

**Final Examination**

This exam is 80 minutes long, and is worth 80 points. You are given 88 minutes to complete it. Part I is multiple choice, Part II is a short answer. The points are allocated in proportion to the time you should spend on each problem. **Part I and Part II, Q1 and Q2 go into bluebook A; Part II, Q3 and Q4 go into bluebook B.**

**BEGIN BLUEBOOK A**

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**PART I:** Multiple Choice [36 minutes total, 2 points each]. Do NOT explain. (18 problems)

1. If the nominal interest rate is less than the real interest rate, we know that
  - a. both the nominal or real interest rate must be negative.
  - b. the nominal interest rate must be equal to expected inflation.
  - c. expected deflation must be occurring.
  - d. expected inflation must be positive.
  - e. expected inflation must be zero.
  
2. Lower money growth tends to cause:
  - a. higher nominal interest rates ( $i$ ) in the medium run and no change in real interest rates ( $r$ ) in the medium run
  - b. no change in  $i$  in the medium run and an increase in  $r$  in the medium run
  - c. an increase in  $i$  in the medium run and no change in  $r$  in the medium run
  - d. a reduction in  $i$  in the medium run and no change in  $r$  in the medium run
  - e. none of the above
  
3. The length of time over which a bond promises to make payments to the holder is called which of the following?
  - a. the term structure of interest rates.
  - b. the face value.
  - c. the yield to maturity.
  - d. the holding period.
  - e. none of the above
  
4. Which of the following best explains why the long-term interest rate will generally change by less than 1% when the short-term interest rate changes by 1%?
  - a. the mathematical calculations are more difficult for analysts in the case of long-term bonds.
  - b. long-term rates are always lower than short-term rates, so there is less room for them to change.
  - c. financial market participants will not expect this increase in the short-term interest rate to persist fully in the future.
  - d. financial markets are often affected by bubbles and fads.

5. Suppose policy makers implement an unexpected fiscal expansion. Further assume that monetary policy is expected to keep interest rates constant in response to this unexpected fiscal expansion.

Given this information, we would expect that:

- a. stock prices will rise.
- b. stock prices will remain constant.
- c. this policy will have an ambiguous effect on stock prices.
- d. the effect on stock prices will depend on the slope of the IS curve.

6. Which of the following best defines total wealth?

- a. financial wealth only.
- b. financial wealth and housing wealth only.
- c. human wealth only.
- d. non-human wealth and human wealth.
- e. none of the above.

7. For this question, ignore tax considerations of each of the following. Assume that consumption decisions are made according to the permanent income theory. Which of the following would lead to the smallest increase in current consumption?

- a. winning \$10,000 in the lottery.
- b. inheriting \$10,000 from a relative.
- c. obtaining \$10,000 by winning a lawsuit.
- d. getting a one-time \$10,000 bonus from your employer.
- e. all of the above

8. A change in which of the following variables would affect the cash flow for a firm?

- a. changes in the nominal interest rate.
- b. expected future profit.
- c. changes in the real interest rate.
- d. changes in expected inflation.
- e. none of the above.

9. An increase in which of the following variables will cause an increase in the user cost of capital?

- a.  $r_t$
- b.  $\Pi_t$
- c.  $\Pi_t^e$
- d. all of the above
- e. none of the above

10. Which of the following will cause a reduction in current consumption?

- a. a reduction in current disposable income
- b. a reduction in financial wealth
- c. a reduction in human wealth
- d. all of the above
- e. both b and c

11. Assume that the current demand for goods DOES depend on expectations in the IS-LM model. A monetary expansion in the current period will cause a rightward shift in the IS curve if:
- current and expected future real interest rates are positively related.
  - current and expected future real interest rates are negatively related.
  - current and expected future real interest rates are unrelated.
  - the central bank is expected to reverse any current movements in monetary policy in the future.
  - monetary policy cannot affect, directly or indirectly, the position of the IS curve in the current period.
12. Suppose individuals now believe that there will be a future tax cut. This reduction in expected future taxes will cause which of the following to occur in the current period?
- the LM curve to shift down.
  - the LM curve to shift up.
  - the IS curve to shift rightward.
  - the IS curve to shift leftward.
  - none of the above.
13. Which of the following statements is true?
- A change in sales should have more impact on current investment if it is expected to be permanent rather than temporary.
  - On a percentage basis, investment is more volatile than consumption.
  - In terms of dollars, investment and consumption are about equally volatile.
  - All of the above.
  - None of the above.
14. In the absence of technological progress, which of the following remains constant in the steady state equilibrium?
- Investment per worker.
  - Output per worker.
  - Saving per worker.
  - all of the above.
  - only a and b.
15. When steady state capital per worker is above the golden-rule level, we know with certainty that an increase in the saving rate will
- increase consumption in both the short run and the long run.
  - decrease consumption in both the short run and the long run.
  - decrease consumption in the short run, and increase it in the long run.
  - increase consumption in the short run, and decrease it in the long run.
  - none of the above.
16. In an economy with technological progress, which of the following is always true after an economy reaches a balanced growth equilibrium?
- the growth rate of output equals the rate of depreciation.
  - population growth is zero.
  - the growth rate of capital is equal to the growth rate of the effective work force.
  - the growth rate of capital is equal to the savings rate.
  - none of the above.

17. Suppose there is an increase in the saving rate. This increase in the saving rate will cause an increase in which of the following once the economy reaches its new steady state equilibrium?

- a. growth rate of output.
- b. growth rate of capital.
- c. growth rate of capital per worker.
- d. all of the above.
- e. none of the above.

18. Assume that an economy experiences both positive population growth and technological progress. Once the economy has achieved balanced growth, we know that the capital per effective worker ratio ( $K/NA$ ) is:

- a. growing at a rate of  $\delta + g_A + g_N$
- b. growing at a rate of  $g_A + g_N$
- c. growing at a rate of  $g_N$
- d. growing at a rate of  $g_A$
- e. none of the above

**PART II: Short Answer** [44 minutes total]

1. (8 minutes total) Suppose the yield on a two year discount bond is 6%, and the yield on a one year discount bond is 4%.

1.1 (4 minutes) What is the market's expectation of the yield on the one year bond, next year?

1.2. (4 minutes) Why might the yield expected on next year's one year bond be expected to be what it is?

2. (8 minutes total) Present value. Suppose the real price of a stock is given by:

$$Q_t = \frac{D_{t+1}^e}{1 + r_{1t}} + \frac{D_{t+2}^e}{(1 + r_{1t})(1 + r_{1t+1}^e)} + \dots$$

2.1 (4 minutes) Suppose expected dividends were suddenly to be expected to be higher by  $\Delta D$  in period  $t+2$  (but only in period  $t+2$ ). What happens to the price of the stock today?

2.2 (4 minutes) Solve for the real price if dividends and the real interest rate are expected to stay constant.

**END BLUEBOOK A**

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*[Exam continues]*

3. (22 minutes total) Suppose the real side of the economy is given by:

$$Y = C(Y - T) + I(Y, i) + G + NX(Y, Y^*, \left(\frac{1+i}{1+i^*}\right) \bar{E}^e)$$

And the LM curve is:

$$\frac{M}{P} = YL(i)$$

3.1. (4 minutes) Show equilibrium in this economy, with both the IS-LM diagram and interest parity relation diagram. Assume the economy is on floating exchange rates.

3.2. (4 minutes) Show, with both the IS-LM diagram and interest parity relation diagrams, what happens if rest-of-world income falls exogenously.

3.3. (4 minutes) Show the change in net exports (or the “trade balance”). Hint:

$$NX(Y, Y^*, \varepsilon) = X(Y^*, \varepsilon) - IM(Y, \varepsilon) / \varepsilon$$

3.4. (4 minutes) Now ignore your answer to 1.2. Show, with both the IS-LM diagram and interest parity relation diagrams, what happens if the foreign interest rate falls exogenously (still under floating exchange rates).

Recall when drawing the interest parity relation diagram:  $E_t = \frac{(1+i)}{(1+i^*)} \bar{E}^e$

3.5 (6 minutes) Now consider an economy under *fixed* exchange rates. Show equilibrium, once again showing both the IS-LM and interest parity relation. Then on the same graph, show what happens if the foreign interest rate falls exogenously.

4. (6 minutes total) Graphically illustrate and explain the effects of an increase in the saving rate on the Solow growth model (Chapter 12). In your answer, you must clearly label all curves and the initial and final equilibria. In your answer, explain what happens to the rate of growth of output per worker and the rate of growth of output as the economy adjusts to this increase in the saving rate.