Answer all of the following questions, using graphs where necessary. Please be concise and thorough.

1. Suppose an isoquant is a straight line with a slope of -1. What does this imply concerning the marginal rate of technical substitution? What does it imply concerning the marginal products of the two inputs?

The marginal rate of technical substitution (MRTS) is the slope of the isoquant. Because the slope of a straight line isoquant is constant, it means that the MRTS is also constant, implying that the marginal productivities between the inputs is constant and unchanging along the isoquant.

2. “An expansion path that is a straight line through the origin implies constant returns to scale.” Evaluate this statement.

Returns to scale is determined by the distance between isoquants that lie along a straight line through the origin, not whether the expansion path (showing all the points of tangency between isoquants and isocost curves) itself is a straight line.

3. Assume a new innovation is developed that reduces the costs of production for firms. What would be the effects on a competitive industry?

A new innovation that reduces the production costs for firms in a competitive industry will shift the marginal and average cost curves down. This shift will create a profit-making opportunity for firms already in the market; however, this profit will also serve as a signal to other firms to enter the market. As other firms enter the market, the market supply curve will shift to the right, thereby bringing down the market price (and eliminating the profit). Firms will continue to enter the market as long as profit exists and stop once the profit has been “competed away” through a lower market price.

4. Explain why elasticities are relevant in determining the effects of an excise tax.

The relative elasticities of supply and demand determine which party bears the burden of paying for an excise tax. An excise tax raises the price paid by buyers and lowers the price received by producers and elasticity determines how responsive buyers and producers are to the change in prices. Whichever party is more response to a change in price will end up paying less of the tax.
5. Will perfect competition always result in more output and lower price than monopoly? Explain

Not ALWAYS. If a monopolist is perfectly discriminating (1st degree price discrimination), then it will end up producing the same amount as a perfect competitor and the last customer will be charged the same price as if s/he had bought the good from a perfectly competitive firm.

6. What is peak-load pricing and why is it advantageous compared to charging a single price?

Peak load pricing refers to charging consumers different prices depending on the times when a good is consumed. At “peak” times, the demand for a good is quite high which pushes a firm up and along its MC curve while at “non-peak” times, demand is low which drags a firm down along its MC curve. If a firm can charge higher prices at peak demand times, then consumers are forced to bear the brunt of the higher production costs, thereby mitigating demand (as price increases, quantity demanded decreases). Likewise, if a firm can lower its prices during non-peak times, then more consumers can enjoy the good.

7. In the dominant firm model, what happens if the supply curve of the smaller fringe firms becomes more elastic?

The price range within which the dominant firm can set its price becomes narrower.