ECO 209Y - L5101
MACROECONOMIC THEORY

Term Test #2

LAST NAME ________________________________

FIRST NAME ________________________________

STUDENT NUMBER ____________________________

INSTRUCTIONS:

1. The total time for this test is 1 hour and 45 minutes.
2. This exam consists of two parts.
3. This question booklet has 8 (eight) pages.
5. Use pen instead of pencil.

DO NOT WRITE IN THIS SPACE

Part I  __________/30

Part III  1. __________/10

2. __________/10

3. __________/10

4. __________/10

5. __________/10

TOTAL __________/80

__________/100
PART I  (30 marks)

Instructions: Enter your answer to each question in the table below. Only the answer recorded in the table will be marked. Table cells left blank will receive a zero mark for that question. Each question is worth 3 (three) marks. No deductions will be made for incorrect answers.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>E</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>B</td>
</tr>
</tbody>
</table>

1. The Price-Phillips Curve suggests that, in the short run,
   a) there is a direct relationship between the unemployment rate and the inflation rate
   b) there is an inverse relationship between the inflation rate and the unemployment rate
   c) there is no policy tradeoff between the unemployment rate and the inflation rate
   d) there is a policy tradeoff between the unemployment rate and the inflation rate
   e) both b) and d) are correct

2. According to the expectations-augmented Phillips Curve,
   a) expected inflation is not passed one for one into actual inflation
   b) unemployment is at the natural rate when expected inflation exceeds actual inflation
   c) unemployment is at the natural rate when expected inflation equals actual inflation
   d) the rate of inflation is lower than the expected rate of inflation when the unemployment rate is below the natural rate
   e) both a) and c) are correct

3. The natural rate of unemployment will increase if
   a) the minimum wage rate is decreased
   b) unemployment benefits are increased
   c) the rate of monetary growth is decreased
   d) income taxes are increased
   e) government spending is reduced

4. Under a fixed exchange rate system, the central bank of a country that experiences a temporary current account deficit will most likely
   a) devalue the currency
   b) permit depreciation of the currency
   c) sell foreign currency to keep the exchange rate from appreciating
   d) buy foreign currency to influence exchange rates
   e) conduct open market purchases
5. In an IS-LM model with flexible exchange rates and perfect capital mobility, restrictive fiscal policy will
   a) cause an appreciation of the domestic currency
   b) shift first the LM-curve and then the IS-curve to the left
   c) not change the overall level of output, but its composition
   d) cause a decrease in net exports
   e) lower the level of output but leave the interest rate unchanged

6. Consider an economic model with fixed prices, flexible exchange rates, and imperfect capital mobility. If the world real interest rate exceeds the domestic real interest rate, then
   a) net exports are negative
   b) net exports are positive
   c) net capital flows are negative
   d) net capital flows are positive
   e) both b) and c) are correct

7. The concept of the diminishing marginal product of labour suggests that
   a) the slope of the production function increases as the input of labour decreases
   b) the slope of the production function decreases as the input of capital increases
   c) the slope of the production function increases as the input of labour increases
   d) the slope of the production function equals zero for all inputs of labour
   e) none of the above are true

8. A profit-maximizing firm will hire more labour if
   a) the real wage exceeds the marginal product of labour
   b) the marginal product of labour exceeds the real wage
   c) the real wage equals the marginal product of labour
   d) the nominal wage equals the value of the marginal product of labour
   e) the nominal wage exceeds the value of the marginal product of labour

9. If both the supply of labour and the demand for labour depend on the real wage rate, then an increase in autonomous investment will cause
   a) price, output, and nominal wage to increase, but real wage to fall
   b) price and nominal wage to increase, but output and real wage to fall
   c) price and nominal wage to increase, while leaving output and real wage unchanged
   d) price, nominal wage, and real wage to increase, while leaving output unchanged
   e) all price, output, nominal wage, and real wage to increase

10. In a closed economy, the aggregate demand (AD) curve will be flatter
    a) the larger the interest sensitivity of the demand for real balances (h) is
    b) the larger the interest sensitivity of investment (b) is
    c) the larger the income sensitivity of the demand for real balances (k) is
    d) the smaller the aggregate expenditure multiplier (\(\alpha_{AE}\)) is
    e) none of the above are correct
PART II (50 marks)

Instructions: Answer true, false, or uncertain to the following statements. Be sure to justify your answers (no justification, no marks!). Answer all questions in the space provided on question sheet (if space is not sufficient, continue on the back of the previous page). Each question is worth 10 (ten) marks.

1. Consider an open economy where capital is perfectly mobile, the price level is fixed, and the exchange rate is flexible. In this economy, an increase in government expenditure will cause the rate of interest to rise, output to increase, and the balances in both the capital account and the current account to deteriorate. (Show your answer with the help of graphs and explain the economics.)

False

An increase in government expenditure will increase aggregate expenditure (AE) causing the AE curve to shift up to the left (not shown in the diagram) and the IS curve to shift up to the right to IS’ (see diagram). This initial increase in aggregate expenditure will also cause the demand for real balances to increase, and thus the domestic rate of interest will rise above the international rate.

Since there is perfect capital mobility in this economy, an increase of the domestic rate of interest above the international rate will cause an inflow of capital, that is, the supply of foreign exchange in the exchange market will increase and thus the value of the exchange rate (e) will fall (i.e., the domestic currency will appreciate). The appreciation of the domestic currency will, in turn, make domestic goods less competitive in the international market and thus net exports will decrease (i.e., exports will fall and imports will rise). The decrease in NX will cause aggregate expenditure to decrease, and thus the IS curve will shift down to the left. This process will continue as long as the domestic interest rate continues to be above the international rate – that is, the domestic economy will continue experiencing capital inflows and the domestic currency will continue to appreciate, with the corresponding decrease in NX. In the new equilibrium, aggregate expenditure will be the same as before and the IS curve will return to the initial position. There will be a change in the composition of AE but not in its level – G will increase and NX will decrease by the same amount. There is complete crowding out effect in this model.

Therefore, in the new equilibrium the rate of interest and the level of output will be the same as in the initial equilibrium. However, since NX have decreased, the balance in the current account has deteriorated. Therefore, since the overall balance of payment must equal zero in equilibrium, we can conclude unequivocally that the balance in the capital has improved. The statement is therefore false.
2. Consider an open Latin American economy where capital is **perfectly** mobile, the price level is fixed, and the exchange rate is **flexible**. The economy is initially in equilibrium and the domestic rate of interest is equal to the rate of interest prevailing in the US. Suppose now that investors expect the US dollar to depreciate 5% during the coming year, then the domestic rate of interest will fall in this Latin American country, output will increase, the balance in the capital account will deteriorate, and the balance in the current account will improve. (Show your answer with the help of graphs and explain the economics.)

**False**

If there is perfect capital mobility and no expectation of any change in the value of the exchange rate, then the BP line is horizontal at the level of the US rate of interest (i.e., of the international rate of interest). This means that the domestic rate of interest in Canada is equal to the US rate in equilibrium. Therefore, under these circumstances, investors would be indifferent between investing in Canada or in the US since they expect to receive the same return for their investment in either country. Things are different, however, when investors expect a change in the exchange rate during the life time of an investment. If they expect a 5% depreciation of the US dollar, then any investment in the US would give them an expected return 5% lower than in Canada (assuming the rates of interest are the same in both countries). That is, if their expectations are correct, when they convert to Canadian dollars their returns (in US dollars) from their US investments, they will obtain 5% less Canadian dollars than before at the now lower exchange rate. Therefore, if the interest rates are the same in both countries, any investor will expect a 5 percentage point higher return in Canada compared to a similar investment in the US.

The above suggests that for investors to be again indifferent between investing in the US or in Canada (i.e., a new situation of equilibrium), the expected return of an investment in Canada must be equal to the expected return in the US, that is, it must be now 5 percentage points lower than before. Therefore, the domestic rate of interest in Canada must be 5 percentage points lower than in the US. In this situation, the interest parity condition is now \( i = i^* + x_e \) (where \( i \) is the domestic rate of interest in Canada, \( i^* \) is the rate of interest in the US, and \( x_e \) is the expected rate of change in the value of the US dollar), and the BP curve shifts down to BP'.

Since, given their expectation of a 5% depreciation of the US dollar, investors expect a higher return in Canada than in the US, Canada will experience a flow of capital and the Canadian currency will appreciate (i.e., the US dollar will depreciate). This will cause a decrease in net exports, and thus in aggregate expenditure and the IS curve will shift down to the left. As output starts to decrease, the demand for money also decreases and the domestic rate of interest starts to fall. This process will continue as long as the expected return of an investment is higher in Canada than in the US. In the new equilibrium, the interest rate in Canada will be 5 percentage point lower than in the US, the level of equilibrium output will be lower than before, the balance in the current account will deteriorate (since net exports decreased), and the balance in the capital account will improve (since the overall balance of payments must be equal to zero). The statement is therefore false.
3. Consider an open economy where capital is *imperfectly* mobile, the price level is fixed, and the exchange rate is *fixed*. If the Bank of Canada increases the money supply, then the rate of interest will fall, output will increase, the balance in the capital account will deteriorate, and the balance in the current account will improve. (Show your answer with the help of graphs and explain the economics.)

**False**

Suppose that the economy is initially in equilibrium, with the overall balance of payments equal to zero. An increase in the money supply will cause the domestic rate of interest to fall, and thus an outflow of capital will ensue since investors will find it now more profitable to invest elsewhere. This outflow of capital will increase the demand for foreign currency in the foreign exchange market, putting an upward pressure on the exchange rate. However, since the Bank of Canada wants to keep the value of the exchange rate fixed at the original level, the Bank will have to sell foreign currency from their reserves. When the Bank sells foreign currency, purchasers pay in Canadian dollars, which the Bank takes out of circulation. The money supply, therefore, decreases and the domestic rate of interest starts to rise. This process continues as long as the domestic rate of interest is below its initial equilibrium level. In the new equilibrium, the rate of interest and the level of output are the same as in the original equilibrium. Since the exchange rate and the level of domestic output have not changed, the balance in the current account remains the same as before. Similarly, since the overall balance of payments equals once again zero in the new equilibrium and the balance in current account has not changed, the balance in the capital account also remains the same as before.

Graphically, the increase in money supply means that the LM curve shifts down to the right to LM’. The rate of interest falls in the short-run, causing the capital outflow and a deficit in the foreign exchange market (demand for US shifts to D’). The bank of Canada supplies foreign currency to eliminate this deficit, and the money supply decreases. Therefore, the LM curve shifts back to its initial position.

The statement is therefore false: the rate of interest and the level of output remain as before, and there is no change in the balances of the current account and the capital account.
4. Consider the Classical model of the economy. An increase in the money supply will cause the rate of interest to fall, output to increase, the price level to rise, and nominal wages to increase but real wages to fall. (Show your answer with the help of graphs and explain the economics.)

**False**

In the Classical model of the economy, the AS curve is vertical, i.e., the level of output and all other real variables (e.g., N and W/P) are determined by supply conditions while demand determines the nominal variables (e.g., P, W, and i). There is, in this sense, a complete dichotomy in the economy. Note that in this model, neither firms nor workers suffer from money illusion and thus both the supply of labour and the demand for labour depend on the real wage rate (W/P).

An increase in the nominal money supply causes the LM curve to shift down to the right and thus the AD curve shifts up to the right, i.e., the quantity demanded of goods and services increases at each price level. This creates a situation of excess demand at the initial equilibrium price level, and thus it creates an upward pressure on the price level. The level of output, however, does not change since this is determined by structural conditions. The excess demand, therefore, is eliminated through an increase in the price level. This increase in the price level triggers an adjustment on both the supply and demand side of the economy.

On the supply side, as P increases the demand for labour increases and the supply of labour decreases since the real wage rate decreases at each level of the nominal wage rate. In other words, the demand for labour curve shifts up to the right (i.e., a greater quantity is demanded at each level of the nominal wage) and the supply of labour shifts up to the left (i.e., a smaller quantity is supplied at each level of the nominal wage). Note that both the supply of labour and the demand for labour shift up in the same proportion. Therefore, the equilibrium level of employment (N₀ in the graph) does not change, and the equilibrium level of output (Y₀ in the graph) also remains the same as before. The nominal wage rate increases to W₁, but the real wage rate remains the same as before (i.e., P and W increase in the same proportion). On the supply side, therefore, the adjustment is along the AS curve: P increases without any change in Y.

On the demand side, as P increases the quantity demanded of goods and services starts to decrease along the AD curve. This is due to the fact that the increase in P causes the real supply of money to decrease (i.e., the LM curve shifts up to the left), and thus the quantity demanded of goods and services decreases as i rises. The adjustment on the demand side is along the AD curve and the IS curve.

The statement is therefore false: the rate of interest and the level of output remain as before, and while P and W both increase, the real wage rate (W/P) remains as before.
5. Consider an economy with rigidities in the labour market such that the nominal wage rate cannot adjust downwards. Suppose that this economy is initially in equilibrium at the level of full employment output. Under these conditions, if there is a decrease in autonomous exports, then the price level will fall but the level of output will remain unchanged since the equilibrium level of employment will not changed. (Show your answer with the help of graphs and explain the economics.)

False

If nominal wages cannot adjust downwards, then the labour supply curve will be horizontal at that level of output up to the initial equilibrium level of employment and then it will have a positive slope. Note that in this model labour supply is independent of the price level, i.e., there is money illusion on the part of workers. In this model, therefore, the AS curve will have a kink, but the slope will be positive throughout.

A decrease in autonomous exports will reduce aggregate demand causing both the IS curve and the AD curve to shift down to the left. The decrease in AD will create a situation of excess supply at the initial equilibrium price level, thus putting a downward pressure on P. The ensuing decrease in the price level triggers an adjustment on both the supply and demand side of the economy.

On the supply side, as P decreases the demand for labour decreases since the real wage rate rises at each level of the nominal wage rate. In other words, the demand for labour curve shifts down to the left (i.e., a smaller quantity is demanded at each level of the nominal wage). Note that the supply of labour does not change since it’s independent of P. Therefore, the level of employment falls below the initial equilibrium N₀ and so the level of output also falls below the initial equilibrium Y₀. The nominal wage rate remains unchanged at W₀, but the real wage rate increases as P falls (i.e., W/P increases). On the supply side, therefore, the adjustment is along the AS curve: P decreases and Y also decreases. Note that the decrease in Y would have been smaller had the nominal wage be flexible. Therefore, here we have the emergence of involuntary unemployment since not everyone who wants to work at the going nominal wage rate is able to find employment.

On the demand side, as P decreases the quantity demanded of goods and services starts to increase along the new AD curve. This is due to the fact that the decrease in P causes the real supply of money to increase (i.e., the LM curve shifts down to the right), and thus the quantity demanded of goods and services increases as i falls. The adjustment on the demand side is along the new AD curve and the new IS curve.

The statement is therefore false: both the rate of interest and the level of output fall, and thus also the level of employment falls.