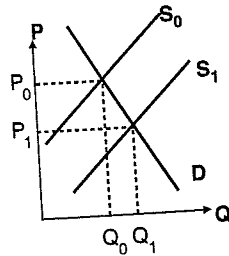
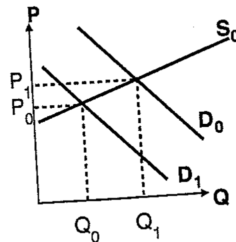
b. The price will rise considerably but quantity will not rise significantly, as shown in the graph (b) below. (122-123)



c. The quantity will fall considerably, but price will not fall significantly, as shown in the graph (c) below. (122-123)



ANSWERS

A BRAIN TEASER

1. They will be sad. The bumper crop year will increase the supply of the crop and reduce the price significantly. A fall in the price given the inelastic demand will decrease total revenues—farmers' incomes. (122-123)

ANSWERS

POTENTIAL ESSAY QUESTIONS

The following are annotated answers. They indicate the general idea behind the answer.

1. As a general rule, the more substitutes a good has, the more elastic is its demand. The number of substitutes is, in turn, affected by the time interval under consideration, whether the good is considered a necessity or a luxury, the specificity with which the good is defined, and the importance of the good relative to one's income.

2. In order to maximize revenues firms will try to charge a higher price to those consumers that have a more inelastic demand (an increase in the price increases total revenue) and a lower price to those that have an elastic demand for the product.

20. a Since quantity rose significantly while price remained unchanged either demand or supply is elastic. Since quantity rose, either demand shifted out or supply shifted out. See pages 122-123.

21. c Since price declined significantly while quantity remained unchanged either demand or supply is inelastic. Since price declined, either demand shifted in or supply shifted out. See pages 122-123.

22. d Since quantity declined significantly while price remained unchanged either demand or supply elastic. Since quantity declined, either demand shifted in or supply shifted in. See pages 122-123.

ANSWERS

SHORT-ANSWER QUESTIONS

1. *Price elasticity of demand* is the percentage change in quantity demanded divided by the percentage change in price. *Price elasticity of supply* is the percentage change in quantity supplied divided by the percentage change in price. (114; 121)

2. Price elasticity of demand is the percentage change in quantity demanded divided by the percentage change in price. Since the quantity demanded has not changed, the price elasticity of demand is zero. In other words, demand is perfectly inelastic. (111)

3. Price elasticity of supply is the percentage change in quantity supplied divided by the percentage change in price. Thus, if the elasticity of supply is 4 and price changes by 10%, quantity supplied will change by 40%. (121)

4. For elastic points, the percentage change in quantity is greater than the percentage change in price. For inelastic points the percentage change in quantity is less than the percentage change in price. For unit elastic points the percentage change in quantity is equal to the percentage change in price. (111)

5. The four main determinants of price elasticity of demand are (1) the time interval considered, (2) whether the good is a necessity or a luxury, (3) how specifically the good is defined, and (4) its percentage of one's total expenditures relative to one's income. The larger the time interval, the more elastic is demand. The less a good is a necessity, the more elastic is demand. The more specifically a good is defined, the more elastic is demand. The greater a percentage of one's expenditures, the more elastic. (111-112)

6. Price elasticity of supply essentially depends on the time period considered: the longer the time period, the more elastic the supply curve, because there are more options for change. Also, the easier it is to substitute a good, the more elastic the supply curve will be. (121-122)

7. **a.** If demand is inelastic the percent fall in quantity demanded will be less than the percent rise in price, so a rise in price will increase total revenue. (113-114)
   b. If demand is elastic, the percent fall in quantity demanded will be greater than the percent rise in price, so a rise in price will reduce total revenue. (113-114)
   c. If demand is unit elastic, the percent fall in quantity demanded will equal the percent rise in price, so a rise in price will not change total revenue. (113-114)

8. Income elasticity of demand is the percentage change in demand divided by the percentage change in income. Normal goods have positive income elasticities. Luxury goods have positive income elasticities greater than one, while necessities have positive income elasticities less than one. (116-118)

9. Cross-price elasticity of demand is the percentage change in quantity demanded of one good divided by the percentage change in the price of another good. (118-120)

10. A complementary good is a good whose consumption goes down when the price of the other good (for which it is a complement) goes up. Complements have negative cross-price elasticities. A substitute good is a good whose consumption goes up when the price of the other good (for which it is a substitute) goes up Substitutes have positive cross-price elasticities (119)