UNIVERSITY OF CAMBRIDGE

ECT1
ECONOMICS TRIPOS PART I

Monday 6 June 2022 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 **blind grade number** (not your name) on the cover of each booklet.

Candidates are asked to note that there may be a reduction in marks for scripts with illegible handwriting.

If you identify an error in this paper, please alert the **Invigilator**, who will notify the **Examiner**. A **general** announcement will be made if the error is validated.

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. Give an example of a situation in which the rate of CPI inflation will differ from the rate of inflation measured by the GDP deflator, and explain why this occurs.

2. How do labour protection laws affect the natural rate of unemployment?

3. Explain what is meant by the Fisher equation and the Fisher effect. What are the long-run effects of an increase in nominal interest rates on the price level and the real interest rate?

4. Assuming a closed economy, analyse and contrast the impact on aggregate savings of an increase in lump-sum taxation in (a) a Classical model, and (b) a Keynesian model with a fixed real interest rate.

5. Explain why imperfect information may give rise to an upward-sloping aggregate supply relationship in inflation-output space. What determines the slope of the short-run aggregate supply curve in this case?

6. How does technological improvement affect a country's real exchange rate?

SECTION B

7. Consider a Solow growth model with constant population and the following aggregate production function:

$$F(K, L) = \left[\phi\sqrt{K} + (1-\phi)\sqrt{L}\right]^{2\gamma}$$

where K is capital stock, L is labour supply and $0 < \phi < 1$, $\gamma > 0$ are parameters.

(a) Provide an economic interpretation of the parameters ϕ and γ.

(b) Now let $\gamma = 1$ and $\phi = 1/4$. Let $k = K/L$ and $y = Y/L$. Derive the production function in per worker terms.

(c) Continue assuming that $\phi = 1/4$ and $\gamma = 1$.

i. Will this economy have a steady state for any savings or depreciation rate? Explain.

ii. Now let capital depreciate at a 10% rate per year, and assume that households save a constant fraction of 25% of their income per year. Is there a steady state for these parameter values? If yes, calculate the steady state capital per worker k^*, output per worker y^*, and consumption per worker c^*. If not, explain why not.

8. The following table reports measures of real GDP, the money supply and inflation for the US economy in 2020 and 2021, expressed as percentage changes from the previous year:

	2020	**2021**
Real GDP	-3.40%	5.68%
M2	24.93%	12.91%
CPI (all urban consumers)	1.28%	7.09%

Discuss in detail whether these figures can be reconciled with the Quantity Theory of Money.

(TURN OVER)

9. Consider a closed economy that satisfies the following two equations:

$$Y = \bar{Y} - b(\pi - \pi^T)$$
$$\pi = \phi\pi^T + (1-\phi)\pi_{-1} + v(Y - \bar{Y}) + \varepsilon$$

where Y is output, $\bar{Y}$ is a measure of full capacity output, π is inflation, π^T is the central bank's inflation target, π_{-1} is lagged inflation, and ε is a random shock to inflation. ϕ, v and b are positive parameters, with $0 \leq \phi \leq 1$.

(a) Provide an intuitive interpretation of the parameters b and ϕ. What factors will influence their size?

(b) Show that the current level of inflation can be written in the form:

$$\pi - \pi^T = \rho(\pi_{-1} - \pi^T) + \gamma\varepsilon$$

where ρ and γ are functions of the parameters ϕ, v and b.

(c) Given your answers to parts (a) and (b), assess the alternative methods central banks might use to prevent persistence in inflation.

10. Assuming fixed prices, analyse the likely short-run effects on a small open economy of:

(a) trade sanctions that restrict the country's exports, and

(b) financial sanctions that reduce the country's access to global capital markets.

In what circumstances will these sanction policies, together or in isolation, have a significant impact on the country's aggregate output?

END OF PAPER