6.1 The Short Run and the Long Run

1. Variable factors are the factors of production that _____ _____, while fixed factors are the factors of production that _____.

2. In the short run, there are *(both fixed factors and variable factors / only fixed factors / only variable factors)*.

3. In the long run, there are *(both fixed factors and variable factors / only fixed factors / only variable factors)*.

4. In the short run, which of the following is/are (a) fixed factor(s) of a coffee shop? Tick (✓) the appropriate box(es).

☐ Coffee beans
☐ Coffee machine
☐ Accountant

6.2 Input-output Relationship in the Short Run

5. The following table shows the input-output relationship of a firm. Complete the table.

Machine (units)	Labour (units)	Total product (units)	Average product (units)	Marginal product (units)
1	3	30	30	30
2	3		35	
3	3		40	
4	3	168		

6. State the law of diminishing marginal returns.

_____

_____

7. The following table shows the input-output relationship of a firm.

Machine (units)	Labour (units)	Average product (units)
5	1	50
5	2	75
5	3	100
5	4	100
5	5	90

(a) The factory is operating in the *(short run / long run)*.

(b) Machine is a *(fixed factor / variable factor)* while labour is a *(fixed factor / variable factor)*.

(c) Diminishing marginal returns sets in when the _____ unit of labour is put to work.

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8. Determine if each of the following statements is true or false. Circle the correct answer.

(a) When diminishing marginal returns sets in, total product will decrease.	*(True / False)*
(b) When all factors of production are variable factors, the law of diminishing marginal returns is not applicable.	*(True / False)*

6.3 Cost of Production

9. Variable costs are the costs that _____, while fixed costs are the costs that _____.

10. The table below shows the cost-output relationship of a firm. There is a fixed cost of $18. Complete the table.

Output (units)	Total cost ($)	Average cost ($)	Marginal cost ($)
1	42		
2	64		
3	78		
4	88		

6.4 Economies and Diseconomies of Scale

11. After a firm opening several branches, its average production cost decreases. The firm *(enjoys internal economies of scale / enjoys external economies of scale / suffers from internal diseconomies of scale / suffers from external diseconomies of scale).*

12. Give **TWO** reasons to explain why an increase in a firm's production scale may cause a decrease in its average cost.

_____

_____

13. Give **TWO** reasons to explain why an increase in a firm's production scale may cause an increase in its average cost.

_____

_____

14. Give **TWO** reasons to explain why the expansion of an industry may cause a decrease in long run average cost of firms in the industry.

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15. Give **TWO** reasons to explain why the expansion of an industry may cause an increase in long run average cost of firms in the industry.

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