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College Name :

DELHI GLOBAL INSTITUTE OF TECHNOLOGY

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Course Code : HSMC-01G

Subject : Economics

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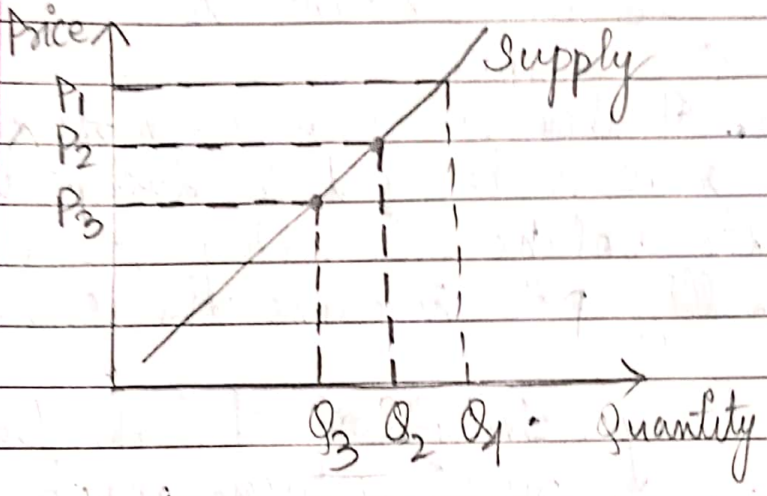
Ans 1.) Supply : It is the willingness and ability of producers to create goods and services to take them to market.

Supply is positively related to price given that at higher prices there is an incentive to supply where as higher prices may generate increased revenue and profits.



This shows that the supply curve that is upward sloping. When the price of the good was at P_3 then suppliers were supplying Q_3 quantity. As the price start rising the quantity supplied also starts rising.

Law of supply : It states that other factors remaining constant, price and quantity supplied of a good are directly related to each other. It means, when the price paid by buyers for a good rises, then suppliers

increase the supply of that good in the market

Some factors affecting the law of supply are as follows:

- Taxes: The imposition of taxes in the production of goods limits profitability. If a producer is required to remit a portion of sales as tax, then the producer will be less inclined to increase supply.
- Cost of Production: If there are changes in the cost of raw materials to produce a unit of supply, the volume will change as well, assuming the selling price remains the same.
- Periods of uncertainty: In situation of higher business risk, producers may be inclined to reduce supplies so that they can offload older inventory.

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Ans 1 e) Fixed cost

A company's fixed cost do not vary with the volume of production. Fixed cost remain the same regardless of whether goods or services are produced or not. Thus, a company cannot avoid fixed costs.

Using the example, we can understand fixed cost easily.
Example: Suppose company ABC has a fixed cost of $10,000 per month to rent the machine it uses to produce mugs. If the company does not produce any mugs for the month, it would still need to pay $10,000 for the cost of renting the machine. On the other hand, if it produces one million mugs, it fixed cost remains the same.
Fixed cost are time-related, i.e., they remain constant for a period of time, Depreciation, interest paid on capital, rent, salary, insurance, etc.

Variable Cost

Variable costs are a company's costs that are associated with the number of goods or services it produces. A company's variable costs increases and decrease with its production volume. When production volume goes up, the variable costs will increase. On the other hand, if the volume goes down, so too will the variable costs. Variable costs are volume-related and change with the changes in output level.

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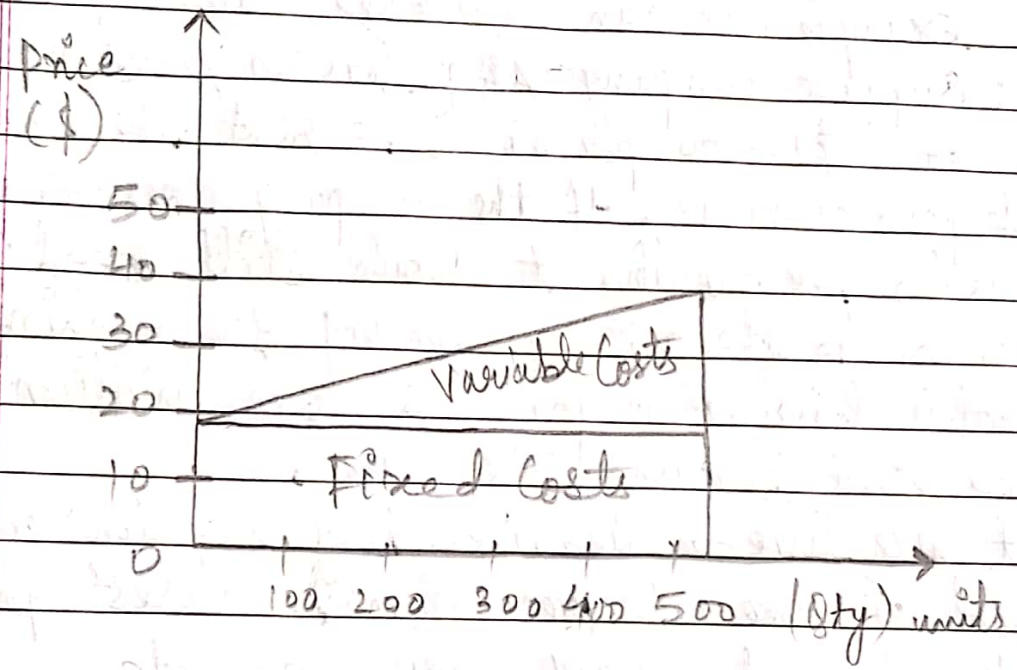
Example :

Examples of variable costs may include labour, commissions, packaging and raw materials for production.



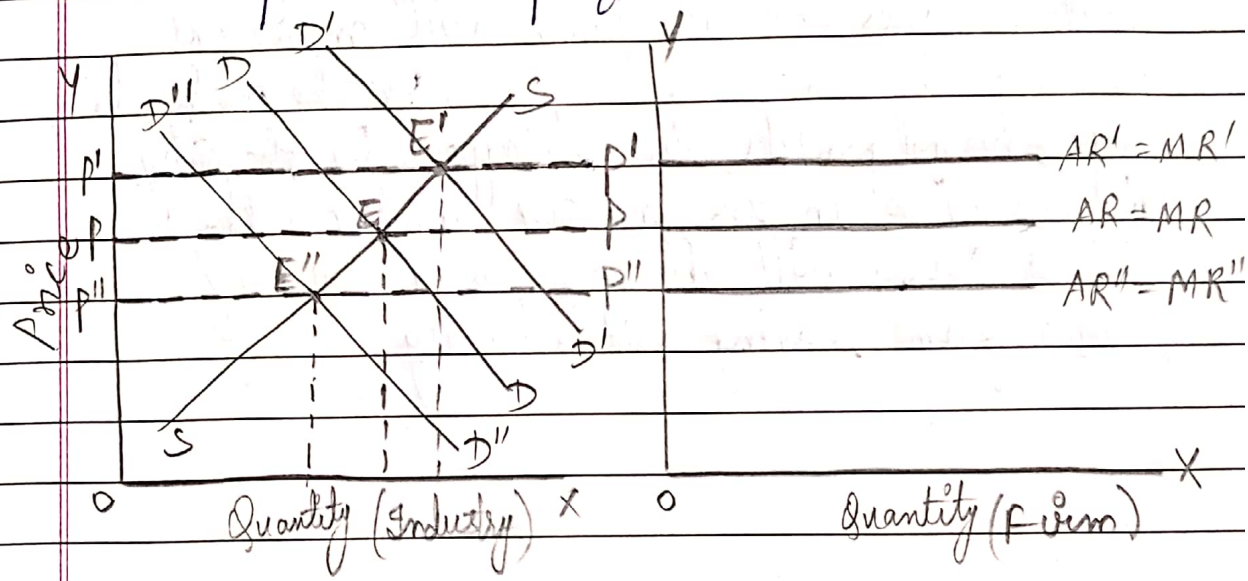
fixed Cost & Variable Cost.

Ans 2a) In a perfect competition market structures, there are a large no. of buyers and sellers. All the sellers of the market are small sellers in competition with each other. There is no big seller with any significant influence on the market. So all the firms in such a market are price takers.

There are certain assumptions ~~when~~ in perfect competition. This is the reason a perfect competition market is pretty much a theoretical concept. These assumptions are as follows:

- All firms only have the motive of profit maximization.
- The products on the market are homogeneous i.e., they are completely identical.
- Consumers have perfect knowledge are are well aware of any changes in the market.
- No government intervention.

- There is free entry and exit from the market i.e., there are no barriers.
- There is no concept of consumer preference.
- No transportation costs.
- All the factors of production have perfect mobility in the market and are not hindered by any market factors.
- Each firms earns normal profits and no firms can earn super-normal profits.



Demand Curve facing an Individual Firm

To begin with, demand curve DD and supply curve SS intersect at point E and determine price OP. Now, the firm having no influence over the price, will take the price OP as given and therefore average-marginal revenue curve facing it will be horizontal straight line at the level of OP.

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When the demand increases and as a result the price rises to OP', the firm will now confront average - marginal revenue curve at the level of OP'. And if the demand decreases and price falls to OP" the firm's average - marginal revenue curve will shift below to the level of OP".

The fourth condition, namely free entry and exit, ensures that the firm will make only normal profits in the long run. On the one hand, super-normal profits will disappear by the entry of new firms in the industry and, on the other losses will disappear as a result of some firms leaving the industry.

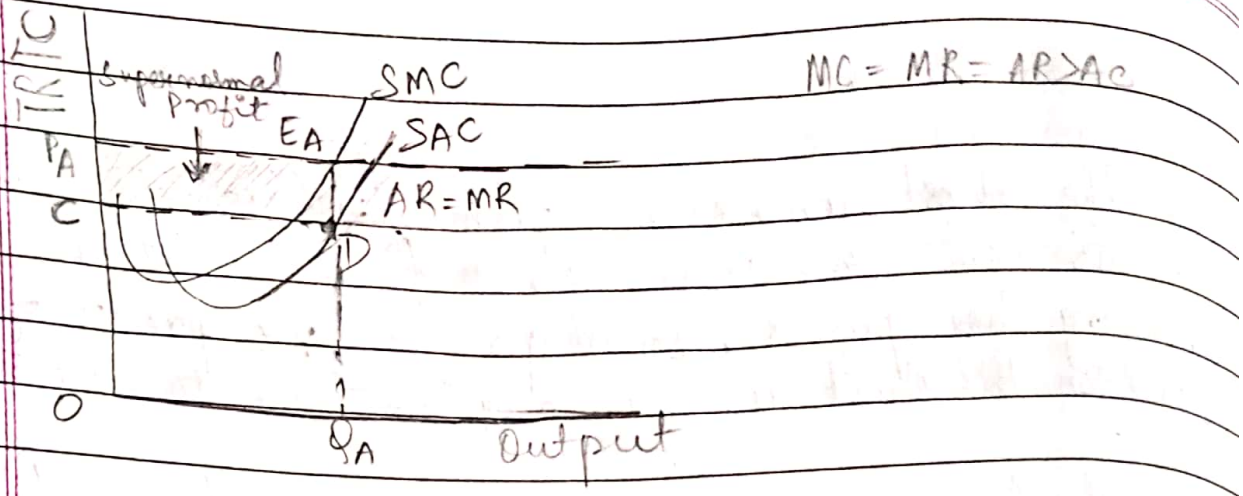
In the short run, no. of firms is fixed. Depending on its costs and revenue, a firm might be making large profits, small profits, no profit or a loss and in the short run, it may continue to do so.

In the long run, however the level of profits affects entry and exit from the industry, if profits are high, new firms will be attracted into the industry, whereas if losses are being made, firms will leave.

Supernormal profit is any profit above normal profit. If supernormal profits are made new firms will be attracted into the industry in the long run. Thus whether the industry expands or contracts in the long run will depend on the rate of profit. Naturally, since the time a firm takes to set up in business varies from industry to industry, the length of time before the long run is reached also varies from industry to industry.

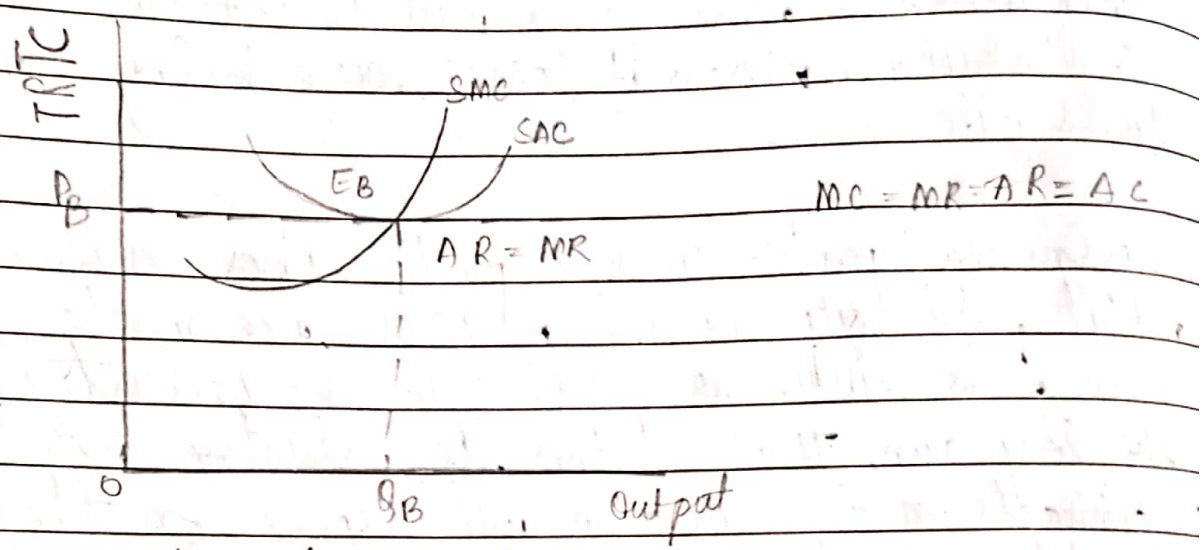
Thereby, in the short run, it may be possible for an individual firm to make supernormal profit. This situation is shown in the diagram.

As fewer firms had happened to enter in the period of high profits, the actual price of a given output would be higher.



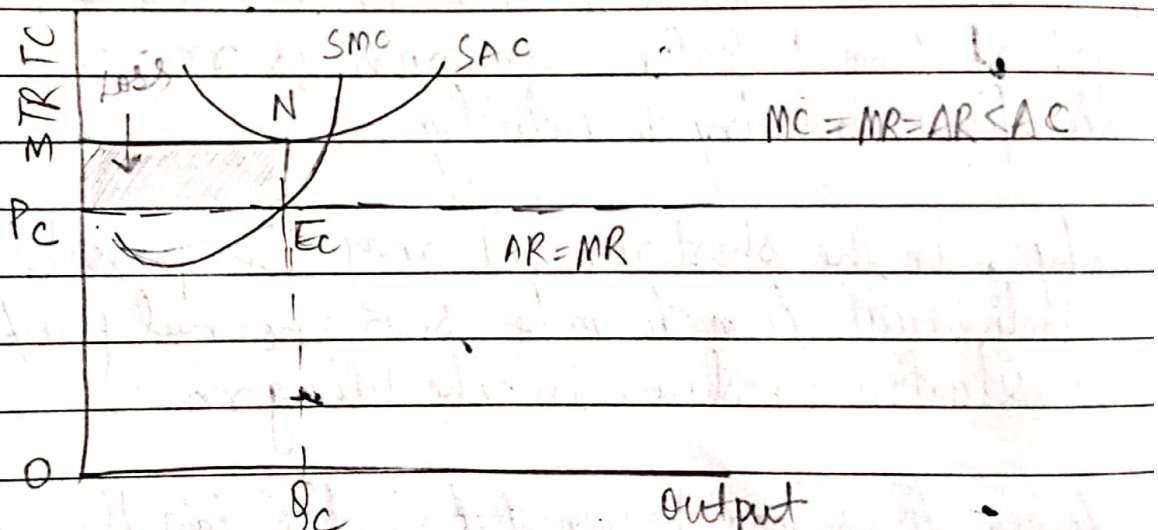
MC = MR = AR > AC

Supernormal Profit (Firm A)



MC = MR = AR = AC

Normal Profit (Firm B)



MC = MR = AR < AC

Loss (Firm C)

Short Run Equilibrium of Firm

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Ans 3a) If one input is variable and all other inputs are fixed the firm's production function exhibits the law of variable proportions.

If the number of units of variable factor is increased then keeping other factors constant, how output changes is the concern of this law.

The law of variable porportions is also known as law of diminishing returns. But the law of diminishing returns are based on the following assumptions.

i) All units of the variable factor are homogeneous.
ii) It is possible to vary the proportion in which different inputs are combined.
iii) Only one factor is variable while others are held constant.
iv) It assumes a short-run situation, in the long run all factors are variable.
v) There is no change in technology.

Example :

Suppose plant, land & equipment are the fixed factors and labour are the variable factor.

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When the no. of labourer is increased successively to have large output, the proportion between fixed & variable factors is altered and the law of variable proportions sets in. The law states that as the quantity of a variable input is increased by equal doses keeping the quantities of other inputs constant, total product will increase, but after a point at a diminishing rate.

Units of Labour (L)	Total Product (Quintals) (Q)	Marginal Product (Quintals) ($\frac{\Delta Q}{\Delta L}$)	Average Product (Quintals) ($\frac{Q}{L}$)
1	80	80	80
2	170	90	85
3	270	100	90
4	368	98	92
5	430	62	86
6	480	50	80
7	504	24	72
8	504	0	63
9	495	-9	55
10	480	-15	48

Table shows: Returns to Labour

The law of variable proportion is illustrated in the above table and the figure below.

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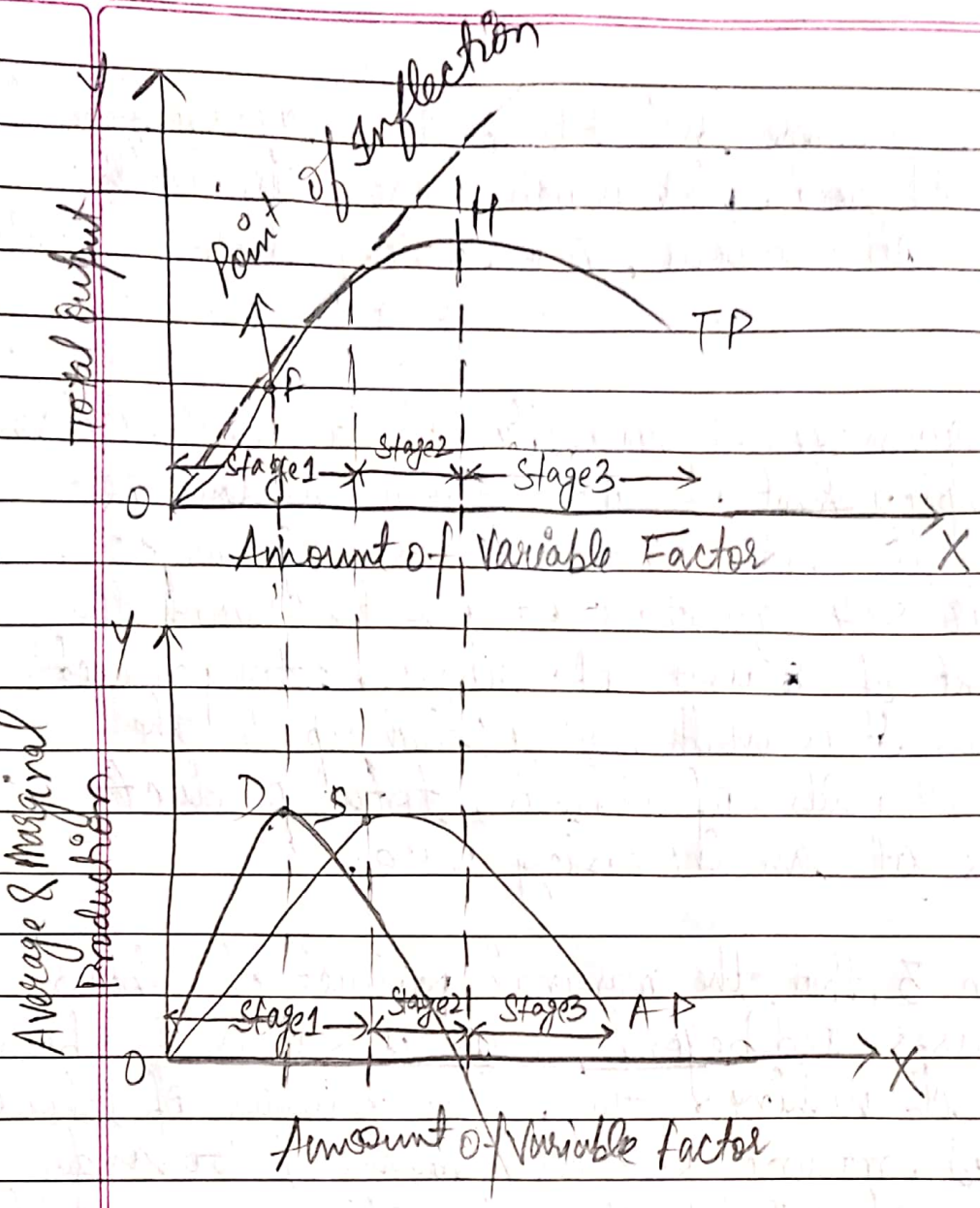
By table, assume that there is a given fixed amount of land, with which more units of the variable factor labour, is used to produce agricultural output.

With a given fixed quantity of land, as a farmer raises employement of labour from one unit to units 7, the total product increases from 80 quintals to 504 quintals of wheat. Beyond the employement of 8 unit of labour, total product diminishes. It is worth noting that up to the use of 3 units of labour, total product increases at an increasing rate.

In column 3, that the marginal product of labour initially rises and beyond the use of 3 units of labour, it starts diminishing. Thus, when 3 units of labour are employed, marginal product of labour is 100 and with the use of 4th & 5th units of labour marginal product of labour falls to 95 & 62 respectively. Beyond the use of eight units of labour, total product diminishes & therefore marginal product of labour becomes negative. As regards average product of labour, it rises upto the use of ~~fourth~~ 4th unit of labour & beyon that it is falling throughout.

Three stages of the law of variable proportions.
The behaviour of output when the varying quantity of one factor is combined with a fixed quantity of the other can be divided into 3 distinct stages.



This has been done in above figure. In this figure, on the X-axis the quantity of the variable factor is measured and on the Y-axis the total product, average product & marginal product are measured. Here the total product, average product & marginal product a variable factor change as a result of the increase in its quantity i.e., by increasing the quantity of one factor to a fixed quantity of the others will be seen from figure.

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Stage 1

In this stage, total product curve TP increases at an increasing rate up to a point. In figure, from the origin to the point F, slope of the total product curve TP is increasing, that is up to the point F, the total product increases at an increasing rate, ~~TP is concave upward upto the~~ (the total product curve is concave upward upto the point F), which means that the marginal product MP of the variable factor is rising.

From the point F onwards during the stage 1, the total product curve goes on rising but its slope is declining which means that from point F onwards the total product increases at a diminishing rate i.e., marginal product falls but it positive. The point F where the total product stops increasing at an increasing rate & starts increasing at the diminishing rate i.e., marginal product falls but is positive.

The point F where the total product stops increasing at an increasing rate & starts increasing at the diminishing rate is called the point of inflection, law of diminishing returns starts operating in stage 1 from point D on the MP curve or from OL amount of variable factor used.

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Thus, during stage 1, whereas marginal product curve of a variable factor rises in a part and then falls, the average product curve rises throughout.

Stage 2

The total product continues to increase at a diminish rate until it reaches its maximum point H where the second stage ends. In this stage both the marginal product and the average product of the variable factor are diminishing but remain positive. At the end of the second stage, that is, at point M marginal product of the variable factor is zero (corresponding to the highest point H of the total product curve TP).

Stage 3

In this stage, with the increase in the variable factor the total product declines and therefore the total product curve TP slopes downward. As a result, marginal product curve MP goes below the X-axis. In this stage the variable factor is too much relative to the fixed factor. This stage is called the stage of negative returns. It may be noted that stage 1 and stage 3 are completely symmetrical. In stage I the fixed factor is too much relative to the variable factor. Therefore in stage 1, marginal product of the fixed factor is negative. In stage III variable factor is too much relative to fixed factor. Therefore in this stage marginal product of variable factor is negative.