

CHAPTER 3 - THEORY OF PRODUCTION & COST

1. Which of the following is considered production in Economics?

- (a) Tilling of soil.
- (b) Singing a song before friends.
- (c) Preventing a child from falling into a manhole on the road.
- (d) Painting a picture for pleasure.

2. Identify the correct statement:

- (a) The average product is at its maximum when marginal product is equal to average product.
- (b) The law of increasing returns to scale relates to the effect of changes in factor proportions.
- (c) Economies of scale arise only because of indivisibilities of factor proportions.
- (d) Internal economies of scale can accrue when industry expands beyond optimum.

3. Which of the following is not a characteristic of land?

- (a) Its supply for the economy is limited.
- (b) It is immobile.
- (c) Its usefulness depends on human efforts.
- (d) It is produced by our forefathers.

4. Which of the following statements is true?

- (a) Accumulation of capital depends solely on income of individuals.
- (b) Savings can be influenced by government policies.
- (c) External economies go with size and internal economies with location.
- (d) The supply curve of labour is an upward sloping curve.

5. The short run, as economists use the phrase, is characterized by:

- (a) at least one fixed factor of production and firms neither leaving nor entering the industry.
- (b) generally a period which is shorter than one year.
- (c) all factors of production are fixed and no variable inputs.
- (d) all inputs are variable and production is done in less than one year.

6. The marginal, average, and total product curves encountered by the firm producing in the short run exhibit all of the following relationships except:

- (a) when total product is rising, average and marginal product may be either rising or falling.
- (b) when marginal product is negative, total product and average product are falling.
- (c) when average product is at a maximum, marginal product equals average product, and total product is rising.
- (d) when marginal product is at a maximum, average product equals marginal product, and total product is rising.

7. To economists, the main difference between the short run and the long run is that:

- (a) In the short run all inputs are fixed, while in the long run all inputs are variable.
- (b) In the short run the firm varies all of its inputs to find the least-cost combination of inputs.
- (c) In the short run, at least one of the firm's input levels is fixed.
- (d) In the long run, the firm is making a constrained decision about how to use existing plant and equipment efficiently.

8. Which of the following is the best definition of "production function"?

- (a) The relationship between market price and quantity supplied.
- (b) The relationship between the firm's total revenue and the cost of production.
- (c) The relationship between the quantities of inputs needed to produce a given level of output.
- (d) The relationship between the quantity of inputs and the firm's marginal cost of production.

9. Diminishing returns occur:

- (a) when units of a variable input are added to a fixed input and total product falls.
- (b) when units of a variable input are added to a fixed input and marginal product falls.
- (c) when the size of the plant is increased in the long run.
- (d) when the quantity of the fixed input is increased and returns to the variable input falls.

Use the following information to answer questions 14-16.

Hours of Labour	Total Output	Marginal Product
0	-	-
1	100	100
2	-	80
3	240	-

10. Which cost increases continuously with the increase in production?

- (a) Average cost. (b) Marginal cost.
- (c) Fixed cost. (d) Variable cost

11. Total cost in the short run is classified into fixed costs and variable costs. Which one of the following is a variable cost?

- (a) Cost of raw materials.
- (b) Cost of equipment.
- (c) Interest payment on past borrowings.
- (d) Payment of rent on building.

12. If a firm moves from one point on a production isoquant to another, which of the following will not happen.

- (a) A change in the ratio in which the inputs are combined to produce output.
- (b) A change in the ratio of marginal products of the inputs.
- (c) A change in the marginal rate of technical substitution.
- (d) A change in the level of output.

13. With which of the following is the concept of marginal cost closely related?

- (a) Variable cost. (b) Fixed cost.
- (c) Opportunity cost. (d) Economic cost.

14. Which of the following statements is correct?

- (a) When the average cost is rising, the marginal cost must also be rising.
- (b) When the average cost is rising, the marginal cost must be falling.
- (c) When the average cost is rising, the marginal cost is above the average cost.
- (d) When the average cost is falling, the marginal cost must be rising.

15. Which of the following is an example of "explicit cost"?

- (a) The wages a proprietor could have made by working as an employee of a large firm.
- (b) The income that could have been earned in alternative uses by the resources owned by the firm.
- (c) The payment of wages by the firm.
- (d) The normal profit earned by a firm.

16. Which of the following is an example of an "implicit cost"?

- (a) Interest that could have been earned on retained earnings used by the firm to finance expansion.
- (b) The payment of rent by the firm for the building in which it is housed.
- (c) The interest payment made by the firm for funds borrowed from a bank.
- (d) The payment of wages by the firm.

Use the following data to answer questions 27-29.

Output (O)	0	1	2	3	4	5	6
Total Cost (TC)	` 240	` 330	` 410	` 480	` 540	` 610	` 690

17. The average fixed cost of 2 units of output is:

- (a) ` 80 (b) ` 85
(c) ` 120 (d) ` 205

18. The marginal cost of the sixth unit of output is:

- (a) ` 133 (b) ` 75
(c) ` 80 (d) ` 450

19. Diminishing marginal returns start to occur between units:

- (a) 2 and 3. (b) 3 and 4.
(c) 4 and 5. (d) 5 and 6.

20. Marginal cost is defined as:

- (a) the change in total cost due to a one unit change in output.
(b) total cost divided by output.
(c) the change in output due to a one unit change in an input.
(d) total product divided by the quantity of input.

21. Which of the following is true of the relationship between the marginal cost function and the average cost function?

- (a) If MC is greater than ATC, then ATC is falling.
(b) The ATC curve intersects the MC curve at minimum MC.
(c) The MC curve intersects the ATC curve at minimum ATC.
(d) If MC is less than ATC, then ATC is increasing.

22. Which of the following statements is correct concerning the relationships among the firm's cost functions?

- (a) $TC = TFC - TVC$. (b) $TVC = TFC - TC$.
(c) $TFC = TC - TVC$. (d) $TC = TVC - TFC$.

23. Suppose output increases in the short run. Total cost will:

- (a) increase due to an increase in fixed costs only.
(b) increase due to an increase in variable costs only.
(c) increase due to an increase in both fixed and variable costs.
(d) decrease if the firm is in the region of diminishing returns.

24. Which of the following statements concerning the long-run average cost curve is false?

- (a) It represents the least-cost input combination for producing each level of output.
(b) It is derived from a series of short-run average cost curves.
(c) The short-run cost curve at the minimum point of the long-run average cost curve represents the least-cost plant size for all levels of output.
(d) As output increases, the amount of capital employed by the firm increases along the curve.

25. The negatively-sloped (i.e. falling) part of the long-run average total cost curve is due to which of the following?

<p>(a) Dis-economies of scale.</p> <p>(b) Diminishing returns.</p> <p>(c) The difficulties encountered in coordinating the many activities of a large firm.</p> <p>(d) The increase in productivity that results from specialization.</p>
<p>26. The positively sloped (i.e. rising) part of the long run average total cost curve is due to which of the following?</p> <p>(a) Dis-economies of scale.</p> <p>(b) Increasing returns.</p> <p>(c) The firm being able to take advantage of large-scale production techniques as it expands its output.</p> <p>(d) The increase in productivity that results from specialization.</p>
<p>27. A firm's average total cost is ` 300 at 5 units of output and ` 320 at 6 units of output. The marginal cost of producing the 6th unit is:</p> <p>(a) ` 20 (b) ` 120</p> <p>(c) ` 320 (d) ` 420</p>
<p>28. A firm has a variable cost of ` 1000 at 5 units of output. If fixed costs are ` 400, what will be the average total cost at 5 units of output?</p> <p>(a) ` 280 (b) ` 60</p> <p>(c) ` 120 (d) ` 1400</p>
<p>29. A firm's average fixed cost is ` 20 at 6 units of output. What will it be at 4 units of output?</p> <p>(a) ` 60 (b) ` 30</p> <p>(c) ` 40 (d) ` 20</p>
<p>30. The average product of labour is maximized when marginal product of labour:</p> <p>(a) equals the average product of labour.</p> <p>(b) equals zero.</p> <p>(c) is maximized.</p> <p>(d) none of the above.</p>
<p>31. The law of variable proportions is drawn under all of the assumptions mentioned below except the assumption that:</p> <p>(a) the technology is changing.</p> <p>(b) there must be some inputs whose quantity is kept fixed.</p> <p>(c) we consider only physical inputs and not economically profitability in monetary terms.</p> <p>(d) the technology is given and stable.</p>
<p>32. What is a production function?</p> <p>(a) Technical relationship between physical inputs and physical output.</p> <p>(b) Relationship between fixed factors of production and variable factors of production.</p> <p>(c) Relationship between a factor of production and the utility created by it.</p> <p>(d) Relationship between quantity of output produced and time taken to produce the output.</p>
<p>33. Laws of production does not include</p> <p>(a) returns to scale.</p> <p>(b) law of diminishing returns to a factor.</p> <p>(c) law of variable proportions.</p> <p>(d) least cost combination of factors.</p>
<p>34. An iso quant shows</p> <p>(a) All the alternative combinations of two inputs that can be produced by using a given set of output fully and in the best possible way.</p>

- (b) All the alternative combinations of two products among which a producer is indifferent because they yield the same profit.
- (c) All the alternative combinations of two inputs that yield the same total product.
- (d) Both (b) and (c).

35. Economies of scale exist because as a firm increases its size in the long run:

- (a) Labour and management can specialize in their activities more.
- (b) As a larger input buyer, the firm can get finance at lower cost and purchase inputs at a lower per unit cost.
- (c) The firm can afford to employ more sophisticated technology in production.
- (d) All of these.

36. The production process described below exhibits.

Number of Workers	Output
0	0
1	23
2	40
3	50

- (a) constant marginal product of labour.
- (b) diminishing marginal product of labour.
- (c) increasing return to scale.
- (d) increasing marginal product of labour.

37. Which of the following is a variable cost in the short run?

- (a) rent of the factory.
- (b) wages paid to the factory labour.
- (c) interest payments on borrowed financial capital.
- (d) payment on the lease for factory equipment.

38. The efficient scale of production is the quantity of output that minimizes

- (a) average fixed cost. (b) average total cost.
- (c) average variable cost. (d) marginal cost.

39. In the short run, the firm's product curves show that

- (a) Total product begins to decrease when average product begins to decrease but continues to increase at a decreasing rate.
- (b) When marginal product is equal to average product, average product is decreasing but at its highest.
- (c) When the marginal product curve cuts the average product curve from below, the average product is equal to marginal product.
- (d) In stage two, total product increases at a diminishing rate and reaches maximum at the end of this stage.

40. A fixed input is defined as

- (a) That input whose quantity can be quickly changed in the short run, in response to the desire of the company to change its production.
- (b) That input whose quantity cannot be quickly changed in the short run, in response to the desire of the company to change its production.
- (c) That input whose quantities can be easily changed in response to the desire to increase or reduce the level of production.
- (d) That input whose demand can be easily changed in response to the desire to increase or reduce

the level of production

41. Average product is defined as

- (a) total product divided by the total cost.
- (b) total product divided by marginal product.
- (c) total product divided by the number of units of variable input.
- (d) marginal product divided by the number of units of variable input.

42. Which of the following statements is true?

- (a) After the inflection point of the production function, a greater use of the variable input induces a reduction in the marginal product.
- (b) Before reaching the inevitable point of decreasing marginal returns, the quantity of output obtained can increase at an increasing rate.
- (c) The first stage corresponds to the range in which the AP is increasing as a result of utilizing increasing quantities of variable inputs.
- (d) All the above.

43. Marginal product, mathematically, is the slope of the

- (a) total product curve.
- (b) average product curve.
- (c) marginal product curve.
- (d) implicit product curve.

44. Suppose the first four units of a variable input generate corresponding total outputs of 200, 350, 450, 500. The marginal product of the third unit of input is:

- (a) 50
- (b) 100
- (c) 150
- (d) 200

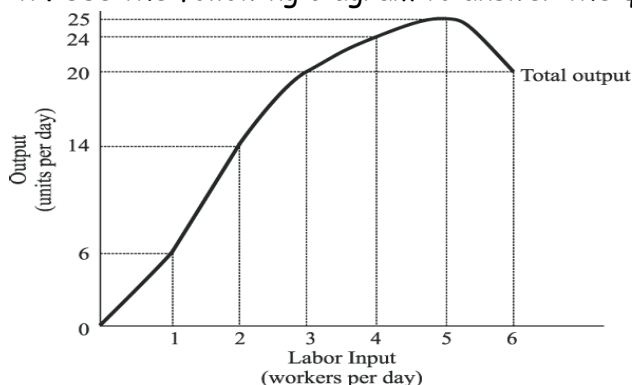
45. Which of the following statements is false in respect of fixed cost of a firm?

- (a) As the fixed inputs for a firm cannot be changed in the short run, the TFC are constant, except when the prices of the fixed inputs change.
- (b) TFC continue to exist even when production is stopped in the short run, but they exist in the long run even when production is not stopped.
- (c) Total Fixed Costs (TFC) can be defined as the total sum of the costs of all the fixed inputs associated with production in the short run.
- (d) In the short run, a firm's fixed cost cannot be escaped even when production is stopped.

46. Diminishing marginal returns for the first four units of a variable input is exhibited by the total product sequence:

- (a) 50, 50, 50, 50
- (b) 50, 110, 180, 260
- (c) 50, 100, 150, 200
- (d) 50, 90, 120, 140

47. Use the following diagram to answer the question given below it



The marginal physical product of the third unit of labour is ___, the MP of the ___ labour is Negative

- (a) Six; fourth
- (b) Six; third
- (c) Six; fifth
- (d) Six; sixth

48. In the third of the three stages of production:

- (a) the marginal product curve has a positive slope.
- (b) the marginal product curve lies completely below the average product curve.
- (c) total product increases.
- (d) marginal product is positive.

49. When marginal costs are below average total costs,

- (a) average fixed costs are rising.
- (b) average total costs are falling.
- (c) average total costs are rising.
- (d) average total costs are minimized.

50. A firm's long-run average total cost curve is

- (a) Identical to its long-run marginal-cost curve.
- (b) Also its long-run supply curve because it explains the relationship between price and quantity supplied.
- (c) In fact the average total cost curve of the optimal plant in the short run as it tries to produce at least cost.
- (d) Tangent to all the curves of short-run average total cost.

51. In the long run, if a very small factory were to expand its scale of operations, it is likely that it would initially experience

- (a) an increase in pollution level.
- (b) diseconomies of scale.
- (c) economies of scale.
- (d) constant returns to scale.

52. Which of the following statements describes increasing returns to scale?

- (a) Doubling of all inputs used leads to doubling of the output.
- (b) Increasing the inputs by 50% leads to a 25% increase in output.
- (c) Increasing inputs by $1/4$ leads to an increase in output of $1/3$.
- (d) None of the above.

53. The marginal cost for a firm of producing the 9th unit of output is ` 20. Average cost at the same level of output is ` 15. Which of the following must be true?

- (a) marginal cost and average cost are both falling
- (b) marginal cost and average cost are both rising
- (c) marginal cost is rising and average cost is falling
- (d) it is impossible to tell if either of the curves are rising or falling

54. Implicit cost can be defined as

- (a) Money payments made to the non-owners of the firm for the self-owned factors employed in the business and therefore not entered into books of accounts.
- (b) Money not paid out to the owners of the firm for the self-owned factors employed in a business and therefore not entered into books of accounts.
- (c) Money payments which the self-owned and employed resources could have earned in their next best alternative employment and therefore entered into books of accounts.
- (d) Money payments which the self-owned and employed resources earn in their best use and therefore entered into book of accounts.

55. Economic costs of production differ from accounting costs of production because

- (a) Economic costs include expenditures for hired resources while accounting costs do not.
- (b) Accounting costs include opportunity costs which are deducted later to find paid out costs.

(c) Accounting costs include expenditures for hired resources while economic costs do not.
(d) Economic costs add the opportunity cost of a firm which uses its own resources.
56. Diminishing returns are due to _____ and increasing returns are due to _____. (a) Internal diseconomies, Internal economies (b) Internal economies, Internal diseconomies (c) External diseconomies, Internal economies (d) Internal diseconomies, external economies
57. When the law of diminishing returns begins to operate, the TVC curve begins to: (a) fall at an increasing rate (b) rise at a decreasing rate (c) fall at a decreasing rate (d) rise at an increasing rate
58. _____ is an implicit cost of production. (a) Wages of the labour. (b) Charges for electricity. (c) Interest on owned money capital. (d) Payment for raw material.
59. Firm's supply curve is the _____ part of the _____ starting from above the _____ point minimum AVC. (a) rising; AC curve (b) falling; AC curve (c) rising; MC curve (d) falling; MC curve
60. Which of the following statements is false: (a) When MP rises, TVC increases at an increasing rate. (b) When MP rises, TVC increases at a diminishing rate. (c) When MP becomes constant, TVC increases at a constant rate. (d) When MP falls, TVC increases at a increasing rate.
61. Implicit cost added in _____ cost (a) Economic (b) Simple (c) Accounting (d) None of the above
62. Assertion (A): In the short run, a producer operates in only II stage of Law of Diminishing Returns Where average product of variable factor is declining. Reason (R): In stage I and stage III the marginal product of the fixed and the variable factors respectively are negative. (a) (A) is true and (R) is false (b) Both (A) and (R) are true & (R) is the correct explanation of (A) (c) Both (A) and (R) are true & (R) is not the correct explanation of (A) (d) (A) is false and (R) is true
63. Which of the following is a FALSE statement? (a) The very long run focuses on the growth of productive capacity (b) In the very long run, the productive capacity is assumed to be given (c) In the very short run, shifts in aggregate demand determine how much output is produced (d) Fluctuations in the rates of inflation and unemployment are important long-run issues
64. Which of the following is a function of an entrepreneur? (a) Initiating a business enterprise (b) Risk bearing (c) Innovating

(d) All of the above

65. Which of the following statements is true of the relationship among the average cost functions?

(a) $ATC = AFC = AVC$ (b) $AVC = AFC + ATC$

(c) $AFC = ATC + AVC$ (d) $AFC = ATC - AVC$

66. For a Price taking firm:

(a) Marginal revenue is less than Price

(b) Marginal revenue is equal to Price

(c) The relationship between behavior marginal revenue and Price is indeterminate

(d) Marginal revenue is greater than price

67. Perfectly Competitive firm and industry are both in long run equilibrium when:

(a) $P = MR = SMC = LMC$

(b) $P = MR =$ Lowest point on the LAC

(c) $P = MR = SAC = LAC$

(d) All of the above

68. Given $TC = 2000 + 15Q - 6Q^2 + Q^3$. How much is TFC at $Q = 2000$?

(a) 2000

(b) 975

(c) 30,000

(d) Can't be determined

69. Which of the following is not a determinant of the firm's cost function?

(a) Taxes

(b) The Production Function

(c) The Price of the firm's output

(d) Subsidies

70. Under the law of variable proportion, stage I is known as the stage of increasing returns because:

(a) Marginal product of the variable factor increases throughout this stage

(b) Average product of the variable factor increases throughout this stage

(c) Marginal product increases at increasing rate throughout this stage

(d) Total increases at increasing rate throughout this stage

71. Production function: $Q = 4L^{1/2}K^{2/3}$ exhibits:

(a) increasing returns to scale

(b) decreasing returns to scale

(c) constant returns to scale

(d) increasing returns to a factor

72. A mathematical relationship showing the maximum output that can be produced by each and every combination of inputs is called _____.

(a) Production equation (b) Production function

(c) Production schedule (d) Production identity

73. If the MRTSLK equals 2, then the MPK/MPL is:

(a) 2

(b) 1

(c) 2

(d) 4

74. The MC curve reaches its minimum point before the AVC curve and the AC curve. In addition, the MC curve intersects the AVC curve and the AC curve at their lowest point. The above statements are both true:

(a) *Always*

(b) never

(c) often

(d) Sometimes

<p>75. At the shut-down point:</p> <p>(a) $P = AVC$</p> <p>(b) $TR = TVC$</p> <p>(c) the total losses of the firm equal TFC</p> <p>(d) all the above.</p>
<p>76. Which of the following is not a reason for operation of increasing returns to a factor?</p> <p>(a) Better utilisation of fixed factor</p> <p>(b) Limitation of fixed factor</p> <p>(c) Increase in efficiency of variable factor</p> <p>(d) Indivisibility of fixed factor</p>
<p>77. At the Point of Inflexion:</p> <p>(a) Total Product is maximum</p> <p>(b) Average Product is maximum</p> <p>(c) Marginal Product is maximum</p> <p>(d) Marginal Product is zero</p>
<p>78. Cost function _____ concept:</p> <p>(a) Economical (b) Functional</p> <p>(c) Financial (d) Technical</p>
<p>79. The cost curve, which is Inversely S-shaped is:</p> <p>(a) Average Cost Curve</p> <p>(b) Total Fixed Cost Curve</p> <p>(c) Total Variable Cost Curve</p> <p>(d) Marginal Cost Curve</p>
<p>80. The cost which is never zero even when production is stopped is known as:</p> <p>(a) Supplementary Cost (b) Prime Cost</p> <p>(c) Explicit cost (d) None of these</p>
<p>81. The Interest on own capital is:</p> <p>(a) Implicit Cost (b) Future Cost</p> <p>(c) Explicit Cost (d) None of these</p>
<p>82. Assertion (A): An iso-cost line is a straight line.</p> <p>Reason (R): The market rate of exchange between the two inputs is constant.</p> <p>(a) (A) is true and (R) is false</p> <p>(b) Both (A) and (R) are true & (R) is the correct explanation of (A)</p> <p>(c) Both (A) and (R) are true & (R) is not the correct explanation of (A)</p> <p>(d) (A) is false and (R) is true</p>
<p>83. Cost Incurred which has no relevance to future planning is called:</p> <p>(a) Marginal cost (b) Sunk cost</p> <p>(c) Average cost (d) None of these</p>
<p>84. Average revenue curve is also known as -</p> <p>(a) Indifference Curve (b) Demand Curve</p> <p>(c) Average Cost Curve (d) None of these</p>
<p>85. The IIInd Stage in Law of Returns to Scale is :</p> <p>(a) Positive Returns (b) Constant Return</p> <p>(c) Negative return (d) None of these</p>
<p>86. Inputs that cannot be easily varied during the time period under consideration are called:</p>

- (a) short run inputs. (b) long run inputs.
(c) fixed inputs. (d) variable inputs.

87. The law of diminishing returns begins at the level of output where:

- (a) marginal cost is at a minimum.
(b) average variable cost is at a minimum.
(c) average fixed cost is at a maximum.
(d) None of the above is correct.

88. If a firm has a downward-sloping long-run average cost curve, then:

- (a) it is experiencing decreasing returns to scale.
- (b) it is experiencing decreasing returns.
- (c) it is a natural monopoly.
- (d) marginal cost is greater than average cost.

89. One reason that a firm may experience increasing returns to scale is that greater levels of output make it possible for the firm to:

- (a) employ more specialized machinery.
- (b) obtain bulk purchase discounts.
- (c) employ a greater division of labor.
- (d) All of the above are correct.

90. If the firm's total costs are INR 2,200,000 and total variable costs are INR 1,300,000, what are the total fixed costs?

- (a) 900,000 (b) 1,200,000
(c) 4,500,000 (d) None of the above.

91. Envelope curve is also called:

- (a) Long Run Average Cost curve
(b) Short Run Average Cost curve
(c) Average Fixed Cost
(d) None of these

92. Which of the following cost wherein curve 'u' shaped?

- (a) Average fixed cost curve
(b) Average cost curve
(c) Marginal cost curve
(d) None of these

93. When Total product is 100 and units of variable factor are 4, average product will be:

- (a) 400 (b) 25
(c) 104 (d) None of these

94. When average cost (AC) is falling:

- (a) $MC < AC$ (b) $MC > AC$
(c) $MC = AC$ (d) None of these

95. Law of Production does not include _____

- (a) least Cost Combination of factors
(b) Law of variable proportion
(c) Law of diminishing returns to a factor
(d) Return to scale

96. The Stages in law of variable proportion is:

- (a) 1 (b) 2
(c) 3 (d) 4

97. Which one of the following is not an internal economies of scale?

- (a) Technical economies
- (b) Financial economies
- (c) Economies due to localization of industries
- (d) Marketing economies

98. X, Y and Z are confused with the formula for defining TC:

- (a) X Says: $TC = TVC + TFC$
- (b) Y Says: $TC = AC \times \text{output}$
- (c) Z Says: $TC = ZMC + TFC$

Identify who amongst them is correct.

- (a) X
- (b) Y
- (c) Z
- (d) All of them

99. In the Cobb-Douglas production function given as: $Q = A L^a K^{1-a}$ the share of labour in total production is:

- (a) A
- (b) $1 - a$
- (c) A
- (d) $a \cdot L$

100. A production function with constant returns to scale for capital alone implies that:

- (a) there are increasing returns to scale for all factors of production taken together
- (b) if all inputs are doubled then output will more than double
- (c) smaller firms are more efficient than larger firms
- (d) both (A) and (B)

Solution :-

1	2	3	4	5	6	7	8	9	10
A	A	D	B	A	D	C	C	B	D
11	12	13	14	15	16	17	18	19	20
A	D	A	C	C	A	C	C	C	A
21	22	23	24	25	26	27	28	29	30
C	C	B	C	D	A	D	A	B	A
31	32	33	34	35	36	37	38	39	40
A	A	D	C	D	B	B	B	D	B
41	42	43	44	45	46	47	48	49	50
C	D	A	B	B	D	D	B	B	D
51	52	53	54	55	56	57	58	59	60
C	C	B	B	D	A	D	A	C	B
61	62	63	64	65	66	67	68	69	70
C	B	D	D	D	B	D	A	C	B
71	72	73	74	75	76	77	78	79	80

	A	B	C	A	D	B	C	B	C	A	
	81	82	83	84	85	86	87	88	89	90	
	A	B	B	B	B	C	A	A	D	A	
	91	92	93	94	95	96	97	98	99	100	
	A	A	B	A	A	C	C	A	A	D	