Question 1. True, false or uncertain? Give a brief but careful explanation.
1) In the early 1990s, the unemployment rate was around 8% both in the US and in France. Considering that the participation rate was also similar in both countries, we conclude that in both countries labor markets work in the same way. (Note: this draws from section 15.1 of the textbook.)
2) In the United States, workers have almost no collective bargaining. Thus it is a surprise to see firms paying wages substantially above workers’ reservation wages (the minimum wages at which they would work).(Note: this draws from section 15.2.)
3) There is a discussion under way now in Congress to raise the minimum wage in the US. This is good news for young workers looking for a job.
4) If equilibrium output is above its natural level, firms will lay off excess workers. This depresses wage demands and therefore prices, thus bringing the economy back to its natural level.

Question 2
Suppose that the labor market is described by the following equations
\[ W = P \cdot z \cdot \left( \frac{1 - \mu}{\mu} \right) \]
\[ P = (1 + \mu)W \]
\[ Y = N \]
Here \( z \) is a variable catching institutional effects on wage setting, such as unemployment benefits, \( \mu \) is the markup of prices over wages.

a) Assume initially that \( z = 1 \). Solve for the equilibrium real wage, unemployment and output.
b) The government decides to increase unemployment benefits. This results in \( z \) increasing to 2. Solve for the new equilibrium real wage, unemployment and output.
c) Suppose that the markup, instead of being fixed, depends on the level of unemployment as given by: \( \mu = \frac{1}{2} (1 - u) \). Solve for the equilibrium real wage, unemployment and output both for the initial case of point a) and the case of increased unemployment benefits of point b) Is the impact of increased unemployment benefits on the equilibrium wage and unemployment larger or smaller in this case than with fixed markups? Discuss.

Question 3
Consider the general equilibrium of an economy described by the following equations:
\[ Y^d = C + I + G \]
\[ C = c_0 + c_1(Y^d - T) \]
\[ I = I_0 - I_1 i \]
\[ M = P Y^d \frac{1}{i} \]
\[ Y = AN \]
\[ W = P^e z \left( \frac{1-u}{u} \right) \]
\[ L = N + U = 1 \]

a) Assume first that A=1. Derive the price setting relation, the natural level of output, the natural level of unemployment, actual output and actual unemployment. Derive the AS schedule, and show that it implies a positive relation between output and prices.

b) Derive the AD schedule as a function of taxes, government spending, money and the price level. Show that it implies a negative relation between output and prices.

c) Show graphically the equilibrium both in (P,Y) and (i,Y) spaces.

d) Suppose that there is an increase in productivity such that now A>1. Solve for the new natural rates of unemployment and output. Assume that expectations are adaptive so \( P_t = P_{t-1} \) Graphically illustrate the change in this periods equilibrium in both (P,Y) and (i,Y) spaces. What happens in the long run?

e) Suppose that the Central Bank is concerned with price level stability, and decides to take measures to keep prices at the original level. What should it do in the short run? Can it maintain price stability in the long run in this way?