Answer a total of three questions. Answer at most one question from Part II.

{thus, either (a) answer three questions from Part I, or (b) answer 2 questions from Part I and one question from Part II}.

Part I.

1. Consider a small economy, such as Mexico, which is on a flexible exchange rate system. Assume that the foreign (US) price level and interest rates are given. Under these circumstances answer all of the following parts. Your answer should be supported either with equations, or a clearly explained graph.

   a) How will a temporary increase in the Mexican money supply affect Mexican interest rates and the exchange rate in the short run? In answering, be sure to indicate what variables you assume are fixed in order to make your prediction. (8 points)

   b) How will a permanent increase in the Mexican money supply affect Mexican interest rates and the exchange rate in the short run? Compare your answer (qualitatively and quantitatively) to part (a), and explain why and how the two answers differ. (8 points)

   c) How does the permanent increase in the Mexican money supply affect Mexican interest rates, prices, and the exchange rate in the long run? Compare your answer to part (b) above (compare not only the direction, but also the magnitude, of the changes). (8 points)

   d) Using your answer to parts (b) and (c) explain what is meant by exchange rate overshooting, and explain why overshooting occurs. Draw a graph to show how the Mexican price level, interest rates and exchange rate respond, over time, to this permanent increase in the money supply. (9 points)

2. Answer all parts. In answering this question, assume that prices adjust immediately.

   a) Consider two countries, such as the US and Britain. Suppose that real income in both countries is stationary (there is no income growth), but that the British money supply (pounds) is growing at 6% per year, while the US money supply is growing at 4% per year. Using the above information, and the fact that there is a flexible exchange rate between the US dollar and the British pound:

      i. What prediction would you make concerning the inflation rate in each country, and the nominal interest rate in each country? Be precise and justify your answer. (6 points)

      ii. What predictions would you make about how the exchange rate between the dollar and the pound would change over time? Be precise and justify your answer. (5 points)
b) How would your answers to part (a) be altered if the British economy were growing at 4% per year, while US income was stable? Explain. (10 points)

c) Return to the assumptions of part (a), in which there is no income growth in either country, the British money supply has been growing by 6% per year, and the US money supply has been growing by 4% per year. Suppose that, unexpectedly, the Bank of England announces that, starting immediately, it will pursue (indefinitely) a more expansionary monetary policy, and that hereafter the money supply will grow by 8% per year.

i. Explain the immediate impact of this new monetary policy on interest rates, prices, and the exchange rate in Britain (by immediate, I mean even before the money supply has begun to grow). Carefully explain the reasoning behind your answer. (6 points)

ii. Show how this policy affects prices, the interest rate and the exchange rate over time. Demonstrate your results by drawing graphs showing both the immediate impact (part i), and the long run consequences of this new policy. (6 points)

3. Prior to the current period of flexible exchange rates, the world financial system operated under the “Bretton Woods” system, under which countries fixed their exchange rate against the US dollar (and the US fixed the dollar price of gold).

a) Assume that France fixed the exchange rate of the French franc (FF) at 6 FF/$. What actions would the French government (or Central Bank) have to undertake to maintain this exchange rate? How would these actions affect the French money supply and French foreign exchange reserves? Be as specific as possible. (7 points)

i. Suppose France wanted its money supply to grow at 7%, while the US money supply growth was only 3%. Assuming identical income growth in the two countries, how would this expansionary monetary policy affect the foreign exchange market, the French “Balance of Payments” (Official Settlements Balance), and official French holding of foreign assets? (6 points)

b) It used to be common for developing countries to use multiple fixed exchange rates. For example, a country (say, Thailand) would require its citizens to sell their dollars to the government in exchange for the local currency (baht) at one exchange rate, while the Thai Central Bank would resell these dollars to importers at different exchange rates. To illustrate, suppose Thailand required exporters (and all citizens who acquired dollars) to sell these dollars to the Central Bank at the rate of 20 baht/$, while the Central Bank sold dollars to food importers at the rate of 30 baht/$, and to car importers at the rate of 40 baht/$.

i. Why would a government resort to a system of multiple exchange rates? What are its economic effects on exports, imports and their composition? Be specific, and relate your answer to trade policies. (6 points)

ii. Explain why illegal markets, in which private citizens trade currencies with each other (even though it is illegal) may develop under this system. (4 points)
c) Using the aggregate demand-money demand models of Chapters 16 & 17 (the “DD-AA model”), explain how – under a fixed exchange rate system – an import tariff is likely to affect domestic output and the Balance of Payments (official settlements balance or official reserves). Relate your answer back to part (b). (10 points)

4. One major issue in comparing fixed and flexible exchange rates concerns how fiscal and monetary policy work under each exchange regime. To illustrate this, consider the aggregate demand-aggregate supply relation (DD), and money market equilibrium condition (AA) for a small, open economy:

\[ Y = C(Y - T) + I + G + CA(Y, \rho, Y^*) \]

\[ \rho \equiv \frac{EP^*}{P} \]

\[ M^* = PLY, r \]

where: \( M^* \) is the domestic money supply; \( L(Y, r) \) is the demand for real money balances; \( Y \) is real domestic income (output); \( T \) is taxes; \( G \) is government purchases; \( CA(\ldots) \) denotes the current account balance; and \( Y^* \) is real foreign income. \( CA \) is decreasing in domestic income (\( Y \)), but increasing in the real exchange rate \( \frac{P}{P^*} \) and foreign income (\( Y^* \)). The real exchange rate, defined as the relative price of foreign to domestic goods, depends on the nominal exchange rate (\( E \), the number of units of local currency per foreign currency), the foreign price level \( P^* \), and the domestic price level, \( P \).

a) Assuming foreign and domestic prices and foreign income are fixed, determine the short run effects of a temporary increase in government spending on domestic income, interest rates and the exchange rate under a flexible exchange rate system. (8 points)

b) Redo part (a) under the assumption that people expect the increase in government spending to be permanent. If the results differ, explain why. (8 points)

c) Redo the analysis of part (a) to show how fiscal expansion affects domestic income, interest rates and the current account balance under a fixed exchange rate system (for both cases of temporary and permanent expansion). Contrast the results. (9 points)

d) Use your above results to discuss whether Italy is more likely to be affected by a German recession (a decline in foreign income) under fixed exchange rates or under flexible exchange rates. Explain carefully. (8 points)

5. Answer All Parts

a) Briefly define the Current Account balance. Then use the macroeconomic model outlined in chapter 16 (and in question 4 above) to show how an increase in import tariffs would affect the Current Account balance, assuming there were domestic unemployment. (6 points)

i. Assuming the economy were at full employment (so that real domestic income could not rise) how would the tariff affect domestic prices, the exchange rate and the Current Account balance? Use the model to support your answer. (5 points)
b) Use the macroeconomic model of chapter 16 (and question 4) to derive a *combination* of policies that can be used to improve the Current Account balance, assuming the economy is at full employment. Show how this policy affects the exchange rate and prices. (11 points)

c) Briefly discuss the potential gains, and costs, that occur when several different countries abandon their own currency to adopt a common currency. In your discussion, discuss the role of factor mobility between the countries. (11 points)

**Part II.** Answer at most one of the following questions.

6. Under the *Multifibre Agreement* (MFA), international trade in textiles is regulated by a series of agreements that restrict the volume of textile exports from developing countries to the richer countries (this agreement is supposed to be phased out as a result of the most recent international negotiations). To illustrate the impact of this agreement, consider a partial equilibrium model of *three* countries, the US, Thailand and Singapore. Demand and supply for textiles in each country are given by:

- **US:** \[ S^{} = 4P^{}; \quad D^{} = 400 - P^{} \]
- **Thailand:** \[ S^t = 100 - P^t \]
- **Singapore:** \[ S^s = 4P^s; \quad D^s = 50 - P^s \]

where the superscripts \{us, t, s\} refer to the country.

In answering the following questions, assume that Thailand and Singapore cannot trade with each other – they can only trade with the US.

a) Assume that the US has an import tariff on textiles of \(10\) per unit. In addition, assume that the MFA states that both Thailand and Singapore must restrict their exports to the US to \(50\) units per country. Find the resulting prices in Thailand, Singapore and the US. (5 points)

i. Given the export limits from the two countries, what would happen if the US eliminated its import tariff? Who would gain and who would lose from this policy? Explain. (5 points)

b) Suppose, as in part (a), that initially both Singapore and Thailand are given quota rights that allow each country to export \(50\) units to the US. However, suppose a change in the agreement allows the two countries to trade these quota (or export) rights with each other. As a result, total exports from the two countries to the US will still be \(100\), but the amount exported from each country may differ.

i. Given trade in the export quotas between the two countries, find the equilibrium price of textiles in Thailand and Singapore, the exports from each country to the US and the price of these export quotas. (6 points)
ii. Show how the trade in quotas affects overall welfare in Thailand, Singapore and the US. Does any country lose from this policy of allowing trade in quotas? Explain the impact this policy has on economic efficiency. (8 points)

c) Suppose that, from the US perspective, the purpose of the import restrictions was to help domestic textile producers. What other US policy would have the same effect on the welfare of the domestic textile producers? From a world welfare perspective, is this policy better or worse than the trade restrictions in part (b)? Explain briefly. (9 points)

7. Answer all parts.

a) In recent years the gap between wages for skilled and less skilled workers in the US has increased significantly. Using a Heckscher-Ohlin type model with two goods, and two factors (skilled and unskilled labor), discuss whether a reduction in US tariff barriers could (at least partly) explain this result. What would this imply about US imports? Explain. (11 points)

b) Consider a specific factor model with two goods (C, F), two specific factors (K, capital; and T, land) and one mobile factor (L, labor). Good C (cloth) is produced using labor and capital, while good F (food) is produced using labor and land. Assume there are two countries, the US and Europe. The two countries have the same labor supply and the same technology, but the US has more land and Europe has more capital.

i. Assuming free trade, predict the pattern of trade between the two countries, and compare factor prices between the countries (the wage rate, the return on capital and the return on land). (8 points)

ii. Given world food prices, how will a subsidy to European food producers affect production, factor prices and welfare in Europe? (5 points)

iii. Assuming Europe is large, how will this food subsidy affect world (and US) food prices, US factor prices, and US welfare? (4 points)

iv. Can Europe ever gain from this policy? In what way, if at all, is this policy like an import tariff? How is it different? Explain. (5 points)