

**ECON 102/100**

February 18, 2003

Section	Day	Time	Location	GSI
101	F	10-11:30	1060 EH	Irina Grafova
102	TH	11:30-1	B239 EH	Ivan Kandilov
104	TH	1-2:30	351 DENN	Jon Millar
105	TH	2:30-4	173 LORCH	Jan Sokolowsky
106	TH	4-5:30	142 LORCH	Jan Sokolowsky
107	F	2:30-4	142 LORCH	Jon Millar
109	F	11:30-1	B239 EH	Irina Grafova

- 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 TWO 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 10 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 point for a blank, and 0 points for a wrong answer. There are NO penalties for guessing.
- Sign the honor code below!

Honor Code:      I did not use any unauthorized aid on this exam.

Name: (PRINT) \_\_\_\_\_

UM ID #: \_\_\_\_\_

Signature: \_\_\_\_\_

**Multiple Choice: (26 questions, 3 pts each = 78 pts)**

Pick the best answer among the given choices.

1. Suppose that households expect the money supply to increase from 110 to 121 over the coming year, and that real output (Y) is expected to grow from \$2000 to \$2060. Suppose also that, if households put money into savings deposits, they can earn a 12 percent nominal interest rate. According to the quantity theory of money (with constant velocity) and the Fisher equation, households should expect a real rate of return on their savings deposits of \_\_\_\_\_ percent.
  - a) 2
  - b) 5
  - c) 7
  - d) 12
  - e) The answer can't be determined from the information given.
2. The University of Michigan, a government-owned school, is currently building a new hospital. This will be classified in US GDP as \_\_\_\_\_, because \_\_\_\_\_.
  - a) investment; it increases the capital stock
  - b) investment; it is a new building
  - c) government purchases; the construction constitutes government activity
  - d) net exports; most construction workers are foreigners
  - e) consumption; people will benefit from hospital services in the future

	Quantity in CPI Basket	Price in 2000	Price in 2001	Price in 2002
Pizzas	10	\$10.00	\$11.00	\$12.10
Burgers	20	\$3.00	\$3.60	\$3.78

3. Use the data above to select from below the correct statement about the consumer price index based on just the two goods, pizzas and burgers, using the quantities indicated and with a base year of 2000.
  - a) From 2000 to 2002, pizzas rose in price by a larger percentage than burgers.
  - b) The CPI in 2001 is 100.
  - c) The rate of inflation from 2000 to 2001 is 15.13%.
  - d) The CPI in 2002 is 197.
  - e) The rate of inflation from 2001 to 2002 is 8.02%.

4. The primary channel through which patent laws affect economic growth is
  - a) by encouraging innovation and thus increasing short run growth in per capita GDP via improved human capital.
  - b) by encouraging innovation and thus increasing long run growth in per capita GDP through faster technological progress.
  - c) by discouraging wide use of inventions, because they grant monopoly power to the owners of the patents and are thus bad for economic growth.
  - d) by encouraging innovation and thus increasing long run growth in per capita GDP through increased human capital.
  - e) none of the above, as patents cannot change human behavior and are therefore irrelevant to short and long run growth of GDP.
5. Which of the following is TRUE?
  - a) A stock represents indebtedness, whereas a bond represents ownership.
  - b) A stock represents a financial intermediary .
  - c) A bond represents indebtedness, whereas a stock represents ownership.
  - d) The corporation that issued a bond is called the principal of the bond.
  - e) None of the above.
6. There is a “double coincidence of wants” when
  - a) the Fed seeks to decrease both unemployment and inflation.
  - b) the demand for money needed for real transactions equals the supply of money created by the Fed, and vice versa.
  - c) one person wants to buy what another wants to sell, and simultaneously wants to sell what the other wants to buy.
  - d) the real interest rate equals the nominal interest rate minus the rate of inflation.
  - e) the amount that households want to save equals the amount that firms want to invest.
7. According to the theory of efficiency wages, if Irina, the CEO of a corporation that hires nonunion labor, decides to increase what she pays workers above the competitive equilibrium wage,
  - a) the profits of her firm may increase as a result.
  - b) the higher wages will induce her workers to shirk.
  - c) the turnover of her workers will increase.
  - d) she will face a shortage of labor.
  - e) the wage increase will have no effect on productivity.
8. At its meeting near the end of January, what did the Federal Reserve policy committee do to the target for the Federal Funds rate?
  - a) Raised it from 1.25% to 1.50% due to fears of inflation.
  - b) Lowered it from 1.50% to 1.25% due to fears of deflation.
  - c) Held it constant at 1.50% because any change would scare the stock market.
  - d) Raised it from 1.50% to 2.00% to stimulate the sales of bonds.
  - e) Held it constant at 1.25%, which is the lowest it has been in over 40 years.

9. Disposable personal income is
- income of households before net taxes.
  - household income minus net taxes.
  - household income minus net taxes and the cost of housing and food.
  - household income minus net taxes and the costs of necessities.
  - household income spent on diapers.
10. "Substitution bias" refers to the fact that
- a legislated minimum wage causes employers to become biased against hiring labor.
  - inflation causes the nominal interest rate to overstate what a borrower actually pays for a loan.
  - the CPI fails to account for the fact that consumers are able to switch away from goods whose prices rise relative to other goods.
  - if capital grows faster than labor, employers substitute away from labor reducing output per capita.
  - imports substitute for domestically produced goods in the measurement of GDP.
11. Which of the following would NOT decrease the value of money ( $1/P$ ) in the long run?
- A decrease in the reserve requirement for banks ( $R?$ ).
  - A large purchase of bonds by the Fed.
  - The public decides to use credit cards to make a greater proportion of their transactions in order to earn points towards air travel.
  - A fall in the velocity of money ( $V?$ ).
  - All of these variables reduce the value of money in the long run.
12. While the Law of Diminishing Returns would suggest that African countries should have grown faster than other developing countries due to their relatively low income per capita, most African countries have in fact grown more slowly. This can be explained in part by
- the catch up effect.
  - high trade barriers.
  - low tax rates.
  - excessive savings rates.
  - none of the above.
13. According to the loanable funds model, which of the following policies would lead to an increase in the equilibrium real interest rate?
- An increase in GDP.
  - A tax reduction on amounts that people save for their retirement.
  - A decline in government purchases.
  - A decrease in the investment tax credit.
  - None of the above.

14. Which of the following Fed actions increases the money supply?
- a) Sale of government bonds.
  - b) Increase in the reserve requirement.
  - c) Decrease in the discount rate.
  - d) Increase in the CPI.
  - e) Increase in the federal funds rate.
15. Which of the following statements is FALSE?
- a) Frictional unemployment can be a consequence of workers leaving existing jobs to find ones they like better.
  - b) There will be structural unemployment if wages are kept above the equilibrium wage level.
  - c) The natural rate of unemployment includes structural but not frictional unemployment.
  - d) Discouraged workers are counted as part of the adult population, but not as part of the labor force.
  - e) Most spells of unemployment are short, but most unemployment observed at any given time is long term.
16. Which of the following is one of the “special features” of the world that make growth possible, according to the New Growth Theory as discussed in the reading by Romer?
- a) Because of past progress, the unexplored possibilities that remain are few, so that new research is likely to discover them with minimal effort.
  - b) Governments are able to take a broader view than firms and thus identify fruitful topics for research and guide the private sector toward pursuing them.
  - c) Markets create incentives for people to exert effort, make discoveries, and share information.
  - d) By limiting international trade and enforcing intellectual property rights, new ideas can be turned into profits instead of being lost to users in other countries.
  - e) Growth usually results from dramatic breakthroughs, such as the steam engine in the nineteenth century, and we need only be lucky in order to grow.
17. In order to put zest back into her graduate life in Michigan, Susie decides to buy a BMW Z4 (a fine German car). Which statement below is TRUE?
- a) German Exports and GDP increase; US Imports increase and US GDP decreases.
  - b) German Net Exports increase and German Consumption falls; US Imports decrease and US GDP increases.
  - c) German Net Exports increase, and German Consumption does not change; US Exports do not change, US GDP falls.
  - d) German Net Exports and GDP increase; US Net Exports fall, US Consumption rises.
  - e) None of the above.

18. Assume that snowmobiles are included in the consumption basket used to calculate CPI. If the prices of Canadian-made snowmobiles imported into the US increase, then the US GDP deflator \_\_\_\_\_ and the US CPI \_\_\_\_\_.
- a) will increase; will increase
  - b) will not increase; will not increase
  - c) will increase; will not increase
  - d) will not increase; will increase
  - e) will decrease; will not change
19. Suppose that after a year of hard, strenuous teaching the Econ crew goes on a discovery mission. In what you might call a very unlikely coincidence, they discover vast deposits of ore containing valuable ruby-red emeralds. It will take 2 years before mining can begin. Which of the following statements is FALSE?
- a) GDP of the current year remains unchanged.
  - b) GDP growth in the long run is unaffected.
  - c) GDP growth in the next 5 years is unaffected.
  - d) The future increase in natural resources will enable the economy to produce more goods and services.
  - e) The rate of technological progress remains unchanged.
20. In closed economy, what does  $Y-T-C$  represent?
- a) Private saving.
  - b) Investment.
  - c) National saving.
  - d) Public saving.
  - e) Government tax revenue.

21. Which of the following is FALSE? The Money Multiplier
- a) is the reciprocal of the reserve ratio.
  - b) would be zero if fractional reserve banking were prohibited.
  - c) means that people think they have more money in the bank than is actually there.
  - d) means that in order to increase the money supply by \$1 million, the Fed needs to increase bank reserves by less than \$1 million.
  - e) is the end result of banks lending out a part of their deposits, with the proceeds of the loans in turn being deposited.
22. Which of the following statements is TRUE?
- a) The labor force participation rate measures the percentage of the adult population of the US that is employed.
  - b) Frictional unemployment results when the number of jobs available in some labor market is insufficient to provide a job for everyone who wants one.
  - c) Structural unemployment results because it takes time for workers to search for the existing jobs that best suit their tastes and skills.
  - d) In the US, teenagers have lower rates of labor force participation but a higher rate of unemployment than do adults.
  - e) Bond prices decrease with decreases in interest rates.
23. Deflation can be harmful because
- a) it swells the real burden of debt, causing bankruptcies and bank failures.
  - b) expectations of lower prices may encourage households to postpone their spending.
  - c) workers are reluctant to accept a nominal pay cut, so that when prices are falling the real wage bill goes up, causing layoffs.
  - d) because interest rates cannot go below zero, deflation makes real interest rates painfully high.
  - e) all of the above.
24. Real GDP per person is not a perfect measure of the current well-being of individuals in society, because
- a) it excludes the value of money.
  - b) it excludes wages paid to labor.
  - c) of substitution bias, new goods bias, and unmeasured quality changes.
  - d) it excludes leisure, services produced at home, environmental quality.
  - e) of all of the above.

25. An income tax increase
- a) decreases BOTH the equilibrium interest rate and amount of national saving.
  - b) increases the equilibrium interest rate and decreases the equilibrium amount of national saving.
  - c) does not affect the equilibrium interest rate.
  - d) has an ambiguous effect on the equilibrium interest rate.
  - e) decreases the equilibrium interest rate and increases the equilibrium amount of investment.
26. Suppose that the banking system has \$20 million in reserves and faces a reserve requirement of 25%. If people hold no cash, then in equilibrium the banks collectively will have \_\_\_\_\_ in deposits and \_\_\_\_\_ in loans.
- a) \$20 million; \$80 million
  - b) \$80 million; \$60 million
  - c) \$100 million; \$80 million
  - d) \$5 million; \$15 million
  - e) \$35 million; \$15 million



**Short Answer: (20pts)**

Write a solution to each of the following problems.

1. Jon buys a house at the end of 1998, when the CPI is 90. He obtains a fixed 10.0 percent mortgage interest rate, and makes payments of \$1,000 per month. The CPI at the end of each year is as follows:

End of:	1998	1999	2000	2001	2002
CPI:	90	90	100	110	120

- a) (5 points) What is the real mortgage interest rate that Jon pays in 1999, 2000, 2001, and 2002? You can round off to one decimal place if necessary.

$r = i - p$ , where  $r$  is the real mortgage rate,  $i$  is the nominal mortgage rate, and  $p$  is the inflation rate.  $i = 10.0\%$ , for all years, and

$$p_{1999} = (90 - 90)/90 * 100 = 0\%; \text{ Hence } r_{1999} = 10 - 0 = 10\%.$$

$$p_{2000} = (100 - 90)/90 * 100 = 11.1\%; \text{ Hence } r_{2000} = 10 - 11.1 = -1.1\%.$$

$$p_{2001} = (110 - 100)/100 * 100 = 10\%; \text{ Hence } r_{2001} = 10 - 10 = 0\%.$$

$$p_{2002} = (120 - 110)/110 * 100 = 9.1\%; \text{ Hence } r_{2002} = 10 - 9.1 = 0.9\%.$$

- b) (5 points) What are the real values in 1998 dollars of Jon's monthly mortgage payments in 1999, 2000, 2001, and 2002?

The real value in 1998 dollars of \$1,000 in 1998 is \$1,000.

The real value in 1998 dollars of \$1,000 in 1999 is

$$\$1,000 = 1000 * CPI_{1998} / CPI_{1999} = 1000 * 90 / 90.$$

The real value in 1998 dollars of \$1,000 in 2000 is

$$\$900 = 1000 * CPI_{1998} / CPI_{2000} = 1000 * 90 / 100.$$

The real value in 1998 dollars of \$1,000 in 2001 is

$$\$818.18 = 1000 * CPI_{1998} / CPI_{2001} = 1000 * 90 / 110.$$

The real value in 1998 dollars of \$1,000 in 2002 is

$$\$750 = 1000 * CPI_{1998} / CPI_{2002} = 1000 * 90 / 120.$$

2. You are given the following information for the economy of New Caledonia:

Real GDP:	$Y = \$10,000$
Net taxes:	$T = \$1,000$
Private saving:	$S_{pr} = \$2,400 + 0.1(Y - T) + 1500r$
Investment:	$I = \$3,580 - 3000r$
Government purchases:	$G = \$900$

- a) (5 points) Calculate the equilibrium real interest rate,  $r$ , in New Caledonia.

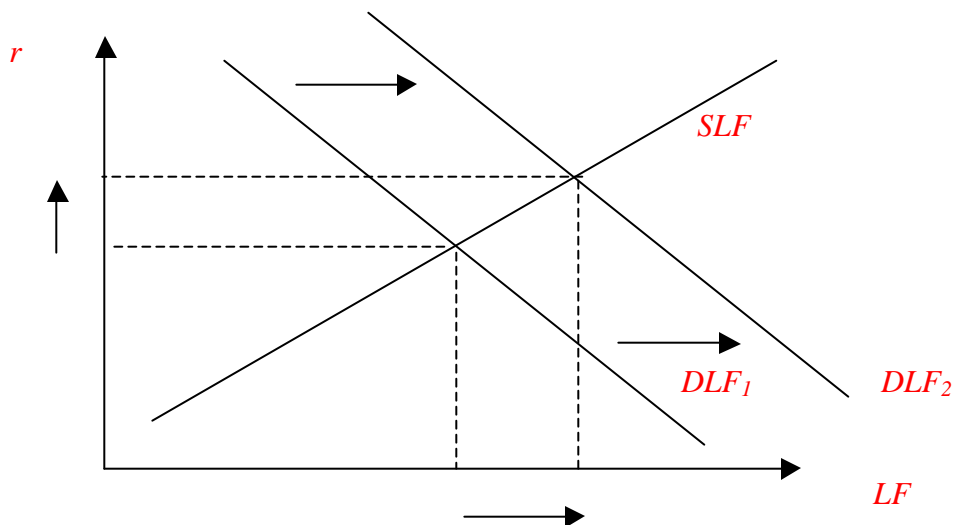
*In a closed economy, in equilibrium,  $S = I$ . Also  $S = S_{pr} + S_{public}$ , hence,*

$$S = 2,400 + 0.1(Y - T) + 1500r + (T - G) = 2,500 + 0.1(10,000 - 1,000) + 1500r = 3400 + 1500r.$$

$$I = 3,580 - 3000r, \text{ hence, in equilibrium,}$$

$$3400 + 1500r = 3,580 - 3000r, \text{ which implies that } r = 0.04 \text{ or } r = 4\%$$

- b) (5 points) Analyze the effects of an investment tax credit that leaves the government budget unchanged. Using a diagram, clearly show and explain what will be the effects on the equilibrium real rate of interest and the equilibrium level of saving. Don't forget to label your graph!



*As the government implements the investment tax credit, the demand for investment increases and hence the  $DLF$  curve shifts out to the right. In the new equilibrium, the real interest rate and the equilibrium level of saving both increase.*

ANSWER KEY:

1. B
2. C
3. E
4. B
5. C
6. C
7. A
8. E
9. B
10. C
11. D
12. B
13. E
14. C
15. C
16. C
17. D
18. D
19. C
20. A
21. B
22. D
23. E
24. D
25. E
26. B