Econ 102   Lecture 100
Exam I   Form 1

ECON 102/100

February 10, 2005

Section	Day	Time	Location	GSI
101	F	2:30-4	205 DENN	Jooyong
102	F	11:30-1	373 Lorch	Sue
103	F	1-2:30	373 Lorch	Jooyong
104	M	4-5:30	351 DENN	Joanne
105	M	2:30-4	330 DENN	Joanne
107	F	1-2:30	110 DENN	Sue
108	M	8:30-10	373 Lorch	Seb

· Do NOT open this exam booklet until instructed to do so!
· Please take a moment to complete the identification information on the scantron.
  Indicate your NAME, discussion SECTION number, FORM number, and UM ID
  number. THIS IS WORTH <u>TWO</u> POINTS ON THE EXAM!
· The exam has 100 points and is designed to take about 60 minutes to complete.
  However, you'll have approximately 80 minutes. Check that you have all 11 pages of
  the exam.
· Read the questions and these instructions carefully!
· Use the space provided in this booklet and the back of the pages to work out the
  answers to the multiple choice problems. Use the space provided on the actual page for
  the short answer questions.
· You can use only NON-graphing calculators.
· For multiple choice questions, you get 3 points for a correct answer, 0 points for a
  blank, and 0 points for a wrong answer. There are NO penalties for guessing.
· Sign the honor code below!

<u>Honor Code</u>:   I did not use any unauthorized aid on this exam.

<u>Name</u>: (PRINT)   _____

<u>UM ID #</u>:   _____

<u>Signature</u>:   _____

Part I: Multiple Choice: (26 questions, 3 pts each = 78 pts)
Pick the best answer among the given choices.

1. In the measurement of GDP, a country's imports

a) Do not enter the calculation because they are not produced in the country.
b) Enter positively because imports are used in the production of other goods.
c) Enter positively because GDP includes production abroad.
d) Enter negatively because imports reduce the country's productivity.
e) Enter negatively because other components of expenditure include imports.

Use the following information to answer questions 2 through 4. Suppose you are given the following information about a closed economy, *where r is the real rate of interest*

$Y = \$25{,}000$	Real GDP = Income
$T = \$5{,}000$	Net tax collections
$G = \$4{,}000$	Government purchases
$s = 0.15$	Marginal propensity to save (MPS)
$S_{pr} = s(Y - T) + 1{,}500r$	Private saving function;
$I = \$4{,}200 - 2{,}500r$	Total investment function

2. What is the government deficit or surplus?

a) $20,000 surplus
b) $1,000 surplus
c) No surplus or deficit at all
d) $1,000 deficit
e) $20,000 deficit

3. What is the equilibrium real interest rate r? What is the corresponding level of investment at this rate of real interest?

a) 5% and $4,075
b) 5% and $5,075
c) 0.5% and $3,875
d) 0.5% and $4,075
e) 0.5% and $5,075

4. Now the government decides to lower the tax T from $5,000 to $4,500. What is the new equilibrium level of r?

a) 5.550%
b) 6.525%
c) 10.275%
d) 16.525%
e) 15.625%

Use this information to answer questions 5 and 6. Mary found the following articles in today's copy of the Wall Street Journal:
- I. Government cuts defense spending in order to provide increased number of college grants.
- II. A very effective medicine for lung cancer, increasing the expected survival rate by 40%, has been invented.
- III. Congress has passed a bill that requires manufacturing firms to spend a minimum percentage of their previous year's revenue on R&D. This percentage is higher than the current average of R&D expenditure.
- IV. People are consuming higher percentage of their income than before.
- V. Government has raised its defense expenditure.

5. Which of the above mentioned events is likely to accelerate the growth of **per capita GDP** of the United States?

a) I only
b) I and II only
c) I and III only
d) I, III and IV only
e) None of the above

6. Which is likely to affect the ***long-run growth rate*** of the United States?

a) I and VI only
b) III only
c) I, III, and VI only
d) II, III, and VI only
e) None of the above

7. Country A is a closed economy. Its GDP is $15 billion. Its government purchases $4 billion in goods and services, collects $5 billion in taxes, and provides $2.5 billion in transfer payments to households. Private savings in Country A is equal to $5 billion. What is investment in Country A?

a) $5 billion
b) $6 billion
c) $4.5 billion
d) $3.5 billion
e) $5.5 billion

8. The effects of an increase in the government budget deficit include

a) A decrease in the supply of loanable funds
b) An increase in the equilibrium interest rate
c) A decrease in the equilibrium quantity of investment
d) All of the above
e) b and c only

9. At a constant interest rate of 10% a year, the present value of a winning lottery ticket paying $1 million a year for three years, where the first payment is made at the end of Year 1, is approximately:

a) $3 million
b) $2.9 million
c) $2.75 million
d) $2.5 million
e) It is impossible to calculate without knowing how risk averse the individual is

10. Based on common assumptions made about the aggregate production function, for a given number of workers, as the amount of capital is increased output will:

a) Increase at an increasing rate
b) Increase at a constant rate
c) Increase at a decreasing rate
d) Decrease at a increasing rate
e) Decrease at a decreasing rate

11. Which of the following statements is true?

a) Technological knowledge is the quality of society's textbooks, whereas human capital is the people who make the textbooks.
b) The terms 'human capital' and 'technological knowledge' can be used interchangeably.
c) The purpose of a patent system is to protect human capital.
d) An individual worker's productivity depends on both technology and human capital.
e) None of the above

Use the following information to answer questions 12 and 13:

In 2005,
- Company A in the US buys
  - $3,000 worth of parts manufactured in Mexico in 2005,
  - $5,000 worth of parts manufactured in the US in 2003, and
  - $12,000 worth of parts manufactured in the US in 2005.
- Company A uses the parts to manufacture Widgets, which it sells to a German auto manufacturer for $28,000.
- The German automobile is manufactured and sold to an American citizen in Ann Arbor for $40,000 in the same year.

12. What is the contribution of these events to US GDP for 2005?

a) $20,000
b) $23,000
c) $25,000
d) $28,000
e) $40,000

13. What is the contribution, if any, to German GDP in 2005?

a) Zero, because the final good was consumed by a non-German
b) Zero, because net exports equals zero and there is no consumption by a German
c) $40,000
d) $12,000
e) $7,000

14. Which of the following might decrease GDP per capita?

a) Increase in population
b) Increase in Capital stock
c) Increase in human capital
d) Increase in natural resources
e) None of the above

Use the following information to answer questions 15 and 16. We have real GDP per capita for 8 fictitious countries in an unspecified year. And we also have the expected growth rate of real GDP per capita for each country. Assume the growth rates are constant.

Countries	GDP per Capita	Growth rate
A	83,839	2.19%
B	33,599	2.25%
C	75,943	3.38%
D	23,877	5.00%
E	13,135	3.67%
F	408	0.16%
G	25,417	1.28%
H	5,769	-4.07%

15. How many years will it take to double the ratio of Country E's real GDP per capita to that of Country A?

a) 19 years
b) 32 years
c) 47 years
d) 57 years
e) 70 years

16. Which of the following countries can "catch up" with Country A within approximately 50 years?

a) G
b) E
c) H
d) B
e) D

17. Which of the following will **not** change GDP in the US?

a) Bob buys $2000 of bonds issued by the US government
b) Kate spends 2 hours babysitting her sister's daughter and gets $40 from her sister
c) Bob buys a new TV set from Bestbuy.com
d) Kate buys a TV set from Canada for $50, and also sells a basket she made by herself
   to a Canadian tourist for $40
e) None of the above (that is, all of the above will change US GDP)

Use the following to answer questions 18 and 19. Suppose there is a small economy where there are 3 goods in 2000, 5 goods in 2001, and 5 goods in 2002. The details are contained in the following table.

	CPI Basket	2000		2001		2002	
		Quantity	Price	Quantity	Price	Quantity	Price
UGGs	5	6	100	8	125	12	175
NorthFace Coats	1	3	250	4	260	4	275
Burberry Scarf	2	5	50	10	50	15	75
Sweatpants	-	-	-	50	20	100	25
Lacoste Shirts	-	-	-	20	75	25	75

18. What is the CPI for 2001? (Let the base year be 2000)

a) 145.2
b) 115.9
c) 96.25
d) 125.6
e) None of the above

19. What is the GDP deflator of 2002? (Suppose the base year is 2001)

a) 117
b) 121
c) 125
d) 129
e) None of the above

20. You read in the news that China is expected to surpass the United States in terms of per capita income sometime during the coming century. However, there are a number of reasons why this might fail to occur, based both on the assigned article and the theory of growth discussed in the textbook. Which of the following is **not** one of those reasons?

a) Shortages of energy and water in China.
b) Increased population growth in the United States.
c) The law of diminishing returns.
d) Environmental degradation in China.
e) Unrest due to rising inequality and lack of political freedom.

21. According to the assigned news item about the U.S. government budget deficit, by what means does the Bush administration plan to reduce the size of the deficit?

a) Increase unemployment compensation so that unemployed workers can consume more.
b) Raise income taxes.
c) Raise taxes on capital gains.
d) Restrain government spending.
e) Reform Social Security.

22. You read an article (by Hymans) giving the University of Michigan's forecast of the U.S. economy for the coming few years. According to that forecast, the GDP growth rate will be _____ than it is now, and the unemployment rate will be _____ than it is now.

a) Lower; lower.
b) Lower; higher.
c) Higher; lower.
d) Higher; higher.
e) The article did not say what would happen to GDP growth and unemployment.

23. How is it possible for a fall in the country's income tax rate to cause a larger amount of taxes to be collected?

a) By stimulating the economy so that income rises.
b) By crowding out government spending and increasing the surplus.
c) By slowing GDP growth, releasing resources to the government.
d) By making it easier for rich people to evade paying taxes.
e) It is not possible for a fall in the income tax rate to increase taxes collected.

24. By diversifying a portfolio of risky assets, a person can

a) Reduce the likelihood of a large loss.
b) Increase the likelihood of gaining overall from whichever assets does the best.
c) Increase the expected overall return on the portfolio.
d) Reduce the taxes that they are expected to pay on income from the portfolio.
e) Learn from the performance of one asset and apply those lessons to managing another.

25. Uncle Alan buys a second-hand car from Auntie Katie for $4,000 in 2005. The car was made in 2003 in the US and sold to Auntie Katie in 2004 for $20,000 as a new car. But after selling her old car, Auntie Katie finds that it's very inconvenient without a car. So, she buys a new car made in Germany in 2004 for $30,000 after selling her old car. Which of the following is CORRECT?

a) US GDP decreases by $26,000 in 2005.
b) US GDP increases by $30,000 in 2005.
c) US GDP increases by $20,000 in 2003.
d) US GDP increases by $20,000 in 2004.
e) US GDP increases by $4,000 in 2005.

26. Which of the following is **not** a valid difference between stocks and bonds?

a) Unless the issuer goes bankrupt, the nominal payments to the bond holder are known in advance, while the nominal payments to the stockholder are not.
b) Unless the issuer goes bankrupt, the real payments to the bond holder are known in advance, while the real payments to the stockholder are not.
c) If the issuer goes bankrupt, the bond holders are more likely to be paid something than are the stockholders.
d) Bonds are less risky than stocks, in that their prices are less uncertain.
e) A share of stock represents partial ownership of the corporation that issued it, while a bond does not.

Part II: Short Answer: (20pts)
        Write a solution to each of the following problems.

1. Kristen gets a two year job offer from UGG manufacturing company in Australia. Her perspective employer offers the following two salary options:

Option #1: $5,000 paid at the end of year 1 and $10,000 paid at the end of year 2
Option #2: $7,500 paid at the end of year 1 and $7,300 paid at the end of year 2

a) Kristen is not very good at math, so she hires you to consult with her on which option she should choose. She tells you that the global interest rate is set at 10%. Which option do you recommend? **Defend your answer by showing all of your work. (4 points)**

b) At what interest rate would you be indifferent between the two options? (3 points)

2. In the space below,
   a. Draw the graph showing equilibrium in the loanable funds market, being sure to label the axes and the cures, and labeling the equilibrium real interest rate r_1. (4 points)

   b. Now suppose that the government of this country undertakes a new and expensive government project to better educate its youth by increasing the number of teachers, and that it chooses to do this without raising taxes. Explain in words how this policy change will change the underlying behavior represented in the loanable funds market, and show in the diagram that you drew above how this changes one or both of the curves and the equilibrium. (You should ignore, here, the effects that this policy might eventually have on the productivity of the economy.) (5 points)

   c. (1 point each) Record below the resulting direction of change in

         i. the interest rate,   rises   falls   is unchanged

         ii. investment,   rises   falls   is unchanged

         iii. private savings and   rises   falls   is unchanged

         iv. government savings   rises   falls   is unchanged