# Question 9

Many companies, recognizing the increase in environmental awareness among consumers that they have invested in research to ensure that their products are now advertise environmentally friendly. They hope that this will increase their demand for their products and lead to higher profits.

1. Explain the difference between the fixed and variable costs and suggest what might happen to the fixed and variable costs in the above companies in the short run. (12)

Introduction

Definition of short run, variable and fixed factors and costs

The short run period of production refers to the production situation where the firm can only increase their output by varying the variable factors while holding one factors of production fixed. In this stage of production, variable factors like labour will incur variable cost like wages and fixed factors while fixed factors like machinery, which will incur fixed cost.

Main body

Explain the difference between the fixed and variable factor

* 1. Fixed cost is incurred once the firm is engaged in the business and it does not vary with the change in output but the variable cost is only incurred when production begins as the cost of the variable factors will only increase when the production increases which means that the variable cost will vary with production.
	2. The Total fixed cost curve is a horizontal curve, which means that the fixed cost is constant through out the production. On the other hand, the total variable cost will increase at different rate as the production increases; it will increase at decreasing rate at the initial stage and increases at decreasing rate at the second stage, when the law of diminishing returns set in.
	3. As for the average fixed cost, it will decrease as production increases but it decreases sharply initially and gradually when the law of diminishing returns set in. As for the average variable cost, it will decrease and increase, once the law of diminishing return sets in, as the decrease in MP will lead to a rise in the average variable cost.

Explain how the increase in advertising and research and development will affect the cost of production

The increase in R & D is a form of fixed cost as the expenditure on the fixed factors is incurred even when no unit of output is produced. These forms of expenditure take in the form of laboratories setup, specialized equipment and fittings and furniture. Although the employment of research personnel, like scientists or specialists and electrical costs are variable costs, these costs are incurred even when the production and revenue is zero and thus, it is considered fixed cost. The increase in advertising is also incurred before any revenue is earned and therefore it is classified as fixed cost.

* + 1. However, the increase in productivity brought about by R& D will increase the marginal product and thus, enabling the firm to reduce AFC and lower down the AVC as the firms now enhance the utilization of the fixed factors.
		2. The increase in market demand due to increase in advertising will also help to spread the total fixed over more units of production and thus lower the average fixed and variable cost. The increase in market demand will induce the firm to reap the benefit of the excess capacity in production.
		3. However, when the production reaches a stage of diminishing returns, the average variable cost and average cost will rise. (over-utilization of fixed factors by variable factors )

In conclusion, the various kinds of production activities will affect the production and hence contribute to the change in the cost of production at both total and unit level.