1. True or False?
   i. F;  ii. T;  iii. F;  iv. T;  v. T;  vi. F;  vii. F;  viii. T;

2) The below graph shows the market for good X, initially with equilibrium quantity, \( Q_X^* = 20 \) and equilibrium price, \( P^* = 10 \). Show the effect of an excise tax of 6 $/unit legally collected from the sellers

\[ P \quad 8 \quad 10 \quad 14 \quad S \quad S' \]
\[ Q_X \quad 16 \quad 20 \]

a) $8 per unit;  b) $14 per unit;  c) **Tax revenue** = (tax per unit) · Q(after tax) = (6)(16) = $96

*For d and e give per unit tax incidence instead of totals requested:*

(he total amount of money collected from sellers would be: $32; and from buyers: $64)

d) **Economic incidence** on suppliers = $2 per unit.  e) **Economic incidence** on demanders = $4 per unit

f) The **price elasticity of demand** (as price changes from $10 to $14) = \( (4/18) ÷ (4/12) = .22/.33 = 67 \)
g) The **price elasticity of supply** (as price changes from $10 to $8) = \( (4/18) ÷ (2/9) = .22/.22 = 1 \)

[because supply is more elastic than demand, economic incidence on suppliers will be smaller than economic incidence on demanders]

3) a) Rent

\[ P \quad 800 \]
\[ Q_{\text{apartments}} \]

b) law preventing rents above $700 is a binding rent control (price ceiling).  A shortage results.

A law preventing rents above $900 is a non-binding price ceiling.  No shortage or surplus results.

4) \( P \)

\[ P^* \]
\[ Q \]

Producer Surplus (PS) ↓ when Demand shifts leftward

Consumer Surplus (CS) ↑ when Supply shifts rightward

5) a) \( Q_{\text{mkt}} > Q_{\text{opt}} \)
b) If consumption of education gives off positive externalities, amount consumed without government involvement is inefficiently low.
c) Tax the firm output; or the actual pollution (if measurable); or regulate the firm, e.g., force the firm to adopt cleaner technology.
6) a-d see #2;  
e) The **Deadweight Loss** (or “**Excess Burden**”) represents the loss to society (consumers, producers, and government) due to inefficiency. It is shown by the triangle below D and above S from Q= 16 to 20. Its area is \( \frac{1}{2} \)(base)(ht.) = \( \frac{1}{2} \)(6)(4) = $12 \)

7) Laffer Curve shows the relation between **tax rate** and **tax revenue** (in this class we place rate on the horizontal axis). Its general shape is known. It has an upward sloping region where rates and revenues increase together, and a downward sloping (negatively sloped) region where increases in rate will reduce tax revenue. Policymakers do not know exactly where the Laffer Curve is (e.g., the rate at which tax revenue would be maximized). Economists who believe an economy is on the downward sloping section of a Laffer curve would favor reducing tax rates. Such economists would believe “labor supply is elastic” so that a rate cut would greatly increase the tax base (the amount of hours worked earning taxable income).

8) Marginal Social Benefit (**MSB**) curve is above the Demand curve (which shows Marginal Private Benefit, **MPB**). The height of the supply curve shows both Marginal Private Cost (**MPC**) and Marginal Social Cost (**MSC**) (since there is no externality in production). \( Q_{\text{opt}} \) (the intersection of Demand and Supply) is to the left of \( Q_{\text{mkt}} \) (the intersection of MSC and MSB).

9) Yes – government can encourage increased consumption (by subsidies), or force increased consumption (by laws or regulations).

10) i) Monopoly; ii) Macroeconomic Instability; iii) Externalities; iv) Non-Rival or Non-Excludable goods; v) Imperfect Information.

11) Assign property rights and allow bargaining and side-payments to be made. “Coase Theorem” solution assumes i) clearly defined property rights, and ii) zero transactions costs. Clearly decide if residents have a right to make noise, or a right to quiet; and then allow residents to pay one another to either: i) be quiet (if residents have a right to make noise); or ii) to allow noise to be made (if residents have a right to quiet). The Coase solution works better if few people are affected by the externality.

12) Non-economists would be more likely to say these three things. Economists think anything should be done as long as marginal benefit exceeds marginal cost.