

PART I: MULTIPLE CHOICE QUESTIONS

1. Suppose that the price elasticity of supply for toothpaste is 0.2. If the price of toothpaste increases by 30%, what would we expect to happen to the quantity of toothpaste supplied?

- a. increase by 3%
- b. increase by 60%
- c. decrease by 5%
- d. decrease by 15%
- e. increased by 6%

$$\frac{\% \Delta Q}{\% \Delta P} = 0.2$$

$$\frac{?}{0.3 \uparrow} = \frac{1}{5}$$

$$\frac{0.3}{5} = \frac{3}{50}$$

2. A perfectly competitive firm has  $MR = \$8/\text{unit}$  and  $MC = 4 + Q/100$ . What will the firm do to maximize profits?

- a. produce 400 units
- b. produce 800 units
- c. charge 8\$/unit
- d. charge a price greater than 8\$/unit
- e. a and c.

$$MC = MR$$

$$8 = 4 + Q/100$$

$$4 = Q/100$$

3. If a risk averse individual is offered the opportunity to buy actuarially fairly priced insurance, she will definitely purchase it because doing so would

- a. increase her expected utility over what it would be without the insurance  $M$
- b. result in the same level of utility as without insurance
- c. yield the same level of expected wealth as without insurance  $x$
- d. increase the standard deviation of her income over what it would be without insurance  $x$
- e. none of the above

4. If decreasing returns to scale are present, then a 10% increase in input would result in

- a. 10% increase in output
- b. more than 10% increase in output
- c. less than 10% increase in output
- d. 10% decrease in output
- e. output not changing

constant in proportion  
 $CRS = 10\% = \text{output increased } 10\%$   
 $IRS = \uparrow \text{ input} < \text{output } \uparrow$   
 $DRS = \uparrow \text{ input} > \text{output } \uparrow$

P. 168  
 ch 8

5. Given any pair of goods X and Y, utility is maximized when:

- a.  $MU_x/P_x = MU_y/P_y$
- b.  $MU_x/MU_y = P_x/P_y$
- c.  $MU_x = MU_y$
- d.  $P_x = P_y$
- e. Both (a) and (b) are correct

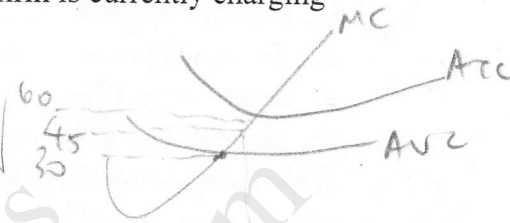
6. If the demand for baseball is more elastic than supply, a tax of 3\$ per baseball will increase the consumer price by:

- a. \$3
- b. more than \$1.50 but less than \$3
- c. \$1.50
- d. less than \$1.50
- e. 0\$

$$\begin{aligned} \epsilon_D &> \epsilon_S \\ T_C &< T_S \\ T_C &= < 1.5 \end{aligned}$$

7. A firm has min AVC at \$30/unit and min ATC is \$60/unit, if the firm is currently charging \$45/unit:

- a. It should produce a quantity to minimize ATC ✓
- b. It should shut down immediately X
- c. It should stay in business until it can eliminate its fixed costs ✓
- d. It should produce a quantity to minimize AVC
- e. a and c.



8. if the price of oranges increases and the total revenue earned by orange producers increases, then the demand for oranges is:

- a. inelastic
- b. unit elastic
- c. elastic
- d. infinitely elastic
- e. upwards sloping

$$P \uparrow \cdot Q \downarrow = TR \uparrow$$

9. If the equilibrium price is 17.33\$ and the equilibrium quantity is 150. The price elasticity at demand at the equilibrium is: (without slope)

- a. -2.25
- b. 2.25+
- c. -.26
- d. -.17
- e. None of the above

$$\epsilon_d = \frac{1}{\text{slope}} \times \frac{P}{Q}$$

$$\frac{\Delta Q / (\text{Avg } Q)}{\Delta P / (\text{Avg } P)} \quad / \quad \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

10. Opportunity cost measures the:

- a. different opportunities for spending money
- b. amount of one good forfeited to obtain a unit of another good
- c. alternative means of producing output
- d. market price of a good
- e. monetary cost of purchasing a commodity

11. When 2 goods are complements in production

- a. a fall in the price of one will increase demand for the other
- b.** an increase in the price of one will increase the supply of the other
- c. an increase in the production of one must be offset by a decrease in production of the other
- d. they have identical supply curves
- e. they must also be complements in consumption

$$\frac{\Delta TFC + TMC}{\Delta Q}$$

12. if marginal cost is rising, it must be true that: (AP of L ↓)

- a. average cost is below marginal cost
- b.** marginal product of labor is falling
- c. average cost is rising
- d. average product of labor is falling
- e. average cost is above marginal cost

$$MC \uparrow \quad MC = \frac{\Delta TC}{\Delta Q}$$

MP & MC are inversely related  
MC reaches min when MP at max

13. A Nash equilibrium refers to:

- a.** action in which the firm does the best it can given its competitor's action
- b. strategies in which the firm doesn't take into account its competitors actions X
- c. a situation in which all firms perform identical actions
- d. action in which the firm does the best it can given regardless of its competitor's actions
- e. a cooperative outcome between firms X

14. The equilibrium payoff in the Prisoner's Dilemma

- a. represents Nash equilibrium
- b.** results in non cooperative behavior
- c. are such that no individual prisoner can be better off by changing his plea
- d. all of the above
- e. none of the above

15. Since the profit maximizing monopoly produces the output where MR = MC, we can conclude that:

- a. P = MC
- b.** P > MC
- c. P < MC
- d. P = MR
- e. P < MR

$$1600 - 20P = -900 + 30P$$

$$2500 = 50P$$

**Problem 1**

Market for college hockey players is given by the following equations where P is the weekly wage in excess of scholarship and Q is the number of athletes:

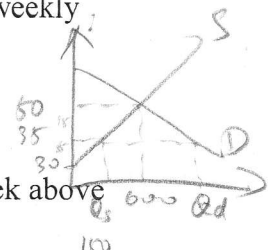
$$Q_d = 1600 - 20P$$

$$Q_s = -900 + 30P$$

1. Find the equilibrium price and the number of athletes hired.
2. Suppose a restriction is imposed such that players can't be paid more than 35\$/week above the scholarship. How many athletes would now be hired?

$$EP = 50$$

$$EQ = 600$$



$$150 \uparrow$$

$$1600 - 20(35) = Q_d = 900$$

$$700 = Q_s = 150$$

$$600 \times 50 = 30000$$

$$20 \times 600 = 12000$$

$$5 \times 150 = 750$$

$$6000 = 30000 - 12000 - 750$$

$$34250$$

3. What is the change in producer surplus (players) as a result of price control?  
 4. How much is now spent on athlete wages compared to the free market equilibrium

*Decrease from 6000 to ...*

$150 \times 35 = \$5250$   
 $50 \times 600 = \$30000$

**Problem 2**

Payoff matrix (profits in millions of dollars)

		Pepsi advertising budget	
		Large	moderate
Coke's advertising budget	large	60, 60	90, 50
	Moderate	50, 90	80, 80

- (i) What is the Nash equilibrium? *60, 60 / Large, Large*  
 (ii) If Pepsi and Coke colluded their choices of advertising budgets, which would they select? Explain *Moderate, Moderate 80, 80*  
 (iii) Is the cooperative outcome in (ii) likely to be stable? Explain *Total: 160M*

*No, each of them has incentive not to respect the contract.*

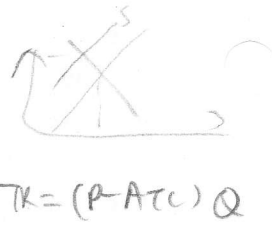
**Problem 3**

Consider the following costs for 2 perfectly competitive firms and answer the questions:

Firm A: output = 5000, TVC = \$2500, TFC = 2000\$, MC = 1.20, P = \$1

Firm B: output: 5000, ATC = 1\$ (and ATC is at its min.), P = \$1.20

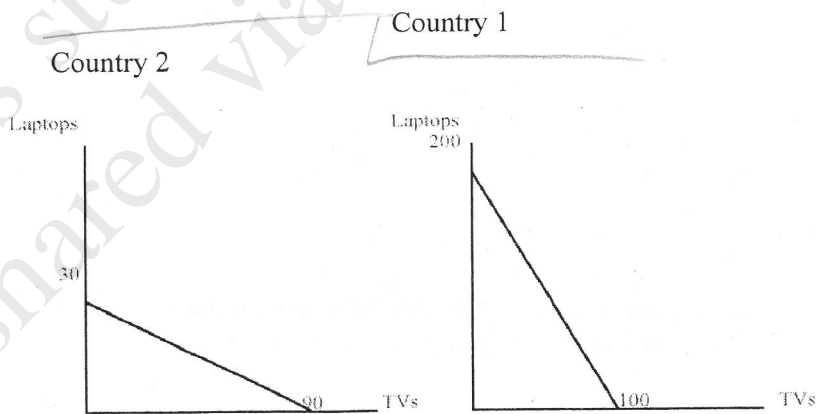
1. How much profit or loss is each firm making *Firm A 500, Firm B 1000 (P=AR)*  
 2. Are the firms maximizing profits? Explain *No, MC=MR=P*  
 3. Should each firm produce more, less or the same output as currently explain?



*A: P=1\$ B: P > MC  
 MC=1.2\$ A: MC > P  
 A: Produce Less  
 B: Produce More*

**Problem 4**

The PPFs of Country 1 and Country 2 are as follows:



- (i) What is the opportunity cost of producing one laptop for Country 1 and Country 2, respectively?

*A: 3TV B: 1/2 TV*

- (ii) What is the opportunity cost of producing one TV for Country 1 and Country 2, respectively?

$\frac{1}{3}L$       $2L$

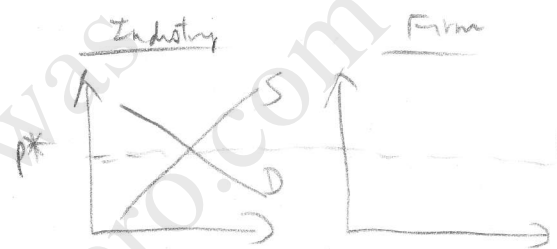
Question 5

The table on the left sets out the market demand schedule for tapes, and the table on the right shows the cost structure of a perfectly competitive firm. There are 1000 firms in the industry.

Price	Quantity Demanded
4.4	600,000
5.5	575,000
6.6	550,000
7.4	525,000
8.2	500,000
9	475,000
9.8	450,000
10.6	425,000
11	400,000
12.2	375,000
13	350,000
13.8	325,000
14.6	300,000
15.4	275,000
16.2	250,000

$TR = (P - ATC) \times Q$

Output (Qs)	MC	AVC	ATC
250	6.6	7.8	21.1
300	7	7	20.6
350	7.7	7.8	20.1
400	11	8.1	17.6
450	13.45	8.9	17.1
500	12.2	9.2	16.6
550	14.6	10	14.6
600	15.05	10.8	14.82



- (i) What is the market price? (2 marks)

$(P = MC) = 11$       $(Q_d = Q_s)$

- (ii) What is the industry's output? (3 marks)

400,000

- (iii) What is the output of each firm? (3 marks)

400

- (iv) What is the economic profit of each firm? (3 marks)

$(P - ATC) \times Q = (11 - 17.6) \times 400 = -2640$

- (v) What is the shutdown point (what is the numerical value)? (3 marks)

\$7,300

- (vi) What is the long run equilibrium price? You can assume that the above ATCs apply to both short run and long run (3 marks).

$P = ATC_{min} = \$14.6$

- (vii) Continuing from (vi), what is the number (integer) of firms in the industry? (3 marks)

$\frac{300}{550} \times 1000 = 545$

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