. Assume there are no other changes to the labor market in Gruyovia.

When Gruyovia's labor statistics office assesses the employment situation in July 2010, what does it find?

    a) Both the unemployment rate and the labor force participation rate have increased.
    b) The unemployment rate has increased, but the labor force participation rate has decreased.
    c) The unemployment rate has decreased, while the labor force participation rate has increased.
    d) Both the unemployment rate and the labor force participation rate have decreased.

23) Suppose in 2014, the government decides to borrow money to finance a new war, and simultaneously replaces the income tax with a consumption tax. All else being equal, which of the following statements is **true**?

    a) Both the equilibrium quantity of loanable funds and the equilibrium interest rate will increase.
    b) The equilibrium quantity of loanable funds will be indeterminate, and the equilibrium interest rate will increase.
    c) The equilibrium quantity of loanable funds will increase, and the equilibrium interest rate will be indeterminate.
    d) The equilibrium quantity of loanable funds will decrease, and the equilibrium interest rate will increase.

24) Imagine that in 2016 the U.S. federal government budget deficit shrinks (it is still a deficit, but a smaller one), while the U.S. trade deficit increases. Assuming that savings by U.S. households stays constant, which of the following statements is true given this information and holding everything else constant?

    a) The supply of loanable funds shifts to the left.
    b) The interest rate in the U.S. decreases.
    c) The U.S. experiences a net capital outflow.
   d) Crowding out of investment will occur.

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

At the interest rate of 5%, the people of Innsmouth, MA are willing to lend $10,000 to local business, while local businesses are willing to borrow $20,000. When the interest rate rises to 10%, the quantity of loans supplied increases to $20,000 while the quantity of loans demanded drops to $10,000. Because the people of Innsmouth are suspicious of outsiders, all financial transactions happen between locals. Assume both the supply and demand curves for loanable funds are linear in Innsmouth.

25) Captain Marsh hopes to borrow money to open a factory in town. Given the above information and holding everything else constant, what is the interest rate that Captain Marsh will pay for her loan?

   a) 8%
   b) 7.5%
   c) 7%
   d) 6.5%

26) Return to the original scenario and assume that Captain Marsh is not borrowing any funds. Suppose the town council of Innsmouth, instead of running their usual balanced budget, decides to borrow $5,000 from the townspeople to build a new park. Assume that the supply of loanable funds stays constant. Given this information and holding everything else constant, which of the following statements is true?

   I. The level of private investment spending in Innsmouth will decrease.
   II The level of savings in Innsmouth will increase.
   III. The equilibrium interest rate will increase after the town council implements its decision.

   a) I is a true statement.
   b) I and III are true statements.
   c) I, II, and III are all true statements.
   d) II and III are true statements.

Use the following information for the next two (2) questions.

Consider the following graph of an aggregate production function for two different levels of capital:
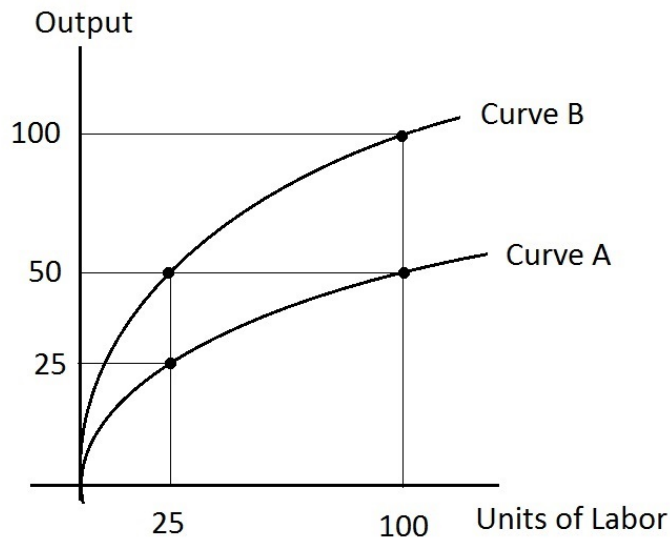
Suppose that the capital level for Curve B is higher than that of Curve A.

27) Based on the provided information and the above graph, consider the following statements:

I) When labor is equal to 100 units and capital is at its lower level, then output is equal to 50.
II) Holding the level of capital constant, the Marginal Product of Labor *decreases* as the amount of labor increases.
III) Holding the level of labor constant, Labor Productivity *decreases* as the amount of capital increases.
IV) Holding the level of capital constant, Labor Productivity *increases* as the amount of labor increases.

Which of the above statements are <u>true</u>?

a) I and II are both true statements.
b) I and III are both true statements.
c) I, II and III are all true statements.
d) I, II and IV are all true statements.

28) Now suppose that the graph above represents the production function

$$Y = \sqrt{K}\sqrt{L}$$

Where Y represents units of output, K represents units of capital, and L represents units of labor.

Given this information, what are the level of capital for Curve A and Curve B?

    a) $K = 1/2$ for Curve A, and $K = 1$ for Curve B
    b) $K = 5$ for Curve A, and $K = 10$ for Curve B
    c) $K = 16$ for Curve A, and $K = 25$ for Curve B
    d) $K = 25$ for Curve A, and $K = 100$ for Curve B

29) Since at least the 1970s, the number of transistors that fit on a given area has doubled approximately every 2 years (This pattern is known as *Moore's Law*). Basically, this implies that the speed of computers doubles every two years.

Suppose the nation of Silicon Valley has an aggregate production function given by

$$Y = A\sqrt{KL}$$

where A represents the level of technology, K represents units of capital, and L represents number of employed workers. The only type of capital in Silicon Valley is computers, and the technology level, A, measures the speed of these computers. Suppose technology in Silicon Valley obeys Moore's Law.

In 2012, the government of Silicon Valley finds that **both the level of output and the amount of capital stock are exactly what they were in 2010**. Given this information, and holding everything else constant, which of the following statements are **TRUE**?

I) Technology grows at an approximate rate of 70% per year.
II) The number of employed people in 2012 must be ¼ of the number of employed people in 2010.
III) Capital productivity is the same in 2012 as in 2010.
IV) The marginal productivity of labor is higher in 2012 than 2010.

    a) Only I is a true statement.
    b) Only III is a true statement.
    c) I, II and IV are all true statements.
    d) II, III and IV are all true statements.

END OF EXAM

If you finish early, please sit quietly until time is up. You should use this time to check your work and check that your information is filled out correctly on this test booklet and your scantron.