Name (Please print) _________________________________________________________

Circle your section time:  2:00    3:30

ECO202: PRINCIPLES OF MACROECONOMICS
FIRST MIDTERM EXAM
SPRING 1997
Prof. Bill Even

Directions

1. There are two parts to the exam. The first part consists of multiple choice and short answer questions. The first 15 questions are worth 1 point each; the next 35 are worth 2 points each. The second part of the exam consists of short essay problems worth 15 points. There is space provided after each question for the second part of the exam. No credit will be given for answers that are misplaced.

2. You may use a calculator.

3. You have until the end of the period to finish the exam. No extra time will be allowed.

4. Academic dishonesty is a serious offense. In the event I found someone behaving in a dishonest manner, I will ask that the maximum penalty allowed by the university be imposed.
1. During an inflationary period, real wages will increase by (more, less) than nominal wages.

2. If over the next year the real wage rate decreases 3 percent and the nominal wage rate increases by 2 percent, the inflation rate over the next year would have to be ____ percent.

3. GDP includes production by domestically (owned, located) factors of production and equals GNP (plus, minus) net income from foreign countries.

4. According to the permanent income hypothesis, most of a permanent increase in income is (saved, consumed) and most of a temporary increase in income is (saved, consumed).

5. What are the four components of the expenditure side of GDP (write them out -- do not abbreviate).

6. Which of the four components of the expenditure side of GDP represents the largest fraction of GDP?

7. Investment in a project will be profitable if the nominal interest rate is
   a. less than the inflation rate.
   b. greater than the inflation rate.
   c. less than the nominal internal rate of return on the project.
   d. greater than the nominal internal rate of return on the project.

8. The yield curve shows the relationship between bond yields and
   a. inflation.
   b. coupon rates.
   c. interest rates.
   d. the bond’s term to maturity.

9. If the yield curve slopes down (i.e. yields fall as term rises), then financial markets must believe that short term interest rates will (rise, fall) in the future.

10. If you expect that the price of wheat will rise over the next month, it would be wise to (buy, sell) futures in wheat.

11. Suppose that a call option on wheat has an exercise (strike) price of $3.00 per bushel. If you think that the price of wheat will be above $3.00 per bushel, it would be wise to (buy, sell) this call option.

12. The two components of loan demand are _____.
   a. saving and investment.
   b. saving and the government budget deficit
   c. investment and the government budget deficit.
   d. none of the above.
13. Suppose that consumers become more concerned about future retirement income and begin saving more. With this higher level of saving, we should anticipate that
   a. loan supply will increase, interest rates will fall, and investment will increase.
   b. loan supply will increase, interest rates will fall, and investment will decrease.
   c. loan demand will increase, interest rates will rise, and investment will decrease.
   d. loan demand will decrease, interest rates will fall, and investment will increase.

14. Which of the following is closest to average GDP per capita in the world today?
   a. $2,400.
   b. $5,200
   c. $8,400
   d. $10,300

15. Which of the following is closest to average GDP per capita in the U.S. today?
   a. $9,000
   b. $14,000
   c. $26,000
   d. $37,000

**THE FOLLOWING QUESTIONS ARE WORTH 2 POINTS EACH.**

16. When the economy is in equilibrium, Saving + Taxes = _____
   a. consumption + investment.
   b. consumption + government purchases.
   c. government deficit + investment
   d. investment + government purchases.

17. When the economy is in equilibrium, Consumption = ______
   a. GDP - saving - taxes.
   b. GDP - deficit - investment.
   c. saving + investment.
   d. saving + deficit.
Suppose that there are three goods in the economy: gasoline, housing, and food. The prices of each are listed below for three different years. The typical consumer is assumed to purchase a "bundle" that contains 10 gallons of gas, 1 unit of housing, and 50 units of food.

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>1996</th>
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<tbody>
<tr>
<td>Price of a gallon of gas</td>
<td>$1</td>
<td>$2</td>
</tr>
<tr>
<td>Price of a unit of housing</td>
<td>$300</td>
<td>$400</td>
</tr>
<tr>
<td>Price of a unit of food</td>
<td>$2</td>
<td>$4</td>
</tr>
</tbody>
</table>

Using 1996 as the base year, compute the consumer price index for:
18. 1980
19. 1996

20. What is the average annual inflation rate between 1980 and 1996 (use the formula presented in class)

To answer the next 5 questions, consider the following information:

<table>
<thead>
<tr>
<th></th>
<th>Nominal GDP</th>
<th>Real GDP</th>
<th>GDP deflator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>19 billion</td>
<td>371 billion</td>
<td>---</td>
</tr>
<tr>
<td>1980</td>
<td>2708 billion</td>
<td>---</td>
<td>56.9</td>
</tr>
<tr>
<td>1994</td>
<td>6738 billion</td>
<td>6738 billion</td>
<td>---</td>
</tr>
</tbody>
</table>

21. What is the GDP deflator in 1900?

22. What is Real GDP in 1980?

23. What is the base year used for calculating the GDP deflator?

24. What is the average annual growth rate in real GDP between 1900 and 1994?

25. What is the average annual inflation rate between 1900 and 1994? (Round your answer to the nearest one-tenth of a percent, e.g. 5.2%).
For the next 3 questions, **round your answers to the nearest dollar.**

26. If you deposit $1000 in a savings account for 5 years at 4% interest, what will your account balance be at the end of the 5 years?

27. If you want a $100 balance in your savings account 2 years from today, how much must you deposit in the bank today if the nominal interest rate is 4%?

28. If you promised to pay the bank $1000 per year for 3 years with the first payment to be made one year from today, what is the most the bank would lend you if it charges you a 5% interest rate on the loan?

To answer the next 4 questions, suppose that your life is split into two periods -- this year and next year. You earn $30,000 this year and $15,000 next year. **Unless told otherwise, round all of your answers to the nearest dollar.**

29. What is your wealth today assuming a 5% interest rate?

30. Assuming that you can borrow or lend at 5% interest, how much can you consume next year if you consume $20,000 this year?

31. If the interest rate is 5%, for every $100 of consumption this year, how many dollars of consumption must be given up next year?

32. If you wish to “smooth out” consumption (i.e. have the same level of consumption in each period), how much can you consume in each period?

33. According to the equation of exchange, if over the next year the nominal money supply is constant, real GDP increases 3%, and velocity increases 4%, the inflation rate will have to be _____ percent.
34. If the real interest rate is 4 percent and the inflation rate over the next year is 5 percent, the nominal interest rate is ______ percent.

To answer the next 3 questions, consider the following investment opportunity. You can purchase a machine today for $100,000. You can lease the machine for $50,000 per year for each of the next 2 years. At the end of the 2 years, you can sell the machine for $30,000. Your first rent payment will come at the end of the first year. The expected inflation rate is zero.

35. What is the NPV of this investment if the interest rate is 0%? (Round your answer to the nearest dollar.)

36. What is the NPV of this investment if the interest rate is 10%? (Round your answer to the nearest dollar)

37. Consider a one year bond with a coupon rate of 4 percent, and a maturity value of $10,000. What is the effective yield on this bond if the selling price today is $9,600? (Give your answer to the nearest one-tenth of a percent -- e.g. 6.2%).

38. Consider a 4 year zero coupon bond with a maturity value of $10,000. What is the effective yield on this bond if the selling price today is $9,200? (Give your answer to the nearest one-tenth of a percent.)

39. Suppose that a one year bond has a coupon rate of 8 percent, a maturity value of $10,000 and sells for $9,800. If there is a 2% percent chance that the bond issuer will default on the bond, what is the expected yield on this bond? (Give your answer to the nearest one-tenth of a percent.)
40. If the yield on a bond exceeds its coupon rate, you can conclude that the price of the bond is ________ its maturity value.
   a. greater than
   b. less than
   c. equal to.

41. Suppose that the yield on one year bonds is currently 5%. If it is expected that one-year bond rates will be 7% percent next year and 8% percent the year after that, the yield on two-year bonds should currently be _____ and the yield on three year bonds should currently be ______. (Give your answer to the nearest one-tenth of a percent.)

To answer the next 2 questions, suppose that there is an increase in government spending and no change in taxes. Unless told otherwise, assume this has no impact on saving on private investment demand.

42. Suppose that there is an increase in government spending and no change in taxes. Also, suppose this has no effect on the amount consumers save or investment demand. Given the impact this will have on the government budget deficit, this should cause:
   a. an increase in loan supply and less investment.
   b. a decrease in loan supply and less investment.
   c. an increase in loan demand and less investment.
   d. an increase in loan demand and more investment.

43. Consider the scenario described above but assume that the increase in government spending is on infrastructure that increases the rate of return on many private investment projects. Compared to the case where it had no effect on private investment, we should expect:
   a. a larger increase in loan supply and a larger decrease in interest rates.
   b. a smaller decrease in loan supply and a smaller increase in interest rates.
   c. a larger increase in loan demand and a larger increase in interest rates.
   d. a smaller increase in loan demand and a smaller increase in interest rates.

44. Consider the scenario described above but assume that the increase in government spending does not affect private investment demand. Suppose that tax-payers recognize the effect this additional government spending has on the deficit and realize the consequences for their future taxes. This implies that, compared to the case where there is no impact on saving,
   a. interest rates will increase less and investment will fall less.
   b. interest rates will increase more and investment will fall less.
   c. interest rates will decrease less and investment will fall less.
   d. interest rates will decrease more and investment will fall more.
To answer the next 2 questions, suppose that there is an increase in the rate of technological innovation that creates many new profitable investment projects.

45. This innovation should cause an increase in loan (supply, demand) and drive interest rates (up, down).
   a. supply; up.
   b. supply; down.
   c. demand; up.
   d. demand; down.

46. Initially, this should cause saving to_____ and consumption to______..
   a. increase; not change.
   b. increase; decrease.
   c. decrease; increase.
   d. decrease; decrease.

47. According to the “majority view”, if the federal government cuts taxes by $20 billion and leaves spending unchanged, tax-payers will increase saving by _____ and interest rates will ____.
   a. $20 billion; not change.
   b. $20 billion; rise.
   c. less than $20 billion; rise.
   d. less than $20 billion; fall.

48. According to the “minority view”, if the federal government cuts taxes by $20 billion and leaves spending unchanged, tax-payers will increase saving by___ and private investment will ______.
   a. $20 billion; fall.
   b. $20 billion; not change.
   c. less than $20 billion; fall.
   d. less than $20 billion; not change.

49. If stock prices reflect “fundamental values”, then an increase in stock prices could be caused by:
   a. an increase in interest rates or an increase in future expected dividends.
   b. a decrease in interest rates or an increase in future expected dividends.
   c. an increase in interest rates or a decrease in future expected dividends.
   d. a decrease in interest rates or a decrease in future expected dividends.

50. When the economy is at full employment,
   a. there will be only frictional and structural unemployment, but no cyclical unemployment.
   b. there will be only cyclical and frictional unemployment, but no structural unemployment.
   c. there will be only frictional unemployment, but no cyclical or structural unemployment.
   d. there will be only structural unemployment, but no cyclical or frictional unemployment.
SHORT ANSWER QUESTIONS.

1. (6 points) The federal government’s real budget deficit (in 1994 dollars) increased from 62 billion to 269 billion between 1980 and 1992. It has often been argued that the growing budget deficit in the 1980s could reduce long term economic growth in the U.S. **Using your knowledge of loan supply and loan demand, explain how a larger budget deficit could reduce future economic growth by impacting private investment. Be sure to explain the role that interest rates play in your answer.**

2. (4 points) When the economy is at full employment, the unemployment rate will be equal to the “natural unemployment rate”. It is generally argued that the natural unemployment rate was higher in the 1970s than it is today. Explain why.
3. (5 points) When President Clinton was first elected in 1992, the economy was in a recession. His administration supported passage of a temporary tax cut to help stimulate spending in the economy. As compared to a permanent tax cut, would a temporary tax cut have a larger or smaller effect on consumption spending? EXPLAIN.
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<th>1,217</th>
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<td>92</td>
<td></td>
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<tr>
<td>3</td>
<td>located, minus</td>
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