1. Show who pays for a specific tax when the buyer collects the tax. Next show who pays for a specific tax when the seller collects the tax. Display your answers with the appropriate demand and supply curves. Based on your earlier answers, demonstrate whether statutory burdens have an effect on economic burdens associated with a specific tax. Explain.

2. Suppose that an ad valorem tax is placed on the buyer. Carefully display who pays the true economic burden of the tax. Show your analysis in a demand and supply diagram.

3. Analyze tax burden sharing when:
   (a) demand is perfectly price elastic
   (b) supply is perfectly price inelastic
   (c) demand is perfectly price inelastic
   (d) supply is perfectly price elastic

4. What happens to tax burdens when supply and demand are moderately elastic? Based on your answers to this question and question 3, describe how tax burdens are shared between buyers and sellers based on the price elasticity of demand and supply. What kinds of goods should a government tax in order to receive high tax revenues? Explain and demonstrate.

5. Is the progressiveness of a tax measured in terms of the marginal tax rate? Give two alternative means for describing how progressive is the tax system. Define proportional, regressive, and progressive taxes. Based on the following flat tax:

   \[ .3(\text{Income} - 4000) \]

show in a table that the average tax rate increases with income. How is the average tax rate and marginal tax rate related?

6. TRUE or FALSE? A specific tax on a monopolist, paid by the buyer, is solely borne by the buyer. Support your choice with a carefully drawn diagram. What happens to the monopolist’s profits? How does this tax on quantity differ from a tax on profit? Does the profit-maximizing output level change with a profit tax?

7. Answer the following questions:
   (a) When is a general equilibrium analysis of tax burdens more appropriate than a partial equilibrium analysis?
   (b) Which of the following combinations of taxes have equivalent effects? Assume two goods (food, F, and manufactures, M) and two inputs (capital, K, and labor,
2

L).

(i) equal proportional taxes on food ($t_f$) and on manufactures, ($t_M$), and an income tax of the same rate ($t$).

(ii) equal proportional taxes on capital used in food ($t_{KF}$) and on labor used in food ($t_{LF}$), and an income tax of the same rate ($t$).

(iii) equal proportional taxes on capital used in the food industry ($t_{kF}$) and on capital used in the manufacturing industry ($t_{KM}$), and a tax on capital ($t_k$) of the same rate.

8. What are the assumptions of the Harberger model of general equilibrium tax analysis? Describe each and their importance.

9. Describe the tax incidence using the Harberger model for the following taxes:

(a) a general tax on labor in all of its uses.

(b) a commodity tax on manufactures, where manufacturing is capital intensive.

(c) how would the results in (b) change qualitatively if the price elasticity of demand for manufactures were larger? How would these results be affected if the elasticity of factor substitution were larger? Or if manufacturing is labor intensive.

(d) an income tax on earners.

10. TRUE or FALSE. A tax on corn has an excess burden so that the tax revenue collected is less than the equivalent variation. (Show with an indifference diagram with corn on the vertical axis and barley on the horizontal axis.)

11. What tax has no excess burden? Explain briefly.

12. Does an income tax have an excess burden? When answering, indicate what happens to the MRS and MRT equalities. [Assume that there are two goods (corn and barley) and a leisure good.]

13. Show the excess burden associated with a tax on a good. In so doing, use a compensated demand curve. Give the formula for excess burden in terms of the price elasticity of the compensated demand curve. How does excess burden change if the absolute value of this price elasticity increase? How does excess burden change if the initial expenditure on the good is larger? How does excess burden change if the tax doubles.

14. As in question (13) show the excess burden of a subsidy on housing. Next show the excess burden of a tax on wage earnings. In this second case, use the compensated labor supply curve. Also give a formula for this excess burden in terms of the price elasticity of
the compensated labor supply.

15. TRUE or FALSE? A tax on all commodities including leisure, at the same percentage rate of t, is equivalent to reducing the value of the time endowment from wT to wT[1/(1 + t)]. Show mathematically using the equation of a budget constraint.

16. (a) To minimize excess burden, how should the tax rate on good X and Y be set?

(b) Interpret the so-called Ramsey Rule of part (a) in terms of the price elasticity of demand or the so-called inverse elasticity rule. Derive this rule mathematically. Based on this rule, what kinds of goods should be taxed?

17. TRUE or FALSE? The price of a regulated monopoly is lower than its marginal-cost price. TRUE or FALSE? The quantity of an unregulated monopoly is larger than that of a regulated monopoly. Show your answers using the appropriate marginal revenue, average cost, marginal cost, and demand curves for a monopoly.

18. Definitions to learn:

excess burden
inverse elasticity rule
equivalent variation
regulated monopoly pricing
marginal-cost pricing
proportional tax
recessive tax
progressive tax
flat tax
Ramsey rule
compensated demand curve