Strathmore
UNIVERSITY

Strathmore Institute of Mathematical Sciences
BBS FIN/FE
END OF SEMESTER EXAMINATION
(MACROECONOMICS II: BSE 2206)

DATE: Wednesday 6th December 2017 Time: 2Hrs

Instructions

- This examination consists of FIVE questions.
- Answer Question ONE (COMPULSORY) and any other TWO questions.

1. (a) Consider a macroeconomy that only produces two goods, A and B. the base year is 2015 and all quantities are measured in billions. Round all your answers to the nearest tenth.

Product	Quantity in 2015	Quantity in 2016	Price in 2015	Price in 2016
A	100	105	Kes.20	Kes.20
B	50	52	Kes.100	Kes.105

(i) Calculate the real GDP(Y) growth rate in 2016.(**4 Marks**).

(ii) Calculate the inflation rate (π) in 2016 using the GDP deflator. (**3 Marks**)

(b) Consider the following Neoclassical model of a closed economy, where r is in percentage terms.

Supply	Demand
$Y = F(K, L) = K^{1/3}L^{2/3}$	$C = 10 + 0.9(Y - T)$
K=125; L=64	$I = 12 - 2r$
	$G = 5, T = 10$

(i) What is the level of GDP in the economy? How much of national income goes to workers and how much goes to the owners of capital? show your work.(**3 Marks**).

(ii) Find the interest rate that produces equilibrium in the goods market.(**3 Marks**).

(c) Explain how each of the following events affects the monetary base, the money multiplier, and the money supply. **(2 marks)**

(i) The central bank of Kenya increases the interest rate it pays banks for holding reserves.(**1.5 Marks**).

(ii)) Rumors about a computer virus attack on ATMs increase the amount of money people hold as currency rather than demand deposits.(**1.5 Marks**).

(d) Suppose we have found a small open economy with perfect capital mobility. If consumers in the country experience a permanent preference shift towards increased consumption (at any level of income), what happens to the long run equilibrium real exchange rate and the real world interest rate? **(3 Marks)**

(e) Using Solow model of economic growth, explain what happens to steady-state capital per worker and the income per worker in response to each of the following exogenous changes.

(i) A change in weather patterns increases the depreciation rate.(**3 Marks**).

(i) Better birth-control methods reduce the rate of population growth.(**3 Marks**)

(f) According to the IS-LM model, what happens in the short-run to the interest rate, income, and consumption when the central bank increases the money supply. **(3 Marks)**

2. (a) Consider the following stylized economy;

Goods market	Financial market
Goods demand: $AD = C + I + G$	Money supply: $\frac{M^s}{P} = 36$
Consumption: $C = 30 + 0.5Y_D$	Money demand:$\frac{M^d}{P} = 0.2Y - 240r$
$Y_D = Y - T$	
Investment: $I = 10 + 0.25Y - 200r$	
Government exp: $G = 30$	

(i) Assume a balanced budget. Derive the IS relation (**4 Marks)**

(ii) Derive the LM relation (**2 Marks)**

(iii) Solve for the equilibrium interest rate, equilibrium output,and equilibrium private consumption **(4 Marks)**

(b) Explain five social costs of a steady and predictable rise in general price level **(10 Marks)**

3. (a) Suppose that the velocity of money **V**is constant, the money supply **M** is growing at 5% per year, real GDP **Y** is growing at 2% per year, and the real interest rate is **r**=4%. Assume that $\pi = \pi^e$, meaning that ex-post inflation rate is always equal to the expected rate.

(i) Find the value of nominal interest rate i in this economy. **(2 Marks)**

(ii) If the central bank increases the money growth rate by 2% per year, find the change in nominal interest rate Δi **(2 Marks)**

(b) Explain the relationship between inflation and unemployment implied by the Philips curve. In your answer make sure to explain the role played by expectations. use diagrams to illustrate your answer **(6 Marks)**

(c) Consider an economy described by the following equations:

$$\begin{aligned} Y &= C + I + G + NX \\ Y &= 8000 \\ G &= 2500 \\ T &= 2000 \\ C &= 500 + \frac{2}{3}(Y - T) \\ I &= 900 - 50r \\ NX &= 1500 - 250\epsilon \\ r &= r^* = 8 \end{aligned} \tag{1}$$

In this economy, solve for private saving, public saving, national saving, investment, the trade balance, and the equilibrium exchange rate.**(7 marks)**

(d) Use the following data to calculate the unemployment rate **(3 Marks)**

Total population	1,000,000
Number of adults employed	450,000
Number of unemployed adults	90,000
Labor force	500,000

4. (a) Explain using diagrams to support your answer, the effect of a monetary expansion on the exchange rate, the current account and output assuming a floating exchange rate.**(8 Marks)**

(b) For each of the following, state whether statement is true/false/uncertain. Justify your answer with a short argument. (Note: no credit will be given for a response without an explanation.

(i) In an open economy, fiscal policy is more effective than (or at least as effective as) monetary policy (in terms of changing output)**(4 Marks)**

(i) From Kenya's perspective, freedom of international capital movement in and out of the country is only sustainable if the central bank sacrifices either exchange rate stability or an activist monetary policy **(4 Marks)**

(c) The government raises taxes by Kes.100 billion. If marginal propensity to consume is 0.6, what happens to the following? Do they rise or fall? By what amounts?

(i) Public saving (**2 Marks**)

(ii) Private saving (**2 Marks**)

5. (a) Suppose that the production function in a given country is given by:

$$Y_t = F(K_t, A_t L_t) = K_t^{\alpha}(A_t L_t)^{1-\alpha}$$

. Where Y_t is total output at time t, K_t is the level of capital,A_t is the level of technology, L_t is labour force and $0 < \alpha < 1$ is a constant.

(i) Denote with $y_t = \frac{Y_t}{A_t L_t}$ the output per effective labor. Using the production function show that $y_t = k_t^{\alpha}$ where k_t is capital per effective labour; **(3 Marks)**

(ii) Denote with s the constant saving rate, with n the growth rate of labour force, with g the growth rate of technology and with σ the capital depreciation rate. Write down the capital accumulation equation and derive the steady state level of capital **8 marks)**.

(iii) Suppose that $s = 0.2$, $\sigma = 0.05$, $n = 0.01$, $g = 0.03$ and $\alpha = 0.3$. Find the value of capital per effective labour and output per effective labour in steady state. **(5 Marks)**

(b) Suppose that an economy has the Philips curve

$$\pi = \pi_{-1} - 0.5(u - 5)$$

How much cyclical unemployment is necessary to reduce inflation by 4 percentage points? Using Okun's law compute the sacrifice ratio. (**4 Marks**)

**********END **********