UNIVERSITY OF CAMBRIDGE

ECT1
ECONOMICS TRIPOS PART I

Tuesday 9 June 2015 9:00-12:00

Paper 2

MACROECONOMICS

Answer **ALL SIX** questions from Section A and **TWO** questions from Section B.

Section A and B will each carry 50% of the total marks for this paper.

Each question within each section will carry equal weight.

Write your **candidate number** (not your name) on the cover of each booklet. Write legibly.

STATIONERY REQUIREMENTS
20 Page booklet x 1
Rough work pads
Tags

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator - students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed that you may do so by the Invigilator

SECTION A

1. The nominal GDP of the UK in the third quarter of 2014 was approximately £451 bn. In the same period, the exchange rate was around 1.26 € per £.

   (a) What is the nominal GDP of the UK in terms of euros in the third quarter of 2014?
   (b) How would you adjust this number to make the GDP of the UK comparable to the GDP of countries in the Eurozone?

2. Explain what happens to the natural rate of unemployment of the UK in the following scenarios:

   (a) New European labour laws allow EU citizens to work in countries of the European Union without work permits.
   (b) A new policy changes the maximum duration of Job Seekers Allowance in a fiscal year from 26 to 30 weeks.

3. What is the money multiplier? Can it be less than one? Assume that the reserve deposit ratio is 15% and the currency deposit ratio is 1%. By how much should the Bank of England increase the monetary base in order to achieve an increase in the money supply of £10 million?

4. What is the 'Keynes effect'? What assumptions must be made about monetary policy for this effect to operate?

5. Describe the long run implications of the following for the trade balance and real exchange rate of a small open economy:

   (a) A reduction in the world real interest rate.
   (b) A tax rise.

6. What is the effect of the following on the equilibrium government spending multiplier in a closed economy with fixed prices:

   (a) A reduction in unemployment insurance.
   (b) A decision by the central bank to react more aggressively to the output gap.

SECTION B

7. Can the classical model of production be reconciled with the differences in income per capita across countries?

8. Consider an economy with constant population, described by the Solow model. Assume that in this economy there is a government that just spends resources without contributing to production or capital accumulation. The production function in per capita terms is $y = \sqrt{k}$, where y is output per capita and k is capital stock per capita. The government maintains a balanced budget and government spending is financed by proportional income taxation at a constant income tax rate τ. Households save a constant fraction s of their disposable income, and consume the rest of their income. Capital depreciates at rate δ. It is assumed that $0 \leq \tau < 1$, $0 < s < 1$ and $0 < \delta < 1$.

   (a) Write the resource constraint for this economy in per capita terms. Use this to derive equilibrium investment per capita.
   (b) Derive the fundamental equation of the Solow growth model for this economy.
   (c) Derive the steady state capital per capita k^*. How does k^* change when the tax rate τ increases? Provide an intuitive explanation for your answer.
   (d) Discuss (without doing any derivations) how your answer in (c) may change if the government spending were productive, i.e. if G entered the production function as a factor of production.

9. Why is it important to have good estimates of long run macroeconomic variables such as potential output and the natural rate of unemployment? What are the difficulties in obtaining high quality estimates for these two variables?

10. A small open economy with sticky prices is described by the following relationships:

$$\begin{aligned} C &= 1000 + 0.6(Y - T), \\ I &= 400 - 50r, \\ G &= 400, \ T = 300, \\ NX &= 400 - 100e - 0.1Y, \end{aligned}$$

where Y is aggregate income, C is consumption, T is taxation, I is investment, G is government expenditure and NX is net exports. The nominal exchange rate, e, is pegged at a value of 1.2.

   (a) First, assume that the domestic interest rate, r, is equal to the world rate, r^*, and that $r^* = 2$.
      i. Find the equilibrium income and net exports in this economy.

ii. What is the effect on income and net exports of an increase in government spending to 500?

(b) Now suppose that the relationship between r and r^* is given by:

$$r = r^* + \gamma(G - T).$$

i. Discuss briefly why this relationship might arise.

ii. Derive the equilibrium government spending multiplier, $\frac{dY}{dG}$, in terms of γ, and provide a brief interpretation of your result.

11. A central bank in a closed economy is setting the nominal interest rate, i, so that the real interest rate, r, satisfies the following equation:

$$r = 2 + 0.5\left(\pi - \bar{\pi}\right).$$

The inflation target, $\bar{\pi}$, is 2, but consumers and firms in the economy currently anticipate deflation at a rate of 1 per cent.

(a) Show that there is a minimum value for π such that the central bank is able to adhere to its rule, and compute this minimum. What happens for lower values of π?

(b) Current levels of consumer demand, investment and government spending in the economy imply the following IS equation:

$$Y = 500 - 100r.$$

Derive an aggregate demand curve for this economy in inflation-output space, and comment briefly on its shape.

(c) The long-run level of aggregate supply in this economy is given by $\overline{Y} = 450$. Discuss, with the use of diagrams, what policy options are available to ensure $Y = \overline{Y}$. How would you expect inflation expectations to evolve if there is no policy change?

12. To what extent can the Phillips curve account for developments in the United Kingdom economy, in relation to the following:

(a) Adoption of inflation targeting after 1992.

(b) Demand-pull pressures since the financial crisis of 2008.

(c) Cost-push pressures, e.g. energy prices, in recent years.

END OF PAPER