Midterm Exam

DURATION: 80 minutes.

INSTRUCTIONS: Use the EXAMINATION BOOKLETS to answer. Show ALL RELEVANT STEPS.

CALCULATORS: non-programmable, Casio 991, blue sticker, gold sticker.

Section A (Short Answer Questions): Do FOUR of the SIX questions. Provide a brief explanation to support your answer. Each question is worth 10 MARKS for a total of 40 MARKS.

Section B (Long Answer Questions): Complete BOTH questions. Each question is worth 30 MARKS for a total of 60 MARKS.

TOTAL: 100 MARKS.

Section A: Short Answer Questions

A1: In a world with two large economies, what relationship between the current accounts of the two countries is satisfied when the world real interest rate is at its equilibrium value?

A2: True or False? An increase in the interest rate means a negative substitution effect in the consumption-saving decision. Explain your answer.

A3: What is the effect on desired national saving of a temporary lump-sum tax increase?

A4: What is the key difference that determines whether an international transaction appears in the current account or the capital account?

A5: True or False? The higher the steady-state capital-labour ratio is in the neoclassical growth model, the more consumption each worker can enjoy in the long run. Explain your answer.

A6: Why is the classical model of the labour market not very useful for studying unemployment?

Section B: Long Answer Questions

B1: Productivity, Output and Employment

Suppose we have an economy with the following aggregate production function:

$$Y = AK^{1/3}N^{2/3}$$

where A is TFP, K represents capital and N represents labour. Set $A = 6$ and $K = 43$. Everything is expressed in real terms.

1. Use the production function to derive an algebraic expression for the demand curve for labour. Assuming that the wage rate prevailing in this economy was equal to $w = 3.5$, what would be the level of employment?

2. Now suppose that the supply curve is upward sloping and has the following form:

$$N^S = 10\left[(1 - t)w\right]^2$$

   where w is the real wage rate, and t is the tax rate on labour income. Assume for now that $t = 0$. Calculate the wage rate and the level of employment that satisfy the equilibrium in the labour market. Show your results graphically.

3. Repeat part 2 under the assumption that the tax rate on labour income, t, equals 0.15. Compare the new equilibrium to the no-tax equilibrium. What has been the effect?

B2: Saving and Investment in a Large Open Economy

Greece, an open economy, has a history of too much government spending and too little tax revenue due to tax evasion. Suppose its national accounts, desired investment and desired consumption are the following:

$$\bar{Y} = 400$$
$$T = 85$$
$$INT = 35$$
$$TR = 10$$
$$G = 90$$
$$NFP = 0$$
$$I^d = 35 - 450r^w$$
$$C^d = 300 - 300r^w$$

where $\bar{Y}$ is full-employment output, INT is interest payments on government debt, TR is transfer payments from the government to domestic residents, G is government spending, and NFP is net factor payments.

1. Calculate the government budget surplus (deficit). Express the government's budget balance as a percentage of GDP.

2. Find equations for desired national saving (S^d) and the current account (CA) as functions of the world real interest rate r^w.

3. Suppose there is only one other economy in the world: Germany. Germany's saving and investment decisions are summarized by the following two equations:

$$S^d_{Germany} = 290r^w$$
$$I^d_{Germany} = 25 - 600r^w$$

With free trade and international borrowing/lending between Greece and Germany, what is the equilibrium world real interest rate? What is Greece's current account balance in equilibrium. Illustrate this situation graphically.