QUEEN'S UNIVERSITY FINAL EXAMINATION
FACULTY OF ARTS AND SCEINCE
DEPARTMENT OF ECONOMICS

ECON 222 001 – Instructor: Chilongo
June 24-25, 2021

INSTRUCTIONS TO STUDENTS:

This exam should be completed on the ECON222 OnQ website within the 24-hour window from Thursday, June 24 at 2:00pm (EST) to Friday, June 25 at 1:59pm (EST). The examination is 3 HOURS in length. There are FOUR sections to this examination. Answer all questions in Section A, B and C. In Section D choose between subsections D1 and D2. Each section is worth 25%.

The following aids are allowed:
Casio FX-991 calculator
Course textbook, lecture slides and assignments

GOOD LUCK!

PLEASE NOTE:

The Final Exam **will not be a proctored exam** and you can refer to any course materials that you have available, including the textbook, lecture slides and assignments but NO external sources. It is expected that you will not communicate with other students in any fashion while completing the final exam.

SECTION A: Independent Multiple Choice Questions

This section has 25 independent multiple choice questions and is worth 25 points. Answer all questions.

Question 1

Suppose the rate of economic growth in Mainland was 25 percent, capital growth 30 percent, and labour growth 20 percent. If labour contribution to economic growth is 14 percent, how much is the elasticity of output with respect to labour?

A. 0.3
B. 0.7
C. 0.5
D. 0.8

Question 2

Suppose the rate of economic growth in Mainland was 25 percent, capital growth 30 percent, and labour growth 20 percent. If the elasticities output with respect to capital and labour are 0.3 and 0.7 respectively, how much is the capital contribution to economic growth?

A. 2 percent
B. 6 percent
C. 9 percent
D. 14 percent

Question 3

Steady-state investment per worker is positively related to the capital-labour ratio because the higher the capital-labour ratio

A. the lower the capital depreciation rate.
B. the greater the amount of resources available for capital investment.
C. the more investment per worker is required to replace depreciating capital.
D. the less the economy needs to equip new workers with the same high level of capital.

Question 4

One effect of the Gulf War was the destruction of a good portion of Kuwait's capital stock. How would you expect this to affect Kuwait's capital-labour ratio in the long run? There would be

A. a rightward movement along the saving-per-worker curve and an increase in the capital-labour ratio.
B. no change in the long-run capital-labour ratio.
C. a downward shift in the saving-per-worker curve and a decrease in the capital-labour ratio.
D. a leftward movement along the saving-per-worker curve and a decrease in the capital-labour ratio

Question 5

The higher saving rate in an economy would result in

A. the higher economic growth in the long run.
B. the higher output per capita in the long run.
C. the higher productivity growth in the long run.
D. the lower output per capital in the long run.

Question 6

If $f(k) = 6k^{0.5}$, s= 0.1, n=0.1, and d=0.2, given the steady-state condition, what is the value of k at equilibrium?

A. 1
B. 2
C. 3
D. 4

Question 7

In the neoclassical theory of growth, an increase in the growth rate of population will lead to

A. a higher long-run economic growth.
B. a lower long-run economic growth.
C. no changes in economic growth.
D. a higher level of long-run standard of living.

Question 8

A fall in the real exchange rate is called

A. a real depreciation.
B. a real appreciation.
C. a real revaluation.
D. a real devaluation.

Question 9

The exchange rate is

A. the price of one currency in terms of another.
B. the price of domestic goods relative to foreign goods.
C. the quantity of gold that can be purchased by one unit of currency.
D. the difference in interest rates between two countries

Question 10

Which of the following is NOT a reason for why domestic and foreign interest rates might differ?

A. differences in transaction costs
B. differences in default risk
C. expected changes in exchange rate
D. differences in the bonds interest rate

Question 11

There's been a real depreciation of the dollar over the past month. In the long run, you would expect the quantity of Canadian imports to _____ and the quantity of Canadian exports to _____.

A. fall; fall
B. rise; rise
C. fall; rise
D. rise; fall

Question 12

If the income elasticity of money demand is 3/4 and the interest elasticity of money demands is -1/4, by what percent does money demand rise if income rises by 10% and the nominal interest rate rises from 4% to 5%?

A. 7.50%
B. 6.25%
C. 5.00%
D. 1.25%

Question 13

You are putting together a portfolio of assets. The three most important characteristics of the assets you will choose are

A. expected return, risk, and liquidity.
B. expected return, risk, and collateral.
C. expected return, risk, and maturity.
D. expected return, liquidity, and maturity

Question 14

Suppose you read in the paper that the Central Bank of Canada plans to expand the money supply. The Central Bank is most likely to do this by

A. printing more currency and distributing it.
B. purchasing government bonds from the public.
C. selling government bonds to the public.
D. buying newly issued government bonds directly from the government itself.

Question 15

The following are all functions of money except

A. medium of exchange.
B store of value.
C. source of anxiety.
D. unit of account.

Question 16

An introduction of ATMs (automatic teller machines), other things being constant

A. reduces interest rates since it shifts money demand leftward.
B. reduces interest rates since it shifts money demand rightward.
C. increases interest rates since it shifts money demand leftward.
D. increases interest rates since it shifts money demand rightward.

Question 17

Which of the following is true about the asset market equilibrium?

A. The asset market is in equilibrium only if the labour market is in equilibrium.
B. The asset market is in equilibrium when the money market is in equilibrium.
C. The money market is in equilibrium only if the non-monetary asset market is in equilibrium.
D. The asset market is in equilibrium, even if the money market is not.

Question 18

When price rises,

A. money loses its function as a medium of exchange.
B. money loses its function as a store of value.
C. money loses its function as a unit of account.
D. money keeps all its functions.

Question 19

The aggregate demand curve shows

A. the demand for goods depending on the relative price of goods compared to financial assets.
B. the amount of output that can be obtained given the current production function in the economy.
C. the relation between the aggregate quantity of goods demanded and the price level.
D. the relation between the real interest rate and output when the goods market clears.

Question 20

Keynesian economists believe that in the short run,

A. money neutrality exists and prices adjust rapidly.
B. money neutrality does not exist and prices adjust rapidly.
C. money neutrality exists and prices do not adjust rapidly.
D. money neutrality does not exist and prices do not adjust rapidly.

Question 21

A change that increases real money demand relative to the real money supply causes

A. the LM curve to shift down.
B. the LM curve to shift up.
C. the IS curve to shift down.
D. the IS curve to shift up.

Question 22

The LM curve is derived from

A. investment-saving market.
B. money market.
C. labour market.
D. goods market.

Question 23

You have just read that Australia has suffered a drought, destroying its wheat crop for this year. The effect of this adverse supply shock on Australia would probably be

A. an increase in prices and an increase in real interest rates.
B. an increase in prices, an increase in nominal interest rates, but a decrease in real interest rates.
C. a decrease in prices and a decrease in real interest rates.
D. a decrease in prices, a decrease in nominal interest rates, but an increase in real interest rates.

Question 24

A tax cut on capital will

A. shift the IS curve down and to the left.
B. shift the LM curve up and to the right.
C. shift the IS curve up and to the right.
D. shift the LM curve down and to the left.

Question 25

A decrease in taxes (when Ricardian equivalence doesn't hold) causes the real interest rate to _____ and output to _____ in the short run, before prices adjust to restore equilibrium.

A. rise; rise
B rise; fall
C. fall; rise
D. fall; fall

SECTION B: Solow (Neoclassical) Growth Model

The information below relates to Question 26 - 33. Answer all questions in this section.

Consider the following labour augmented version of the Solow (Neoclassical) model. Suppose the production function is represented by

$$Y_t = K_t^{1/2}(A_t N_t)^{1/2}$$

where Y_t is the aggregate output, K_t is the aggregate capital stock, A_t represents total factor productivity (TFP), N_t is the number of workers in the economy. The labour force grows at the rate of n, capital depreciates at rate, d and households save a fraction, s, of their income. TFP grows at a constant rate, g.

Question 26 (3 points)

What is the expression of the production function in intensive form or in per effective worker terms?

A. $y = A^{1/2}k^{1/2}$
B. $Y = A^{1/2}K^{1/2}$
C. $y = k^{1/2}$
D. $y = k^{-1/2}$

Question 27 (3 points)

The steady state is described as a situation in which Δk=0.

Capital accumulates according to $K_{t+1} = I_t + (1-d)K_t$ and the effective labour next period, $A_{t+1}N_{t+1}$ grows at the rate $g+n$, what is the steady state (or "break-even") investment per effective worker?

A. $i = (n + g + d)k$
B. $i = (1 + n + g + d)k$
C. $i = (1 + n + d)k$
D. $i = (n + d)k$

Question 28 (3 points)

Using the goods market equilibrium condition and the expression for the steady state investment from the previous question, what is the steady state condition that determines the level of steady state capital stock per effective worker, k^* given the expression for *y*, output per effective worker.

A. $sA^{1/2}k^{1/2} = (n + g + d)k$
B. $sA^{1/2}k^{1/2} = (1 + n + g + d)k$
C. $sk^{1/2} = (1 + n + g + d)k$
D. $sk^{1/2} = (n + g + d)k$

Question 29 (3 points)

What is the steady state level of capital per effective worker, k^*, in terms of *s*, *n*, *g* and *d*

Given that $A = 9$, $s = 0.3$, $n = 0.02$, $g = 0.01$ and $d = 0.20$, what is k^*?

A. $k^* = \left(\frac{n+g+d}{s}\right)^{-2}$; $k^* = 1.701$
B. $k^* = \left(\frac{1+n+g+d}{A^{1/2}s}\right)^{-2}$; $k^* = 0.535$
C. $k^* = \left(\frac{1+n+g+d}{s}\right)^{-2}$; $k^* = 0.0595$
D. $k^* = \left(\frac{n+g+d}{A^{1/2}s}\right)^{-2}$; $k^* = 15.312$

Question 30 (3 points)

Using the values of k^*, from the previous question, what is the steady state output per effective worker, y^*?

A. $y^* = 3.913$
B. $y^* = 1.304$
C. $y^* = 0.244$
D. $y^* = 0.731$

Question 31 (3 points)

The value of consumption per effective worker, c^*, is closest to?

A. 0.512
B. 0.171
C. 2.739
D. 0.913

Question 32 (3 points)

Suppose the population growth rate, *n*, rose from 0.02 to 0.03. The new steady state level of capital per effective worker, k^*, output per effective worker, y^* and consumption per effective worker, c^* are closest to?

A. $k^* = 0.0585;\ y^* = 0.242;\ c^* = 0.169$
B. $k^* = 1.563;\ y^* = 1.25;\ c^* = 0.875$
C. $k^* = 1.563;\ y^* = 1.25;\ c^* = 1.625$
D. $k^* = 0.0585;\ y^* = 0.242;\ c^* = 0.315$

Question 33 (4 points)

From the values you derived in the previous question, what has happened to the standard of living in this economy?

A. The effect cannot be determined
B. unchanged
C. fallen
D. risen

SECTION C: ASSET MARKET

The information below relates to Question 34 - 41. Answer all questions in this section

Suppose the real money demand function is:

$$\frac{M^d}{P} = 1200 + 0.5Y - 800i$$

Question 34 (3 points)

Assume that the asset market is in equilibrium such that $\frac{M^d}{P} = \frac{M}{P}$, where M is the nominal money supply and that the quantity theory of money holds. What is the real money demand, $\frac{M^d}{P}$ and velocity of money, V in this economy if $Y = 2500$ and $i = 0.1$?

A. $\frac{M^d}{P} = 2530;\ V = 1.012$

B. $\frac{M^d}{P} = 2530;\ V = 0.988$

C. $\frac{M^d}{P} = 2370;\ V = 0.948$

D. $\frac{M^d}{P} = 2370;\ V = 1.055$

Question 35 (3 points)

Following from the previous question, if the nominal money supply, $M = 2600$, and the asset market is in equilibrium, what is the price level?

A. 1.028
B. 0.912
C. 0.973
D. 1.097

Question 36 (3 points)

Now suppose that more people start participating in the Bitcoin market and we also see a decline in uncertainty in the market, how will these changes affect the real money demand?

A. unaffected
B. declines
C. cannot be determined
D. rises

Question 37 (3 points)

Suppose that the quantity theory of money holds and that velocity of money has increased to 2 and income remains unchanged at $Y = 2500$, what is the real money demand? What is the new price level if we assume that the asset market is in equilibrium such that $\frac{M^d}{P} = \frac{M}{P}$. Also, assume that the nominal money supply is unchanged.

A. $\frac{M^d}{P} = 1550; P = 1.68$
B. $\frac{M^d}{P} = 1550; P = 0.408$
C. $\frac{M^d}{P} = 1250; P = 2.08$
D. $\frac{M^d}{P} = 1250; P = 0.408$

Question 38 (3 points)

Suppose that the change in velocity occurred over the course of one year, what is the inflation rate over this period given your price levels from Question 35 and 37?

A. 0.727
B. 0.68
C. 0.896
D. 4.098

Question 39 (3 points)

What do we call periods of very high inflation?

A. deflation
B. depression
C. hyperinflation
D. stagflation

Question 40 (3 points)

Assume that the nominal interest rate has declined with the real interest, $r = 0.04$ and expected inflation, $\pi^e = 0.035$. Using the same value of income, $Y = 2500$, what is the new real money demand? Given that the asset market is in equilibrium and that the price level, $P = 2$, the reduction in the nominal interest rate was a result of the central bank raising the money supply, M, to _____.

A. $\frac{M^d}{P} = 2510; M = 5020$

B. $\frac{M^d}{P} = 2510; M = 4780$

C. $\frac{M^d}{P} = 2390; M = 5020$

D. $\frac{M^d}{P} = 2390; M = 4780$

Question 41 (4 points)

What monetary policy tool did the central bank use to increase the money supply and reduce the nominal interest rate, in the previous question?

A. Contractionary monetary policy

B. When deposits are transferred from banks to Bank of Canada

C. Open market sale

D. Open market purchase

SECTION D: IS-LM-FE Model

Section D comprises of two long questions: sub-sections D1 and D2.
Choose between D1 and D2.

SUB-SECTION D1: IS-LM-FE Model in a closed economy

The information below relates to Question 42 – 49. Answer all questions in this section if this is your chosen sub-section for section D.

Suppose the following IS-LM model represents the economy:

$C^d = 500 + 0.5(Y - T)$

$I^d = 250 - 600r$

$\frac{M^d}{P} = 0.5Y - 600i$

$i = r + \pi^e$

$\pi^e = 0.06$

where Y output, C^d is desired consumption, $\frac{M^d}{P}$ is real money demand, T, is lumpsum tax, i is the nominal interest rate, π^e is expected inflation, and P is the price level. Suppose that $T = 200$, government spending, $G = 200$, the money supply, $M = 2000$ and $P = 2.5$.

Question 42 (3 points)

What are the IS and LM curves, with r on the left-hand side of the equations? Assume that the goods and asset market are in equilibrium.

A. $IS\colon\ r = \frac{850-0.5Y}{600};\ LM\colon\ r = \frac{0.5Y+836}{600}$

B. $IS\colon\ r = \frac{850+0.5Y}{600};\ LM\colon\ r = \frac{0.5Y-836}{600}$

C. $IS\colon\ r = \frac{850-0.5Y}{600};\ LM\colon\ r = \frac{0.5Y-836}{600}$

D. $IS\colon\ r = \frac{850+0.5Y}{600};\ LM\colon\ r = \frac{0.5Y+836}{600}$

Question 43 (3 points)

The equilibrium, Y^* and the equilibrium real interest rate, r^*, are closest to?

A. $Y^* = 1686;\ r^* = 43/600$

B. $Y^* = 1614;\ r^* = 7/600$

C. $Y^* = 1686;\ r^* = 7/600$

D. $Y^* = 1614;\ r^* = 43/600$

Question 44 (3 points)

What is the equilibrium level of consumption, C^* and investment, I^*? Is the goods market equilibrium condition satisfied or does the income-expenditure identity hold?

A. $C^* = 1243;\ I^* = 243$
B. $C^* = 1243;\ I^* = 207$
C. $C^* = 1207;\ I^* = 207$
D. $C^* = 1207;\ I^* = 243$

Question 45 (3 points)

Suppose consumer sentiment increases such that the expression for consumption is now $C^d = 600 + 0.5(Y - T)$. What is the new IS curve?

A. $r = \frac{950+0.5Y}{600}$
B. $r = \frac{950-0.5Y}{600}$
C. $r = \frac{1150-0.5Y}{600}$
D. $r = \frac{1150+0.5Y}{600}$

Question 46 (3 points)

Given the new IS curve from Question 46, what is the change in the IS curve as a result of an increase in consumer sentiment?

A. It becomes steeper
B. It shifts to the right
C. It shifts to the left
D. There is no change

Question 47 (3 points)

Given the IS curve you found in Question 45 and that the LM curve remains unchanged, what is the short-run equilibrium output and real interest rate as a result of the increase in consumer sentiment? Use the general equilibrium condition as a starting point.

A. $Y^* = 1714;\ r^* = 0.155$
B. $Y^* = 1714;\ r^* = 0.095$
C. $Y^* = 1786;\ r^* = 0.095$
D. $Y^* = 1786;\ r^* = 0.155$

Question 48 (3 points)

Suppose the equilibrium output that you found in Question 43 is the full employment level. Compare this full employment level of output to the computed short-run equilibrium output in Question 47. How do firms adjust their prices for the economy to adjust back to the long run equilibrium?

A. Firms decrease their prices
B. Firms increase their prices
C. Firms leave their prices unchanged
D. Firms cannot adjust their prices

Question 49 (4 points)

Suppose prices did not adjust quickly enough to bring the economy to the long-run equilibrium. What fiscal policy can be implemented to bring the economy to long-run equilibrium or full employment level? Which curve shifts? Assume that the Ricardian equivalence does not hold.

A. Decreasing government spending; the IS curve
B. Increasing government spending; the IS curve
C. Tax cuts; the LM curve
D. Fiscal policy will not effective; the LM curve

SUB-SECTION D2: IS-LM-FE Model Small open economy with flexible exchange rate

The information below relates to Question 50 – 57. Answer all questions in this section if this is your chosen sub-section for section D.

Suppose Davisville is a small open economy trading with one large open economy. The behaviour of Davisville can be represented by the equations:

$C^d = 500 + 0.5(Y - T)$

$I^d = 250 - 600r^w$

$NX^d = 150 - 0.25Y - 0.3e$

$\frac{M^d}{P} = 0.25Y - 600i$

$i = r^w + \pi^e$

$\pi^e = 0.06$

where Y output, C^d is desired consumption, $\frac{M^d}{P}$ is real money demand, T, is lumpsum tax, i is the nominal interest rate, π^e is expected inflation, and P is the price level.

Question 50 (3 points)

What is the IS curve in terms of T, e and G, with r^w on the left-hand side of the equation? Assume that the goods market is in equilibrium.

A. $r^w = \frac{600+0.5T-0.3e+G-0.75Y}{600}$

B. $r^w = \frac{900-0.5T-0.3e+G+0.75Y}{600}$

C. $r^w = \frac{600-0.5T-0.3e+G-0.75Y}{600}$

D. $r^w = \frac{900-0.5T-0.3e+G-0.75Y}{600}$

Question 51 (3 points)

What is the LM curve in terms of Y, M and P, with r^w on the left-hand side of the equation? Assume that the asset market is in equilibrium: $\frac{M^d}{P} = \frac{M}{P}$.

A. $r^w = \frac{M/P-0.5Y+36}{600}$

B. $r^w = \frac{0.5Y+36+M/P}{600}$

C. $r^w = \frac{0.5Y-36+M/P}{600}$

D. $r^w = \frac{0.5Y-36-M/P}{600}$

Question 52 (3 points)

By setting IS curve equal to the LM, find the AD curve, with P on the left-hand side and Y, M, T, G and e on the right-hand side.

A. $P = \frac{M}{Y-864+0.5T+0.3e-G}$

B. $P = \frac{M}{Y-936+0.5T+0.3e-G}$

C. $P = \frac{M}{Y+864-0.5T-0.3e+G}$

D. $P = \frac{M}{Y+936-0.5T-0.3e+G}$

Question 53 (3 points)

Assume that the interest parity holds i.e. $r = r^w$, where r is the domestic interest rate and that suppose that $T = 250$, $G = 200$, the nominal money supply, $M = 2000$, $e = 10$ and $r^w = 0.02$. What is the equilibrium output, Y^* using the derived IS curve? What is the price level using the derived aggregate demand curve?

A. $Y^* = 1280; P^* = 11.628$
B. $Y^* = 1280;\ P^* = 7.35$
C. $Y^* = 880; P^* = 11.628$
D. $Y^* = 880;\ P^* = 7.35$

Question 54 (3 points)

Now suppose that government spending, G is increased to 250 to balance the budget and all other values remain unchanged. We know that;

$$e = \frac{e_{nom}P}{P_{for}},$$

where e_{nom} is the nominal exchange rate and P_{for} is the price level for the foreign country. Assume that $P_{for} = 5$ and $e_{nom} = 12$. What is the real exchange rate, e, given that the domestic price, P is equal to the value computed in Question 53. Also, what is the short-run equilibrium level of output, Y^* using the new IS curve and that r^w is unchanged?

A. $e = 10;\ Y^* = 1{,}346.667$
B. $e = 17.647; Y^* = 1{,}343.608$
C. $e = 8.5;\ Y^* = 1{,}343.608$
D. $e = 17.647;\ Y^* = 1{,}346.667$

Question 55 (3 points)

How does an increase in government spending affect the IS curve?

A. Government spending does not directly affect the IS curve
B. The IS curve becomes steeper
C. Up (or to the right)
D. Down (or to the left

Question 56 (3 points)

How does an increase in government spending affect the LM curve?

A. Government spending does not directly affect the LM curve
B. The LM curve becomes steeper
C. Up (or to the right)
D. Down (or to the left

Question 57 (4 points)

Is the real exchanged rate computed in Question 54 higher or lower than the initial value of 10? How does this affect net exports?

A. Higher; NX^d rises
B. Higher; NX^d declines
C. Lower; NX^d rises
D. Lower; NX^d declines