Facing perfect competition in your product market, with a market price equal to 400, you are producing in two plants. The cost of producing QA units of output in Plant A is C(QA) = 4,000 + 10QA2, with marginal cost of production MC(QA) = 20QA. The cost of producing QB units of output in Plant B is C(QB) = 2,000 + 5QB2, with marginal cost of production MC(QB) = 10QB. You manage a profit maximizing firm.

1. You will produce \_\_\_\_\_\_ units of output in Plant A.

a) 5 b) 10 c) 15 \* d) 20 e) 25

2. Your cost of production in Plant B equals:

a) 4,000 b) 6,000 c) 8,000 \* d) 10,000 e) 12,000

3. You will earn profits equal to:

a) 0 b) 2,000 c) 4,000 \* d) 6,000 e) 8,000

Marginal revenue MR(Q) = P = 400. Here output Q = QA + QB. To maximize profits:

1) MR(QA + QB) = 400 = 20QA = MC(QA) QA = 20

2) MR(QA + QB) = 400 = 10QB = MC(QB) QB = 40

Total output Q = QA + QB = 20 + 40 = 60.

Profits earned by the firm will be:

Profit = P × Q – C(QA) – C(QB) = 400 × 60 – (4,000 + 10 × 202) – (2,000 + 5 × 402)

= 24,000 – 8,000 – 10,000 = 6,000

4. If own price elasticity of demand, EQ,P is greater than -1.00 an increase in the price charged by a firm will:

a) decrease total revenue and decrease economic profit.

If EQ,P > -1.00, |EQ,P| < 1.00. We are in the price inelastic region of the demand curve.

b) decrease total revenue and increase economic profit.

c) increase total revenue and decrease economic profit.

\* d) increase total revenue and increase economic profit.

5. Profit for Acme, Inc. this year was $4,000,000. The firms profits are expected to grow at a rate of 5 percent per year in the future. The current *Ex-Dividend* market value of Acme, Inc. is $210,000,000. The rate of time discount used to arrive at this market value is \_\_\_\_\_\_\_ percent.

a) 5.5 b) 6.0 c) 6.5 \* d) 7.0 e) None of the above are correct.

6. Consumers consider wine and cheese to be complementary goods. Which of the following events would cause a fall in the quantity sold of wine and a rise in the price of cheese?

a) A rise in the price of grapes. c) A fall in the price of milk.

b) A fall in the price of grapes. \* d) A rise in the price of milk.

Stupendous Stoves manufactures high end, commercial grade, stoves for the home. The company must commit to a production decision, Q, before demand for its product is known. Demand will high, Q = 1,100 – (1/10)P, with probability pHigh = 0.6. Demand will be low, Q = 1,200 – (1/5)P, with probability pLow = 0.4. Costs of production for any level of output Q, C(Q) = 750,000 + 3,400Q.

7. Stupendous Stoves will maximize expected profits producing \_\_\_\_\_ stoves.

a) 275 b) 300 c) 325 \* d) 350 e) 375

8. Maximum expected profits for this company equal \_\_\_\_\_\_\_ thousand dollars.

a) 0 \* b) 230 c) 360 d) 420 e) 480

9. If demand turns out to be low, Stupendous Stoves will set its price equal to:

\* a) 4,250 b) 4,375 c) 4,500 d) 4,675 e) 4,825

10. If demand turns out to be high, Stupendous Stoves will earn a profit of \_\_\_\_\_\_\_ thousand dollars.

a) 245 b) 490 c) 545 \* d) 685 e) 750

11. The standard deviation of profits, a measure of risk for shareholders of this company, equals:

a) 487, 124 \* b) 557, 014 c) 667, 324 d) 727,584 e) 824,216

For any given Q, the expected price equals:

EP = 0.6(11,000 – 10Q) + 0.4(6,000 – 5Q) = 9,000 – 8Q

Therefore, expected marginal revenue for an given Q equals EMR(Q) = 9,000 – 16Q. The company maximizes profits at a level Q for which EMR(Q) = MC, or

9,000 – 16Q = 3,400 Q = (9,000 – 3,400)/16 = 350

At this level Q = 350, cost of production C(350) = 750,000 + 3,400(350) = 1,940,000. The price the company will charge in High versus Low Demand markets will be:

HIGH DEMAND P = 11,000 – 10(350) = 7,500

LOW DEMAND P = 6,000 – 5(350) = 4,250

Profits will be:

HIGH DEMAND πHigh = 7,500(350) – 1,940,000 = 685,000

LOW DEMAND πLow = 4,250(350) – 1,940,000 = -452,500

Expected profit = 0.6(685,000) + 0.4(-452,500) = 230,000. The standard deviation of the company’s profit equals:

Maria faces a probability of 0.01 percent that she will have an accident this year. If she has an accident her wealth will be reduced to $160,000. If she survives the year without an accident, her wealth will be $2,560,000. Maria is risk averse, with utility of wealth U(W) = W3/4.

12. Without insurance, Maria’s expected utility of wealth equals:

a) 63,440.0 b) 63,664.8 \* c) 63,994.4 d) 64,182.2 e) None of the above are correct.

13. The maximum insurance premium Maria will pay for insurance against this loss equals \_\_\_\_\_\_ dollars.

\* a) 298.67 b) 309.34 c) 320.0 d) 332.67 e) None of the above are correct.

Here we have:

EW­ = 0.9999(2,560,000) + 0.0001(160,000) = 2,559,760

EU(W) = 0.9999(2,560,000)3/4 + 0.0001(160,000)3/4 = 63,994.4

U(WC) = (WC)3/4 = 63,994.4 = EU(W) for WC = (63,994.4)4/3 = 2,559,701.33

π = EW – WC = 2,559,760 – 2,559,701.33 = 58.67

Maximum Premium = pL + π = 0.0001(2,560,000 – 160,000) + 58.67

= 240.00 + 58.67 = 298.67

Jose is participating in a auction in which bidders hold independent private values of the item being sold. Valuations of the 10 risk neutral bidders (including Jose) for this item are uniformly distributed from a low of $200 to a high of $4,200. Jose values the item at $3200. The auction is a *First Price Sealed Bid* auction.

14. Jose’s maximum expected gain from participating in this auction equals \_\_\_\_ dollars.

\* a) 8.73 b) 16.60 c) 98.64 d) 142.65 e) 300

15. Jose’s optimal bid in this auction equals \_\_\_\_\_\_dollars.

a) 2,800 \* b) 2,900 c) 3,000 d) 3,100 e) 3,200

Jose’s optimal bid, maximizing his expected gain, will equal

b = 3,200 – (3,200 – 200)/10 = 3,200 – 300 = 2,900

His expected gain, given this bid, equals:

16. If this auction is a *Second Price Sealed Bid* auction, Jose’s optimal bid will equal \_\_\_\_\_ dollars.

a) 2,800 b) 2,900 c) 3,000 d) 3,100 \* e) 3,200

Acme sells in two markets. In Market A demand for its product is QA = 6,800 – 2P. In Market B demand for its product is QB = 6,200 – 2P. For any level of output Q, Acme’s cost of production is C(Q) = 6,500,000 – 350Q + (1/4)Q2 and marginal cost of production MC(Q) = -350 + (1/2)Q.

17. If Acme is unable to price discriminate, it will charge a price of \_\_\_\_\_\_ dollars per unit.

a) 2,275 \* b) 2,350 c) 2,425 d) 2,500 e) None of the above are correct.

18. If Acme is unable to price discriminate it will earn an economic profit of \_\_\_\_\_\_\_\_ dollars.

\* a) - 20,000 b) 0 c) 2,500 d) 51,250 e) None of the above are correct.

19. If Acme is able to practice 3rd Degree Price Discrimination, it will set its price in Market A equal to \_\_\_\_\_dollars.

a) 2,275 b) 2,350 \* c) 2,425 d) 2,500 e) None of the above are correct.

20. If Acme is able to practice 3rd Degree Price Discrimination, it will sell \_\_\_\_\_\_units of output in Market B.

\* a) 1,650 b) 1,750 c) 1,850 d) 1,950 e) None of the above are correct.

21. If Acme is able to practice 3rd Degree Price Discrimination it will earn an economic profit of \_\_\_\_\_\_\_ dollars.

a) - 20,000 b) 0 \* c) 2,500 d) 51,250 e) None of the above are correct.

No Price Discrimination

Q = QA + QB P = 3,250 – (1/4)Q MR(Q) = 3,250 – (1/2)Q = -350 + (1/2)Q = MC(Q)

= 6,800 – 2P + 6,200 – 2P Q = 3600 P = 3,250 – (1/4)3600 = 2,350

Q = 13,000 – 4P MR(Q) = 3,250 – (1/2)Q QA = 6,800 – 2(2,350) = 2,100

QB = 6,200 – 2(2,350) = 1,500

C(3600) = 6,500,000 – 350(3600) + (1/4)(3600)2 = 8,480,000

Profit = (2,350)(3,600) – 8,480,000 = - 20,000

3rd Degree Price Discrimination

PA = 3,400 – (1/2)QA PB = 3,100 – (1/2)QB

MR(QA) = 3,400 – QA MR(QB) = 3,100 – QB

1) MR(QA) = MC(QA + QB) 3,400 – QA = -350 + (1/2)QA + (1/2)QB (3/2)QA + (1/2)QB = 3,750

2) MR(QB) = MC(QA + QB) 3,100 – QB = -350 + (1/2)QA + (1/2)QB (1/2)QA + (3/2)QB = 3,450

QA = 1,950 QB = 1,650

PA = 3,400 – (1/2)(1,950) = 2,425 PB = 3,100 – (1/2)(1,650) = 2,275

Profit = (2,425)(1,950) + (2,275)(1,650) – 8,480,000 = 2,500

Jack and Jill are playing a simultaneous game shown in normal form below. Jill must choose move A, B, or C as Jack chooses move X, Y, or Z. Payoffs for each of the possible nine joint strategies are shown as (Jill’s payoff, Jack’s payoff).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | JACK | | |
|  | Moves | X | Y | Z |
| JILL | A | (45,35) | (35,50) | (45,45) |
| B | (30,30) | (45,40) | (35,35) |
| C | (40,50) | (40,60) | (40,45) |

22. If both players play a secure strategy, the outcome of the game will be:

a) (40,50) b) (45,45) \* c) (40,60) d) (45,40) e) None of the above are correct.

Jill’s secure strategy is Move C. Her worst outcome from Move A is 35, from Move B is 30, and from Move C is 40. Jack’s secure strategy is Move Y. The joint outcome will be (40, 60)

23. The outcome of this game – and only Nash equilibrium – will be:

a) (40,50) b) (45,45) c) (40,60) \* d) (45,40) e) None of the above are correct.

Jack has a dominant strategy: Move Y. Jill, aware of this fact, will choose Move B. The joint outcome will be (45,40), or a payoff of 45 for Jill and 40 for Jack.

24. \_\_\_\_\_\_\_\_\_\_\_\_\_ has a potential “first mover” advantage in this game, and would be willing to pay up to \_\_\_\_\_\_\_ for the right to make the first move if the other player observes the move before he/she makes the second move.

\* a) Jack; 5 b) Jill; 5 c) Jack; 10 d) Jill; 10 e) None of the above are correct.

If Jack is able to make the first move, he will opt for Move Z. Jill’s response will be Move A. The joint outcome will be (45,45), increasing Jack’s payoff by 5 as compared to the simultaneous game.

25. A competitive market for an inferior good is hit with two events: the price of a jointly produced good increases *and* average household income rises. Ceteris paribus, we would expect

a) the price of this good to rise, but we cannot make a prediction regarding the change in quantity sold

without further information.

\* b) the price of this good to fall, but we cannot make a prediction regarding the change in quantity sold

without further information.

c) the quantity sold of this good to fall, but cannot make a prediction regarding the change in price without

further information.

d) the quantity sold of this good to rise, but cannot make a prediction regarding the change in price

↑Supply and ↓Demand

without further information.

e) None of the above are correct.

26. Accounting profits are \_\_\_\_\_\_\_\_\_ than economic profits. The present value of a stream of promised future payments is \_\_\_\_\_\_\_\_\_\_than the annuity value.

a) less; less b) less; greater \* c) greater; less d) greater; greater

e) None of the above are correct.

Consider the Short Run Cost Curves shown below:

2500

1800

9

18

20

AVC

ATC

MC

$

Q

This firm uses only capital and labor as inputs, inputs it acquires in competitive markets. The wage rate in labor markets, w = 180, and the rental rate of capital r = 90. Capital is fixed.

27. We can determine that Acme is employing \_\_\_\_\_\_\_\_\_\_ units of capital.

\* a) 220 b) 295 c) 335 d) 385 e) None of the above are correct.

TFC = AFC × Q = (20 – 9)1,800 = 19,800 = 90K K = 30,800/80 = 220

28. Acme is employing \_\_\_\_\_\_\_\_\_\_\_ units of labor to produce 2500 units of output.

\* a) 140 b) 170 c) 210 d) 250 e) None of the above are correct.

TVC = TC - TFC = 18(2,500) – 19,800 = 25,200 = 180L L = 25,200/180 = 140

29. If the marginal product of capital is 4.00 at Q = 3600, we can determine that this firm, in the long run, can decrease its cost of production by using \_\_\_\_\_\_\_\_ labor and \_\_\_\_\_\_\_\_ capital.

a) less; less b) less, more \* c) more; less d) more; more

e) None of the above: this firm is minimizing long run cost of production.

MC = w/MPL MPL = w/MC = 180/18 = 10.0

MRTS = MPL/MPK = 10.0/4.00 = 2.50 > 2.00 = 180/90 = w/r

A unit of labor replaces more capital in production than it costs in capital. The firm can reduce cost by employing more labor, less capital.

30. Consumers consider wine and cheese to be substitute goods. Which of the following events would cause a rise in the price of wine and a fall in the quantity sold of cheese?

a) A rise in the price of grapes. c) A fall in the price of milk.

b) A fall in the price of grapes. \* d) A rise in the price of milk.

Bob’s utility from annual income (I) and daily leisure hours on the job, or shirking (S), is U(S,I) = S1/4I3/4. Here I is thousands of dollars. For this utility function, . He must choose how much he wants to work on an average day during the year. Each hour he works during an average day generates an $200,000 in annual profits for the firm. If he shirks all day the firm’s profits are zero. Bob is in his office eight hours each work day.

31. If Bob is earning 150 thousand dollars and shirking 4 hours each day on the job his marginal rate of substitution of income for leisure equals \_\_\_\_\_\_\_\_\_ thousand dollars per hour.

\* a) 12.5 b) 17.5 c) 25.0 d) 40.0 e) 60.0

32. If Bob’s compensation package is one in which he is paid 100 thousand dollars per year, he maximizes his utility working \_\_\_\_\_\_ hours each day.

\* a) 0 b) 2 c) 4 d) 6 e) 8

33. If instead Bob is offered a compensation package which pays him twenty percent of the firm’s profits he maximizes his utility earning \_\_\_\_\_\_\_\_ thousand dollars per year.

a) 80 b) 120 c) 160 \* d) 240 e) 320

If Bob works all eight hours each day he is in the office, his compensation will be 320 thousand dollars per year. Each hour he chooses to shirk rather than work costs him 40 thousand dollars. His optimal daily hours shirked and annual income is determined by the two equations:

1) I = 320 – 40S and 2)

Substituting 2) into 1) we have 120S = 320 – 40S, or S = 320/160 = 2. Shirking two hours a day Bob’s annual income I = 320 – 40(2) = 240 thousand dollars.