Instructions: Answer 2 of the following 3 questions. Provide diagrams and explain your answers.

(1) How does a firm determine its optimal level of employment in the short-run? Show how this can be used to derive the firm’s short-run demand curve for labor. Suppose a new trade agreement with Argentina means that the price of the firm’s output falls. How would this affect the firm’s short-run labor demand curve?

(2) Suppose the market for nurses in the Capital Region is summarized as follows:

Supply: \( w = 450 + 0.05E \)
Demand: \( w = 600 - 0.1E \)

where \( w \) is the weekly wage in dollars and \( E \) is the number of nurses.

(i) What are the competitive equilibrium wage, \( w^* \) and employment level, \( E^* \).

(ii) What are the elasticity of demand and the elasticity of supply at the equilibrium values?

(iii) Suppose now that a consortium of hospitals becomes the only employer of nurses in the capital region (i.e. all the demand for nurses comes from a single employer). Would the nurses be better or worse off than in the competitive equilibrium? (I do not need the exact number but explain your answer.)
(3) Suppose employers prefer high-school graduates to drop-outs. Explain with a diagram and in words how an increase in the minimum wage can cause the graduates to crowd-out (i.e. displace) the drop-outs in employment. How do you think this result fits in with the original intension of the minimum wage legislation? What might be the long-term implications for the high school graduation rate?