

**Intermediate Macroeconomics 311 (Professor Gordon)
Mid-Term Examination Fall, 2002**

YOUR NAME: _____ TA: _____

INSTRUCTIONS:

1. The exam is worth 60 points in total: 30 points for the two analytical questions, and 30 points for the multiple choice
2. Write your answers to Part A (the multiple choice section) in the blanks on page 1.
YOU WILL NOT GET CREDIT FOR CIRCLED ANSWERS IN THE MULTIPLE CHOICE SECTION
3. Place all of your answers for part B in the spaces provided

PART A

Answer multiple choice questions in the space provided below.
Write clearly, **USING CAPITAL LETTERS.**

- | | | | | | |
|----------|-----------|-----------|-----------|-----------|-----------|
| 1. _____ | 6. _____ | 11. _____ | 16. _____ | 21. _____ | 26. _____ |
| 2. _____ | 7. _____ | 12. _____ | 17. _____ | 22. _____ | 27. _____ |
| 3. _____ | 8. _____ | 13. _____ | 18. _____ | 23. _____ | 28. _____ |
| 4. _____ | 9. _____ | 14. _____ | 19. _____ | 24. _____ | 29. _____ |
| 5. _____ | 10. _____ | 15. _____ | 20. _____ | 25. _____ | 30. _____ |

PART A

- 1) In order to determine personal income, what adjustments have to be made to national income?
 - A) Subtract undistributed corporate profits, corporate income tax, social security taxes, and then add government transfers and private interest payments.
 - B) Subtract corporate income tax and social security taxes and then add corporate dividends, government transfers, and private interest payments.
 - C) Subtract undistributed corporate profits, corporate consumption allowance, corporate income tax, social security tax and then add government transfers and private interest payments
 - D) Subtract corporate income tax and social security taxes and then add corporate dividends, government transfers, and private interest payments.

- 2) The unemployment-population ratio equals
 - A) The employment-population ratio times the labor force participation rate.
 - B) The unemployment rate divided by the labor force participation rate.
 - C) The employment-population ratio divided by the labor force participation rate.
 - D) The unemployment rate times the labor force participation rate.

- 3) A decrease in real GDP causes
 - A) movement downward along a money demand schedule.
 - B) movement upward along a money demand schedule.
 - C) a leftward shift of the money demand schedule.
 - D) a rightward shift of the money demand schedule.

- 4) The money supply consists of
 - A) currency alone.
 - B) currency and checking accounts.
 - C) checking and savings accounts.
 - D) currency and checking and savings accounts.
 - E) checking accounts alone.

- 5) The IS curve would be vertical if
 - A) the government's budget was balanced.
 - B) the demand for money was insensitive to the interest rate.
 - C) the government increased the money supply.
 - D) autonomous expenditures were insensitive to the interest rate.

- 6) A lower nominal money supply is equally demanded, given each interest rate, at a _____ level of income, meaning that the LM curve has shifted to the _____.
 - A) higher, left.
 - B) higher, right.
 - C) lower, left.
 - D) lower, right.

- 7) An increase in autonomous taxes
- A) increases autonomous planned spending by an equal amount.
 - B) decreases autonomous planned spending by an equal amount.
 - C) increases consumption by that amount times the marginal propensity to consume.
 - D) decreases saving by that amount times the marginal propensity to save.
- 8) Actual real GDP this year is expected to exceed last year's by two percent, while the annual growth rate of natural real GDP is three percent. This is enough to lead us to expect that this year's unemployment rate will be
- A) below last year's and below the natural rate of unemployment.
 - B) below last year's but still above the natural rate of unemployment.
 - C) below last year's.
 - D) above last year's.
 - E) above last year's and above the natural rate of unemployment.
- 9) Between 1995 and 2001, expressed as shares of GDP, Private Saving decreased and Gross Private Domestic Investment increased. From this you can conclude
- A) The government surplus decreased and foreign borrowing increased.
 - B) The government surplus increased and foreign borrowing decreased.
 - C) The sum of the government surplus and of foreign borrowing increased.
 - D) The sum of the government surplus and of foreign borrowing decreased.
- 10) Help in financing our federal budget deficit comes from a _____ amount of net exports, which is called _____.
- A) negative, net foreign investment.
 - B) negative, foreign borrowing.
 - C) positive, net foreign investment.
 - D) positive, foreign borrowing.
- 11) Comparing Britain and Ireland, we would expect
- A) Britain's GDP/GNP ratio to be higher than the same ratio for Ireland
 - B) Britain's GNP/GDP ratio to be higher than the same ratio for Ireland
 - C) Britain's "payments of factor income to the rest of the world" to be higher than Ireland's
 - D) A) and C)
- 12) If the expected earnings of an investment project exceed all expenses except interest payments
- A) business firms will not undertake the project.
 - B) business firms will not undertake the project but will borrow the funds.
 - C) consumers will get lower prices.
 - D) business firms will undertake the project and raise prices later.

- 13) If chain-weighted increases in real GDP for 2002-03, 2003-04, 2004-05, 2005-06, and 2006-07 are 5%, 4%, 2%, 1%, and 3% respectively, and nominal GDP in the 2002 base year is \$6,244.4 billion, then chain-weighted real GDP for 2007 is
- A) \$6,987.02 billion.
 - B) \$7,181.06 billion.
 - C) \$7,235.6 billion.
 - D) \$7239.0 billion.
- 14) Suppose we have normally-sloped IS and LM curves intersecting at point A. Then a monetary policy change shifts the LM curve to the right. Directly below point A we find a point on the new LM curve that shows us
- A) where the new IS-LM equilibrium occurs.
 - B) how much income must rise to by itself raise the demand for money by as much as the money supply has increased.
 - C) how much the interest rate must fall to raise planned expenditures to the new equilibrium income.
 - D) how much the interest rate must fall to by itself raise the demand for money by as much as the money supply has decreased.
 - E) how much the interest rate must fall to by itself lower the demand for money by as much as the money supply has decreased.
- 15) Economic magnitudes measured at the prices actually paid are referred to as _____ magnitudes.
- A) unadjusted.
 - B) actual.
 - C) nominal.
 - D) real.
 - E) gross.
- 16) A rise in the income tax rate will
- A) lower the multiplier and lower equilibrium income.
 - B) lower the multiplier and raise equilibrium income.
 - C) raise the multiplier and raise equilibrium income.
 - D) raise the multiplier and lower equilibrium income.
- 17) Suppose that along the economy-wide rate-of-return line, the current interest rate of 8 percent causes planned investment of \$300 billion. The \$250-billionth dollar of investment spending has a rate of return _____ 8 percent and thus a _____ profit rate.
- A) above, negative.
 - B) above, positive.
 - C) below, negative.
 - D) below, positive.
- 18) Each month the media highlight the announcement of the unemployment rate (UR) and the change in employment (ΔE). The source of these two numbers is as follows

- A) Both come from the establishment survey
 - B) Both come from the payroll survey
 - C) UR comes from the household survey and ΔE comes from the payroll survey
 - D) ΔE comes from the household survey and UR comes from the payroll survey
- 19) With a rise in the interest rate
- A) we move downward along an unchanged A_p demand line.
 - B) we move upward along an unchanged A_p demand line.
 - C) the A_p line shifts to the left.
 - D) the A_p line shifts to the right.
- 20) Which of the following statements would be true of an economy that can be characterized as being to the left of the IS curve?
- A) There will be a tendency for the level of output to decrease.
 - B) There will be a tendency for interest rates to fall.
 - C) There is an excess demand for commodities at the existing interest rate.
 - D) There is an excess supply of commodities at the existing interest rate.
- 21) Which of the following was the weakest component of real GDP during 2001-2002?
- A) Residential investment
 - B) Consumption of durable goods
 - C) Gross fixed domestic investment
 - D) Federal government spending
- 22) An increase in the marginal propensity to import will
- A) raise imports and raise equilibrium income.
 - B) lower imports and raise equilibrium income.
 - C) lower the multiplier and reduce equilibrium income.
 - D) raise the multiplier and reduce equilibrium income.
- 23) Which of the following exhibit a strong negative correlation during the past decade?
- A) Unemployment rate; labor force participation rate
 - B) Household saving rate; unemployment rate
 - C) Household net worth/income ratio; household saving rate
 - D) Household net worth/income ratio; labor force participation rate
- 24) If the MPS is 0.1 and the income tax rate is 0.33 the multiplier, k , is approximately
- A) 10.
 - B) 3.
 - C) 2.
 - D) 2.5.
- 25) "Autonomous" variables are
- A) completely independent of income, although they can be explained by movements in other variables.

- B) determined only by income levels.
 - C) the same as endogenous variables.
 - D) spontaneous variables that are completely unpredictable.
- 26) The LM curve is the set of combinations of _____ such that _____.
- A) interest rates and real money balances, real income equals real money balances times $(1/r)$.
 - B) real income and interest rates, the money supply is equally demanded.
 - C) real income and interest rates, the production of output is equally demanded.
 - D) interest rates and real money balances, the money supply is equally demanded.
 - E) real income and real money balances, the production of output is equally demanded.
- 27) When planned autonomous spending rises, the planned expenditure line
- A) makes a parallel shift upward.
 - B) pivots upward from the vertical intercept.
 - C) pivots downward from the vertical intercept.
 - D) makes a parallel shift downward.
- 28) An increase in the marginal propensity to consume would cause the IS curve to
- A) make a parallel shift to the right.
 - B) make a parallel shift to the left.
 - C) rotate to become flatter from its horizontal intercept.
 - D) rotate to become steeper from its vertical intercept.
 - E) rotate to become flatter from its vertical intercept.
- 29) Which of the following is *not* a reason to be pessimistic about the economic recovery over the next few quarters
- A) Housing refinance
 - B) State and local government budgets
 - C) Stock market
 - D) Equipment investment
- 30) A farmer sells raw milk for 50 cents to a dairy, who sells cheese made from it for \$1.50 to a grocery wholesaler, who sells it for \$1.90 to a supermarket, who sells it to the final consumer for \$2.19. These transactions increase the GDP by
- A) \$2.19
 - B) \$5.59
 - C) \$1.50
 - D) \$0.69
 - E) \$1.69

PART B

QUESTION 1 (10 points)

An economy produces only two consumption goods – horses and cars. Production and price statistics for these goods in 1990 and 1991 are the following:

	1990		1991	
	Output	Prices (\$)	Output	Prices (\$)
Cars	10	5	5	8
Horses	2	10	10	9

A) (2 points) What is the nominal GDP in 1990?

B) (4 points) What is the chain-weighted real GDP growth-rate between 1990 and 1991?

C) (4 points) The year-to-year chain weighted real-GDP-growth-rates between 1990-1993 are reported in the table. Add the solution from part b) to the following table. [If you did not calculate part **B**), add any number between 1 and 2]

Year	Year-to-year chain-weighted real-GDP growth- rates
1990	1
1991	
1992	1.05
1993	.95

What is the chain-weighted real GDP expressed in 1990 dollars for the year 1993?

QUESTION 2 (20 points)

Consider the following economy:

$$C = 250 - 10r + 0.8(Y - T)$$

$$T = 250 + 0.2Y$$

$$I = 350 - 10r$$

$$G = 900$$

$$NX = 400 - 0.14Y$$

$$M^s/P = 500$$

$$(M/P)^d = 0.25Y - 25r$$

A) (5 points) Write down the general formulas for the IS and LM equations, and then, in particular, for the given parameter values of this economy.

B) (5 points) Compute the equilibrium levels of Y , r , the quantity of net exports, and the Government's budget deficit/surplus.

C) (10 points) Assume the Government decides to change the autonomous component of taxes, T_a , in order to achieve a balanced budget, in equilibrium. By how much should it change T_a ? What is the effect on the equilibrium level of Y , r and net exports?

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Suggested Answers

PART A

- | | | | | | |
|-------------|--------------|--------------|--------------|--------------|--------------|
| 1. <u>A</u> | 6. <u>C</u> | 11. <u>B</u> | 16. <u>A</u> | 21. <u>C</u> | 26. <u>B</u> |
| 2. <u>D</u> | 7. <u>D</u> | 12. <u>A</u> | 17. <u>B</u> | 22. <u>C</u> | 27. <u>A</u> |
| 3. <u>C</u> | 8. <u>D</u> | 13. <u>C</u> | 18. <u>C</u> | 23. <u>C</u> | 28. <u>E</u> |
| 4. <u>B</u> | 9. <u>C</u> | 14. <u>D</u> | 19. <u>B</u> | 24. <u>D</u> | 29. <u>A</u> |
| 5. <u>D</u> | 10. <u>B</u> | 15. <u>C</u> | 20. <u>C</u> | 25. <u>A</u> | 30. <u>A</u> |

PART B

QUESTION 1 (10 points)

An economy produces only two consumption goods – horses and cars. Production and price statistics for these goods in 1990 and 1991 are the following:

	1990		1991	
	Output	Prices (\$)	Output	Prices (\$)
Cars	10	5	5	8
Horses	2	10	10	9

A) (2 points) What is the nominal GDP in 1990?

$$\text{Nominal GDP}_{1990} = 10 * 5 + 2 * 10 = 70\$$$

B) (4 points) What is the chain-weighted real GDP growth-rate between 1990 and 1991?

$$\text{Growth-p}_{1990} = (5 * 5 + 10 * 10) / (10 * 5 + 2 * 10) = 1.78$$

$$\text{Growth-p}_{1991} = (5 * 8 + 10 * 9) / (10 * 8 + 2 * 9) = 1.32$$

$$\text{c.w.-growth-rate} = \text{Sqrt}(1.78 * 1.32) = 1.54$$

C) (4 points) The year-to-year chain weighted real-GDP-growth-rates between 1990-1993 are reported in the table. Add the solution from part b) to the following table.

[If you did not calculate part B), add any number between 1 and 2]

Year	Year-to-year chain-weighted real-GDP growth- rates
1990	1
1991	1.54
1992	1.05
1993	.95

What is the chain-weighted real GDP expressed in 1990 dollars for the year 1993?

$$\text{1993-real-GDP} = (1.54 * 1.05 * .95) * 70\$ = 107.53 \$$$

QUESTION 2 (20 points)

Consider the following economy:

$$\begin{aligned}C &= 250 - 10r + 0.8(Y - T) & M^s/P &= 500 \\T &= 250 + 0.2Y & (M/P)^d &= 0.25Y - 25r \\I &= 350 - 10r \\G &= 900 \\NX &= 400 - 0.14Y\end{aligned}$$

A) (5 points) Write down the general formulas for the IS and LM equations, and then, in particular, for the given parameter values of this economy.

$$\begin{aligned}\text{MLR} &= s(1-t) + t + nx = 0.2 * (1-0.2) + 0.2 + 0.14 = 0.5; \quad k = 1/\text{MLR} = 2 \\A'_p &= 250 - 0.8*250 + 350 + 900 + 400 = 1,700 \\b &= 10 + 10 = 20\end{aligned}$$

$$\begin{aligned}\text{IS: } Y &= k(A'_p - br) = 3,400 - 40r \\ \text{LM: } Y &= (M^s/P + fr)/h = 2,000 + 100r\end{aligned}$$

B) (5 points) Compute the equilibrium levels of Y , r , the quantity of net exports, and the Government's budget deficit/surplus.

Equating the right hand sides of the IS and LM equations,

$$3,400 - 40r = 2,000 + 100r \rightarrow r = 10.$$

Substituting $r=10$ in the LM, $Y = 2,000 + 100r = 3,000$

The equilibrium level of net exports and of the budget deficit are determined as follows:

$$\begin{aligned}NX &= 400 - 0.14*3,000 = -20 \\ \text{Deficit} &= G - T = 900 - 250 - 0.2*3,000 = 50\end{aligned}$$

C) (10 points) Assume the Government decides to change the autonomous component of taxes, T_a , in order to achieve a balanced budget, in equilibrium. By how much should it change T_a ? What is the effect on the equilibrium level of Y , r and net exports?

The multiplier effects of A'_p and M^s/P are:

$$k_1 = 1 / (1/k + bh/f) = 1/0.7 = 1.429; \quad k_2 = bk_1/f = 0.8/0.7 = 1.143.$$

The equilibrium level of output can be written as:

$$(1) Y' = k_1 [(A'_p + c T_a') - c T_a'] + k_2 M^s/P = 1.429*(1,900 - c T_a') + 1.143*500$$

where $(A'_p + c T_a')$ is the part of autonomous planned spending not dependent on the interest rate, net of the component dependent on T_a' , Y' is the new equilibrium level of output, and T_a' is the new public spending.

The balanced budget requirement is:

$$(2) G = 900 = T = T_a' + 0.2 Y'$$

We can solve the system of equations (1)-(2) for Y' and T_a' to get:

$$T_a' = 314.81, Y' = 2,925.9$$

$$\text{Hence } \Delta T_a' = 314.81 - 250 = 64.81$$

From the LM equation, $2,925.9 = 2,000 + 100r$, we get the equilibrium interest rate $r=9.259$.

The new equilibrium level of net exports is given by:

$$NX = 400 - 0.14 * 2,925.9 = -9.626$$