Mid-Semester Exam

ECON F211: Principles of Economics

Maximum Marks: 105 **Dated**: 5/Mar/2021

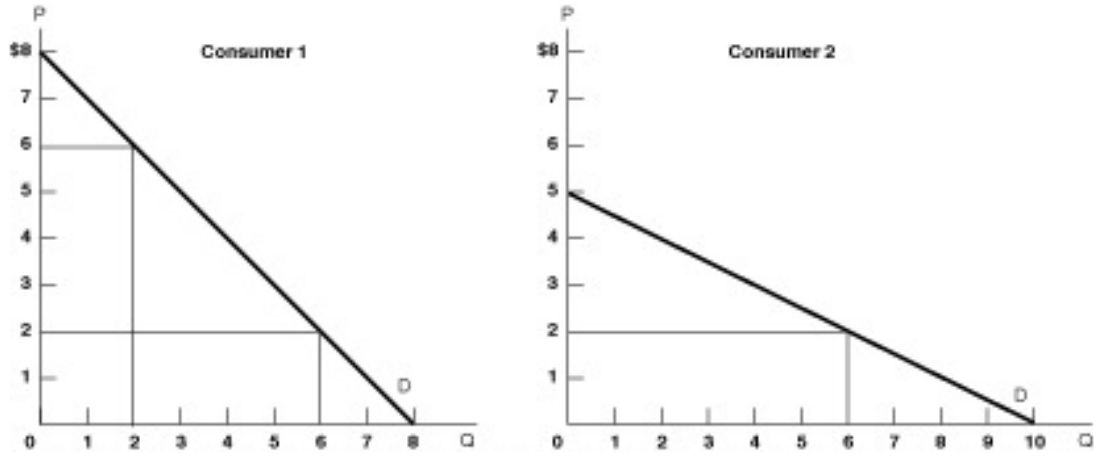
Max Duration: 105 Minutes [90 Minutes for attempt and 15 Minutes for Uploading]

Solution

Part A: MCQ

[Marking Scheme: +2 for the correct answer and -1 for the incorrect**]**

1. Assume that the market consists of two buyers (Consumer 1 and Consumer 2) of a commodity and their demand curves are shown in the Figure.



Figure

Which figure best describes the demand curve of the market consisting of these two buyers?

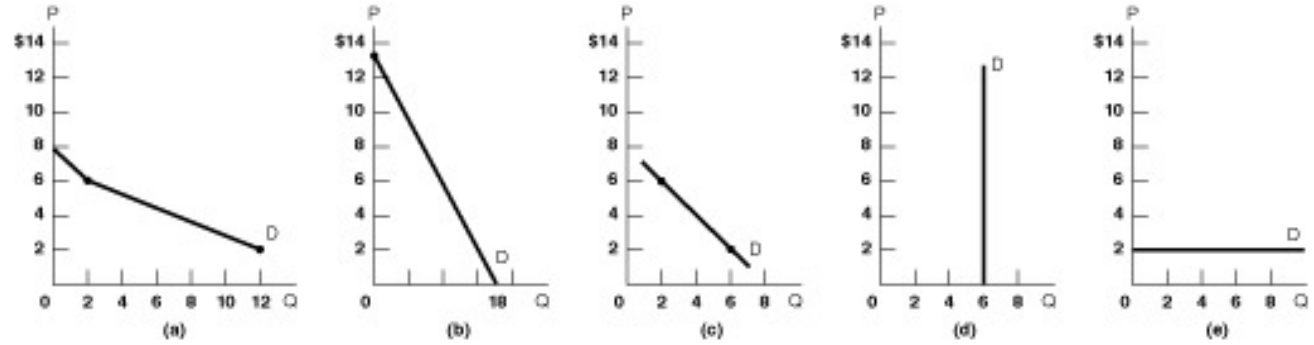


Figure A B C D E

Ans: A

2. Suppose that when the price of C rises by 0.02, the quantity of B purchased increases by 4 percent. (Assume ceteris paribus) This means that the:

a. the income elasticity of demand is 2 and the goods act as complements to each other.

b. the cross price elasticity is 2 and the goods are substitutes.

c. the cross price elasticity is -0.5 and the goods are complements.

d. the price elasticity of demand for C is -2; both the goods are complements.

e. the price elasticity of demand for B is 0.5; the goods are substitutes.

Ans: B

3. You consider two goods P and Q as substitutes. If the price of P rises in the market then the income effect will cause you to buy (assuming both goods are normal):

a. more Q if the price of P is less than price of Q

b. less of Q

c. same amount of Q

d. more of Q if only the price of P is more than the price of Q

e. none of the options is correct

Ans: B

4. Assuming that a consumer consumes Coke and Pepsi (both normal goods) and considers both goods as substitutes, then when the price of Coke falls in the market it is not likely that:

a. demand for Pepsi in the market will shift to the left

b. the real income of the consumer will rise

c. the consumer moves to a higher indifference curve

d. the substitution effect will cause the consumer to buy more of Pepsi

e. all given options are incorrect

Ans: E

5. You as a consumer of goods and services move to a new equilibrium point that is a result of some arbitrary variation either in market price or your take home salary (i.e. income). You observe that in this new equilibrium point, the marginal utilities are all less than the marginal utilities compared to the old equilibrium point. Your tastes or preferences have not changed. You are:

a. definitely worse off in the new situation.

b. definitely better off in the new situation.

c. worse off in the new situation if income has changed, but not otherwise.

d. better off in the new situation if price has changed, but not otherwise.

e. none of the given options is correct

Ans: B

6. Assume that for an individual, the hourly wage rate is $80. Currently, the individual is working 6 hours in a day. There is no restriction on how many hours this individual can work. The next week you observe that the same individual is working 8 hours in a day. You can reasonably conclude that the reason for additional work hours is NOT likely because:

a. the labor wage rate has increased

b. the price of leisure has risen and income effect dominates

c. the substitution effect of labor supply dominates

d. the labor wage rate has decreased

e. none of the given options is correct

Ans: B

7. The marginal rate of substitution of ____ would mean that for a given consumer ____ more units of commodity Y is equivalent to ____ more units of commodity X:

a. 1.5; 15; 10

b. 1.5; 5; 15

c. Not enough information to answer the question

d. 3; 6; 9

e. 3; 9; 6

Ans: A

8. The indifference curves for a particular individual do not meet because of:

a. Diminishing marginal utility

b. Unlimited needs

c. Increasing opportunity cost

d. Variability in total utility along an indifference curve

e. none of the given options is correct

Ans: E

9. When an individual move along the budget constraint, his or her:

a. total utility may increase

b. total utility may decrease

c. total utility may increase or decrease

d. total utility remains constant but marginal utilities change

e. total utility changes but marginal utilities remain constant

Ans: C

10. Which of the statements below does *not* apply to the production-possibility frontier, or *PPF*?

a. The *PPF* is closely related to the concept of scarcity.

b. Quantities of inputs are measured along the axes of the *PPF*.

c. The *PPF* may shift over time.

d. Movements along the *PPF* may occur as the allocation of resources changes.

e. Technology may change the shape of the *PPF*.

Ans: B

11. This question focuses on the difference between *normative* and *positive* economic statements.

a. Taxes should be progressive. ___

b. Taxes discourage work effort. ___

c. Inflation tends to be high when unemployment is low. ___

Indicate which of the above statements are of *normative* or *positive* character.

a. Normative; Positive; Positive

b. Normative; Normative; Positive

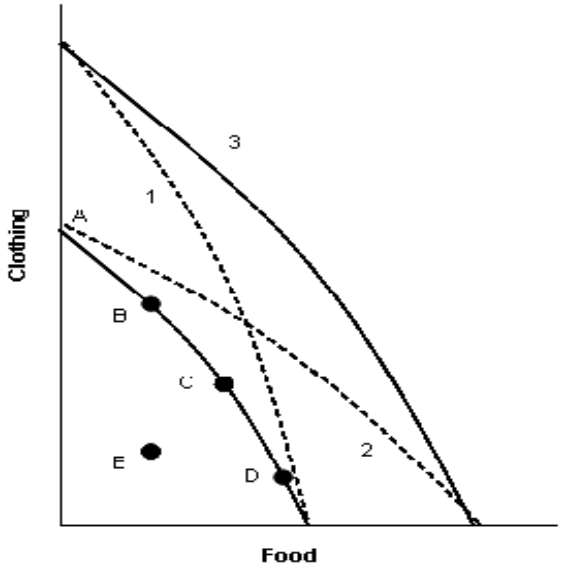
c. Normative; Positive; Normative

d. Normative; Normative; Normative

e. Positive; Positive; Positive

Ans: A

12. Refer to the figure below:



A shift in the dark *PPF* curve (labeled A, B, C, and D) to the position indicated by the dotted line marked "1" would be appropriate to illustrate:

a. a change in the tastes of the population whereby its members want more food produced and less clothing.
b. the appearance of some new resources useful only in one of the industry.
c. decreasing opportunity cost for clothing industry and constant opportunity cost for the food industry
d. a change in the production mix involving an increase in clothing output and a decrease in food output.
e. the development of a better technology in the food industry alone.

Ans: B

13. Each and every point in a production-possibility curve (whether on the curve or off it) stands for some combination of the two goods produced. With a given input stock, some of these points are attainable, while others are not. Specifically, with respect to production, the economy *could* operate:

a. anywhere on the curve and only on the curve.
b. anywhere on the curve or anywhere inside the curve.
c. anywhere on the curve, inside it, or outside it.
d. all of the above.
e. none of the above.

Ans: B

14. The economic problem of *how* to produce goods would not exist:

a. if the required proportions of inputs were fixed for all commodities, so substitution of one input for another input in production would be impossible.

b. if production had not been carried to the point where there was full employment of all the economy's resources.

c. if the economy's stock of capital were small relative to its labor force.

d. in a technically advanced society, since proper technology would have established the best possible method of producing each good.

e. in any circumstance, because the problem of how to produce goods is an engineering problem throughout and not an economic problem.

Ans: A

15. Suppose a firm is producing at Q = 10, and the firm's total cost function is: $C = 100 + 10Q + 2Q^2$.

A. Total cost is 400 and marginal cost is 10.
B. Marginal cost is constant.
C. Average cost is 50.
D. Fixed cost is 100 and marginal cost is 50.

ANS: D

16. Assume that the firm's profit equation is : $\pi = -200 + 80Q - 0.2Q^2$. Therefore,

A. Marginal profit = 80 - .2Q.
B. The firm's profit-maximizing output is Q = 400.
C. The firm's profit-maximizing output is Q = 200.
D. More than one option is correct

ANS: C

17. If there is a decrease in fixed costs, this implies that

A. Marginal revenue will increase; marginal cost will decrease.
B. Marginal revenue will not change; marginal cost will decrease.
C. Neither average total cost nor marginal cost will change.
D. Neither marginal revenue nor marginal cost will change.
E. Both marginal revenue and marginal cost will decrease.

ANS: D

18. Assume that the demand for a firm's product dramatically increases. What are the most likely effects on the marginal revenue and marginal cost curves?

A. Marginal revenue will increase, and marginal cost will decrease.
B. No effect. Neither will change.
C. Both marginal revenue and marginal cost will increase.
D. Marginal revenue will be unchanged; marginal cost will increase.
E. Marginal revenue will increase; marginal cost will not change.

ANS: E

19. Marginal revenue product denotes

A. The extra revenue resulting from a unit increase in the input.
B. The extra revenue resulting from a unit increase in output.
C. The extra revenue that results from economizing on excess inputs.
D. The extra output that results from a unit increase in the input.
E. The extra revenue that results from an increase in technical efficiency.

ANS: A

20. The firm will consider the following, when choosing a least-cost production method,

A. Different production technologies to find efficient combinations of inputs.
B. The marginal products of all inputs.
C. The costs of all inputs.
D. Option B and C are both correct.
E. Option A, B, and C are all correct.

ANS: E

21. If there is a change in input prices, what is the most likely impact on production isoquants?

A. They will shift leftward.
B. They will shift downward.
C. They will be unchanged.
D. They will shift outward.
E. Uncertain, depends on which input prices change.

ANS: C

22. The average fixed cost of a firm

A. Is constant at all levels of output.
B. Always increases as output increases.
C. Increases at first and then decreases.
D. Decreases at first and then increases.

E. Always decreases as output increases.

ANS: E

23. If it happens that the marginal product of labor is decreasing, then in the short run we can say that

A. Marginal cost must be increasing.
B. Marginal cost must be decreasing.
C. Average cost must be increasing.
D. Average cost must be decreasing.
E. None of the other option is correct.

ANS: A

24. In the short run, a firm that is maximizing profit should nonetheless shut down if

A. Total revenue is less than total cost.
B. Total revenue is less than total variable cost.
C. The firm is earning less than a normal rate of return.
D. The firm is not able to cover its overhead.
E. Option B, C and D are all correct.

ANS: B

25. A perfectly competitive firm in order to maximize profits, continues producing until,

A. It reaches its full capacity.
B. The cost of producing the last unit equals the market price.
C. The average cost per unit is minimized.
D. Total sales revenue is maximized.

ANS: B

26. The short-run supply curve of the perfectly competitive firm:

A. is that portion of its marginal cost curve (SMC) which lies above Average Variable Cost (AVC).
B. is that portion of its marginal cost curve (SMC) which lies between Average Variable Cost (AVC) and Short run average cost curve (SAC)
C. is that portion of its marginal cost curve (SMC) which lies below Average Variable Cost (AVC).
D. is that portion of its marginal cost curve (SMC) which lies above the intersection of marginal revenue (MR) and SMC.
E. is that portion of its marginal cost curve (SMC) which lies between Average Variable Cost (AVC) and the intersection of marginal revenue (MR) and SMC.

ANS: A

27. If a firm in a competitive market doubles its number of units sold, total revenue for the firm will

A. more than double.
B. double.
C. increase but by less than double.
D. may increase or decrease depending on the price elasticity of demand.

ANS: B

28. Which of the statement given below, best reflects a price-taking firm?

A. If the firm were to charge more than the going price, it would sell none of its goods.
B. The firm has an incentive to charge less than the market price to earn higher revenue.
C. The firm can sell only a limited amount of output at the market price before the market price will fall.
D. Price-taking firms maximize profits by charging a price above marginal cost.

ANS: A

Average Marks of Part A: 22.36

Maximum Marks: 53

Minimum Marks: (-) 11

Part B

Long Answer Type Questions

[Marks: 25 – Breakup of Marking Scheme is given with the Solution]

Question 1: A vegetable fiber is traded in a competitive world market, and the world price is $9 per pound. Unlimited quantities are available for import into the United States at this price. The U.S. domestic supply and demand for various price levels are shown below.

(13 marks)

Price	U.S. Supply (Million lbs.)	U.S. Demand (Million lbs.)
3	2	34
6	4	28
9	6	22
12	8	16
15	10	10
18	12	4

a. What is the equation for demand? What is the equation for supply?
b. At price of $9, what is the price elasticity of demand? What is it at price of $12?
c. Determine equilibrium quantity and supply.
d. In a free market, what will be the U.S. price and level of fiber imports?

Solution:

Qd = 40 – 2P	3 Marks/0
Qs = 2/3P	3 Marks/0
PED @ $9 is -0.82	2 Marks/0
PED @ 12 is -1.5	2 Marks/0
Equilibrium quantity 10 mn lbs and price $15	1 Mark/0
Total Imports = 16 million	2 Marks/0

Question 2: Amazon.com, the online bookseller, wants to increase its total revenue. One strategy is to offer a 10% discount on every book it sells. Amazon.com knows that its customers can be divided into two distinct groups according to their likely responses to the discount. The accompanying table shows how the two groups respond to the discount. **(12 Marks)**

Cases	Group A (sales per week)	Group B (sales per week)
Volume of sales before the 10% discount	1.55 million	1.50 million
Volume of sales after the 10% discount	1.65 million	1.70 million

a) Using the midpoint method, calculate the price elasticities of demand for group A and group B

b) Explain how the discount will affect total revenue from each group

Solution:

Price elasticity of demand for group A is -0.625	4 Marks/0
Price elasticity of demand for group B is -1.25	4 Marks/0
Total revenue will decrease for group A and will increase for group B	4 Marks/0

(for securing marks in the third part of the question, the first two parts must be correct)

Note: Marks are only given for final values since the steps involved are straightforward.

Explanation of Part (a): Mid-point formula is used to calculate the percentage change in quantity demanded and for the percentage change in price you need not to calculate anything. The value is already given, i.e. 10 percent discount. Negative sign represents the inverse relationship between price and quantity demanded. Apparently, one could decide by looking at this question that only the information on quantity sold is given. Information on price change is given in one line, i.e., 10 percent discount which will be used in the denominator of elasticity formula.

The logic behind using the mid-point formula is to get the same value of elasticity between two points in either direction. In this question, one value is given and other you need to calculate for which you have to use the mid-point formula.

Average Marks of Part A: 16.67

Maximum Marks: 25

Minimum Marks: 0

Part C

Long Answer Type Questions

[Marks: 24 – Breakup of Marking Scheme is given with the Solution]

Question 1: Suppose Jayant enterprise is a perfectly competitive firm. It is operating under the following condition: (i) If the firm does not produce anything, it will incur a cost of Rs.1,000 (ii) the marginal revenue from the sale of output is Rs.100 and (iii) the total variable cost function of the firm is given as: $125Q - 0.5Q^2$ where Q is the units of output produced.

(9M)

Now, answer the following questions with the relevant calculations)

a) Determine the profit maximizing level of output of Jayant enterprise.
b) Calculate the amount of profit or loss at this output level.
c) Do you advice Jayant enterprise to produce output (or operate) in the short run or advice the firm to temporarily shut down. Substantiate your answer.

Solution:

a) Profit is maximized (or loss minimized) where MR = MC

$$P = MR = 100$$

$$MC = SMC = \frac{dTC}{dQ} = 125 - Q$$

$$100 = 125 - Q$$

$$Q = 25$$

3 marks

b)

To determine profit:

$$T\pi = TR - TC = P \times Q - TC$$

$$T\pi = 100(25) - \left[100 + 125(25) - .5(25)^2\right]$$

$$T\pi = 2500 - (1000 + 3125 - 312.5)$$

$$T\pi = 2500 - 3812.5$$

$$T\pi = -1312.5$$

Profit at the profit maximizing output is a loss of $1,312.5. 3 marks

c) **As P = MR = Rs.100 is below AVC of Rs.112.**5 (OR loss exceeds the fixed cost OR TR is less than TVC or Operating profit is negative) at the profit maximizing output level of 25 units per month, **the firm should shut down** 3 marks

Question 2: Consider a perfectly competitive market in the short run. Assume that market demand is given as: $Q_D = 10 - 4P$ and the market supply: $Q_S = P$, where Q_D and Q_S indicate the quantity of output demanded and supplied in the market respectively, while P indicate the price (in Rs.) of output. Further, assume that ABC firm is operating in the short run with capital (K) fixed at 5 units. The ABC firm pays a market-determined wage rate of Rs. 90 for each unit of labor hired and spends Rs. 23.6 for every unit of capital used.

15M

The firm's average product curve is given as.

$$AP_L = 12K + 0.35KL - \frac{1}{30}KL^2$$

Answer the following questions with relevant calculations:

a) How many units of labor will be employed by this profit maximizing firm? (Note: only positive values to be considered)
b) Corresponding to that unit of labor (as identified in part a), how many units of output will be produced by the firm? (Note: round **UP** to the next whole unit)
c) What will be the firm's total profit at that level of output (as identified in part b)?

Solution: a)

Given that $Q_D = 10 - 4P$ and $Q_S = P$. Equating we get Price of output= Rs.2. → **2 marks**

$MRP_L = MP_L \times P_X$

The firm has the following short run total product curve

$TP_L = Q = 12KL + 0.35KL^2 – 1/30\ KL^3$

At K = 5

$TP_L = Q = 60L + 1.75L^2 – 1/6\ L^3$

$MP_L = 60 – 3.5L – 3/6\ L^2$

Thus:

$MRP_L = MPL * Price$

$120 + 7L - L^2$ → **4 marks**

Profits are maximized where MRP_L = Rs.90, the daily wage rate, thus:

$120 + 7L - L^2 = 90$

$-L^2 + 7L + 30 = 0$

L = 10 L = -3

L = 10 (as L cannot be negative and has no economic meaning)

The firm should employ 10 workers. → **2 marks**

If identified L = 3 and solve the next part with L = 10 then no marks awarded. Please do not ask for recheck on this basis.

b) **As clearly calculated and mentioned above that L = 10**, thus

When L = 10:

$$TP_L = Q = 60L + 1.75L^2 - \frac{1}{6}L^3$$

$$TP_L = 60(10) + 1.75(10)^2 - \frac{1}{6}(10)^3$$

$$TP_L = 600 + 175 - 166.67$$

$$TP_L = 608.33 \text{ or } 609 \text{ units per day}$$ → **3 marks**

c) **As clearly calculated above, Q = 609 (or 608),** then accordingly profit is

$T\pi = TR - TC$ where TC equals fixed cost + labor cost

$T\pi$ = Rs. 200 or 198. → **4 marks**

Note: Uniform marking scheme is adopted for all. Please do not ask marks for the steps. If it is given, then given to all otherwise to no one.

Average Marks of Part A: 7.46

Maximum Marks: 24

Minimum Marks: 0

Overall Average: 46.49

Maximum Marks: 97

Minimum Marks: (-) 4

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