Macro qualifier:
Each section is weighted equally.

Part A:
Answer one of the following questions:
1. Consider the following economy

$$Y = F(N) \qquad F' > 0, \qquad F'' < 0$$

$$W / P = F'$$

$$N = N(W / P) \qquad N' > 0$$

$$Y = C + I + G$$

$$C = C(Y) \qquad 1 > C' > 0$$

$$I = I(i) \qquad I' < 0$$

$$M / P = L(i, Y) \qquad L_i < 0, \qquad L_Y > 0.$$

a. Assume that the monetary authority fixes the *real* money supply; the fiscal authority sets government expenditures at $\overline{G}$. Show that in the above model there is no unique price level that can bring about equality between the quantity of commodities demanded and supplied.

b. Does your answer change if the consumption function is replaced with:
$C = C(Y, M / P)$ where consumption changes directly with the real money supply? Explain.

c. How does your conclusion change if the monetary authority is assumed to fix the *nominal* money supply? Under what conditions does the system with fixed money supply still not have a solution for $P$? Explain.

2. Consider a Central Bank which uses short term interest rate as the instrument of policy. The central bank's problem is given as:

$$\min L = (y_1 - y_e)^2 + \beta(\pi_1 - \pi^T)^2$$

subject to the Phillips Curve: $\pi_1 = \pi_0 + \alpha(y_1 - y_e)$.

where $y_1$ is real GDP in period 1, $y_e$ is the equilibrium GDP, $\pi_0$ and $\pi_1$ are inflation rates in periods 0 and 1, $\pi^T$ is the target inflation rate, and $\alpha$ and $\beta$ are positive parameters.

    a. Derive a mathematical expression describing the monetary rule (MR) that minimizes the Central Bank's loss function.

    b. Now suppose that the IS equation is given by $y_1 - y_e = -a(r_0 - r_s)$, where $r_0$ is the interest rate at time 0, $r_s$ is the real interest rate that equates $y_1$ to $y_e$. Use the Phillips curve, MR and IS do derive the interest rate rule. How is this interest rate rule similar to and different from the Taylor Rule?

Part B:
Answer one of the following questions:
1. How does the real wage behave over the business cycle according to the standard Keynesian (fixed nominal wage, flexible price), Lucas incomplete information, real business cycle, and new-Keynesian models? Explain.

2. How do the bargaining and efficiency wage models explain the persistence of involuntary unemployment? Explain

Part C:
Answer one of the following questions:
1. Consider two policy choices to lower the inflation rate by 10 percent: a) cold-turkey; b) gradualism. How would you choose between these alternatives?

2. New Keynesian economics often allude to externalities to explain macroeconomic failures. Write an essay on the significance of externalities in the new-Keynesian models. Illustrate your arguments with examples.

*Question 1.*
Explain the main differences between the Solow and Ramsey neoclassical growth models and the classical-Keynesian growth models. Describe in your reply:

(a.) The Ramsey and Solow models
(b.) The Kaleckian model (Rowthorn)
(c.) The Kaldorian model (Thirlwall)
(d.) The policy implications of both approaches

*Question 2.*
Explain the significance of the Equifinality theorem and the capital controversies. What are the implications for growth theory?

*Question 2.*
What is the main difference between New Growth Theory (Romer/Lucas) and the old (Solow) neoclassical analysis? Explain.