Name _____

Mike Lovell

Sign the pledge:

9:00-12:00, December 19, 2000

No Aid; No Violations _____

Room Fisk 302

Econ 105: Final Examination

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Please Note:

- The exam will end at 12:00 noon! Budget your time carefully
- Save time to read over your answers and make corrections at the end of the test.
- Start your answers in the space provided, but continue if necessary on the back of the page or on a separate sheet of paper. Extra sheets are available in the front of the room.
- Show your calculations in order that you may receive partial credit even if you make a numerical error.
- If you would like me to mail your exam to your home, leave a stamped addressed envelope in the slot for this course in the Economics/Sociology Alcove. Otherwise, your work will be returned to the alphabetical slots in the Alcove to be picked up at the start of classes for the second semester.
- If you want additional feedback on any aspect of your work, please contact me at your convenience for an appointment early in the next semester.

Exam Protocol:

- Sign the Pledge; observe the Honor Code. Ask the instructor if you have any questions
- Step out of the room when you please, but leave your exam at your desk.
- When you have finished the exam, check it over carefully. Then place your examination in the envelope on the table in the front of the room and leave quietly.

PART 1: (40 points) MULTIPLE CHOICE:

Please <u>circle</u> the letter in front of the best answer to each of the following multiple choice questions (Answer all items because there is no penalty for wrong answers).
ANSWER ON THIS EXAM SHEET.

1.1   According to Okun's Law, an increase in GDP of 2.5% may be expected to:
a.   reduce the unemployment rate by about 5%.
b.   reduce the unemployment rate by about 1%.
c.   cause prices to rise by about 2.5%.
d.   cause the demand for money to increase by 2.5%.

1.2   Suppose that the demand for wheat in Never-Never land is described by the equation q = 1000 - 100p. Then
a.   if the price of wheat is $10 the elasticity of demand is zero.
b.   if the price of wheat is $5.00, then the elasticity of demand is unity.
c.   if the price of wheat is $7.50, then the elasticity of demand is 1/4.
d.   none of the above.

1.3   Consider the IS-LM model
a.   An increase in government spending will push the LM curve to the right, thereby stimulating GNP.
b.   An increase in the money supply will push the LM curve to the left, thereby causing inflation.
c.   A personal income tax cut will push the IS curve to the right, thereby stimulating the economy.
d.   None of the above.

1.4   In Never-Never Land, where banks are required to keep reserves of 10% behind their demand deposit liabilities, a decision by the central bank to purchase $20 billion of government securities on the open market would be likely to:
a.   cause the reserves of commercial banks to increase by $20
b.   encourage bank lending, and generate a $200 billion increase in the money.
c.   drive down interest rates, stimulating investment spending and generate an expansion in GDP
d.   all of the above.

1.5   If in 2001 the nominal GDP of Simpleland is $2,000 trillion and the GDP implicit price deflator is 200 (1982=100), then the real value of GDP (1982=100) is:
a. $4,000 trillion.
b. $2,000 trillion.
c. $1,000 trillion.
d.   none of the above.

1.6   Under flexible exchange rates, a fall in interest rates:
a.   will stimulate the economy by encouraging private investment spending.
b.   will cause the value of the dollar to decline in the foreign exchange market.
c.   will lead to an increase in exports and a decrease in imports, which will help to stimulate GDP.
d.   all of the above.

1.7   According to Robert Solow's growth model, an increase in the savings rate (s) will
a.   Decrease the equilibrium rate of output growth.
b.   Increase the equilibrium rate of output growth.
c.   Cause an increase in labor's share.
d.   None of the above

1.8   Suppose the production function of Never-Never Land economy is $Q = aL^{3/4}K^{1/4}$, then:
a.   the production function is homogeneous of degree 1/2.
b.   the marginal product of labor is $\partial Q/\partial L = 0.75\ Q/K$.
c.   labor's share (wL/pQ) will be 0.75 if all markets are competitive.
d.   none of the above.

1.9   The value of the American dollar would be strengthened vis-à-vis the Japanese yen in the foreign exchange market if
a.   the Bank of Japan pushed up interest rates.
b.   an increase in government spending in the United States pushed up GDP.
c.   the United States reduced tariffs.
e.   none of the above.

1.10   Bill Clinton claimed that he had "changed welfare as we know it," but Judith Havemann reports in her article that in spite of welfare-reform:
a.   many single women are unable to work because they cannot find affordable care for their children.
b.   most of the people formerly on welfare rolls remain unable to work due to health problems.
c.   former welfare recipients have difficulty affording necessities with the low-paying jobs they have been able to find.
d.   instances of welfare fraud are increasing, because although people want to work, they are unable to find suitable employment.

PART 2: [60points] Please answer in the space provided and on the back of the preceding page.

2.1   Suppose that in SimpleLand,

(1) $Y = C + I + G + X - M$
(2) $C = c_0 + c_1 Y_d$
(3) $M = m_0 + m_1 Y$
(4) $Y_d = d_0 + d_1 Y$

Here Y is GDP, C is consumption, I investment, G government spending on goods and services, X exports, M imports and Y_d disposable income.

a.   Derive the reduced form equation explaining Y in terms of the exogenous variables of the model (I, G, X).

b.   Determine the value of the government spending multiplier for this open economy.

c.   Consider a simultaneous $10 billion increase in government spending on goods and
     services coupled with a $10 billion lump sum tax increase. Derive the equation showing
     the effect of this balanced budget multiplier policy on the level of Y.

2.2   The Phillips curve for Simpleland is

$$\dot{p} = \frac{0.0012}{u - 0.03} - 0.02$$

        Here $\dot{p}$ is the rate of inflation and u is the unemployment rate.

   a. If u = 4%, how rapidly will prices rise.

   b. What is the full-employment unemployment rate?

        Econoland has the following expectations augmented Phillips Curve:

$$\dot{p} = \frac{0.0012}{u - 0.03} - 0.02 + \hat{p},$$

        where $\hat{p}$ is the expected rate of inflation.

   c. What is Econoland' natural unemployment rate (NAIRU - non-accelerating inflation rate
       of unemployment)?

   d. What is the significance of the difference between the two alternative formulations of the
       Phillips Curve?

2.3   Suppose the demand function for widgets is $q = 10p^{-.5}Y^{.75}$.
        a.   What is the price elasticity of demand? Explain

        b.   What is the income elasticity of demand? Explain

        c.   Forget about that demand function. Suppose that a 20% rise in train fare from
                    New Haven to New York caused ridership to drop off by 10%. Compute the best
                    estimate you can of the price elasticity of demand on the basis of this
                    information. Explain your calculation.

2.4   Suppose that the Central Bank purchases $1 billion worth of government securities on the
          open market.
    a. How would this transaction affect the reserve posture of the commercial banks?

    b. How would the change in reserves of the commercial banks affect the willingness of the
          commercial banks to make loans to the public, assuming that banks always strive to
          remain loaned up.

    c. Estimate the magnitude of the change in the money supply resulting from the Central
          Bank's open market operation? Explain

    d. How would you expect the change in the money supply to affect employment, output and
          prices,? Explain briefly.

2.5   Consider the following price data for the United States

Year	CPI (1982-84=100)	Price of motor fuel (1982-84=100)	Real price of motor fuel (1982-94=100)	Real price of motor fuel (1999=100)
1970	38.8	27.9	_____	_____
1980	82.4	97.4		
1990	130.7	101.2		
1999	166.6	100.7	_____	_____

Show your computations:
   a. Compute the real price of motor fuel for 1970 and 1999 twice, once with 1982-94 = 100 and again with 1999=100.

   b. At what rate per annum was the general price level increasing from 1990 to 1999.

   c. If prices continue to increase in the future at the same rate as they had in the 1990s, how long will it take for prices to double?

   d. If you arranged a loan from your bank at 10% interest in 1999, and you expected the same rate of inflation to prevail in the future as from 1990 to 1999, what would be your *ex ante* real rate of interest? Explain

2.6   Your firm's total cost function is $C(q) = q^2 + 4q + 4$.
   a. If you could sell your output on a competitive market at a price of $10, how many units would you sell in order to maximize total profits?

   b. Determine the equation for average total cost; then find the level of output at which average total cost will be at a minimum.

   c. Suppose the price falls to $5. How much will you market in the short run and what will you do in the long run?

   d. If there is free entry and exit from this industry, all firms having the same cost function, what will be the long run competitive price and how much will our representative firm sell?

PART 3: (20 points) Consider the table of data on the next page for the U.S. economy during the Great Depression of the 1930's.

3.1   Show your mastery of macroeconomic indicators by defining 4 (only 4) of the following concepts:

      1.   Disposable Income

      2.   Implicit Price Deflator (IPD)

      3.   M1

      4.   Real Interest Rate

      5.   Unemployment rate

3.2   Write a brief essay explaining the most intriguing and surprising economic aspects of the Great Depression. How severe was the depression? On the basis of the evidence presented in the table, to what would you attribute the collapse of the economy. Was it mistaken policy of the Federal Reserve System? Was it errors in fiscal policy? What policy would you prescribe in order to get the economy rolling again? What additional evidence would you like to have in resolving these issues?

Honors Option: (Do not attempt to answer this question until you have checked over your answers to the standard questions - credit will not be given for a partial answer to the Honors Option.)

Never-Never Land has the following production function: $Q = (1.02)^t L^{2/3} K^{1/4}$.
The savings rate is 10%. The labor force grows at 1% per annum. *Derive* the
equilibrium growth rate of output, assuming that labor is always fully employed.

Room for additional computations here