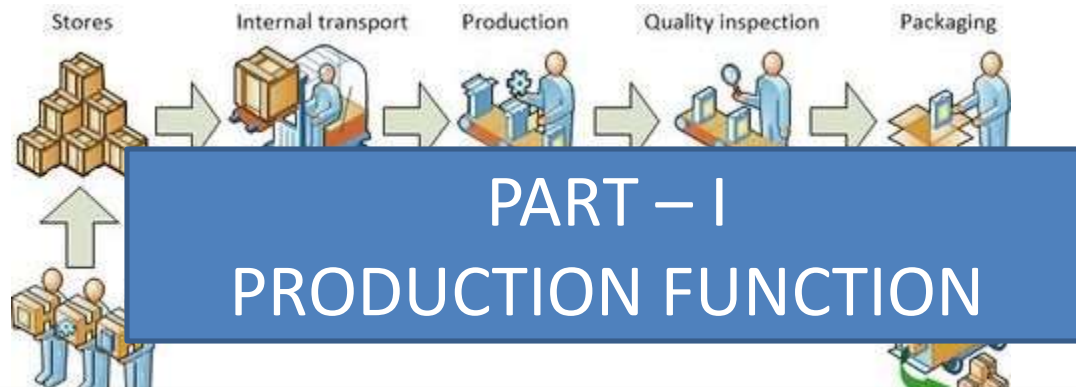


PRODUCER BEHAVIOUR



BY- NIRBHAY JHA, WPS

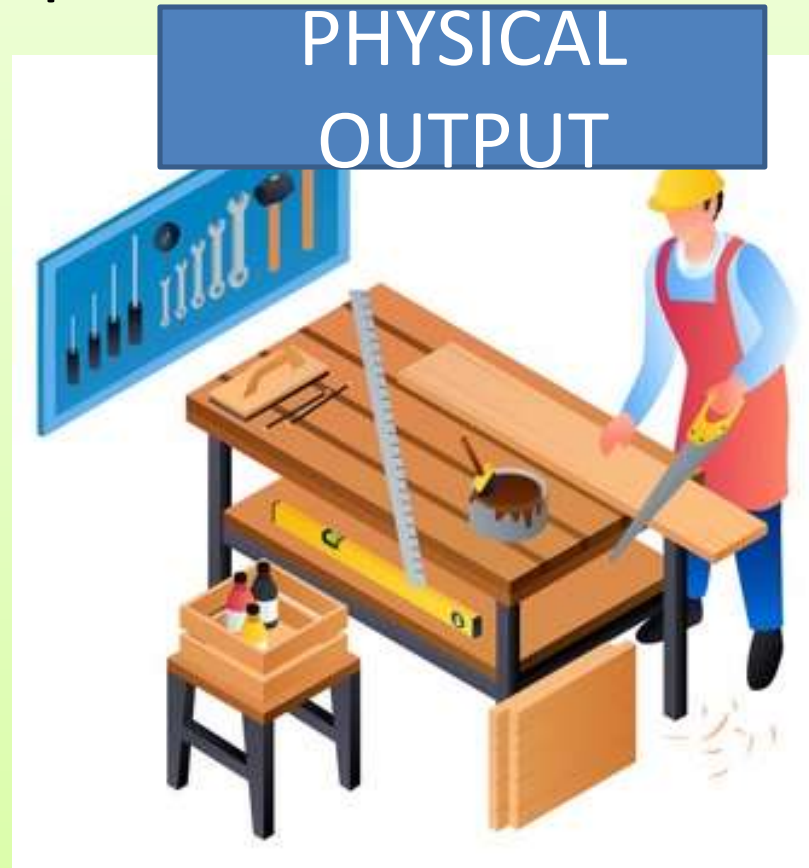
PRODUCTION

- Production is the creation of value.
- It is a process in which physical inputs are transformed into physical output.

PHYSICAL INPUT



PHYSICAL
OUTPUT



PRODUCTION FUNCTION

It is the functional relationship between physical inputs and output.

It can be expressed as:

$$Q = f(\text{Land, Labour, Capital and Organisation})$$

$Q \longrightarrow$ Output

Land, Labour, Capital and Organisation are inputs

FACTORS OF PRODUCTION

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graph TD; A[FACTORS OF PRODUCTION] -- blue arrow --> B[VARIABLE FACTORS]; A -- orange arrow --> C[FIXED FACTORS]; B -- orange arrow --> D[Factors that can be changed in the short run. Ex: Labour and Raw materials]; C -- blue arrow --> E[Factors that cannot be changed in the short run. Ex: Factory building and machines];
```

VARIABLE FACTORS

Factors that can be changed in the short run.

Ex: Labour and Raw materials

FIXED FACTORS

Factors that cannot be changed in the short run.

Ex: Factory building and machines

SHORT RUN

- Short Run is a period in which a producer can change his output only by changing variable factors of production such as labour and raw materials.
- Fixed factors such as factory building and machines cannot be changed in the short run.

LONG RUN

- Long Run is a period in which output can be changed by changing the quantity of all factors of production.
- All factors are variable in the long run

TYPES OF PRODUCTION FUNCTION

SHORT RUN
PRODUCTION
FUNCTION

LONG RUN
PRODUCTION
FUNCTION

SHORT RUN PRODUCTION FUNCTION

- It deals with effect on output due to change in variable factors. Fixed factors are kept constant.
- Law of Variable Proportions(Law of Returns to a Factor) explain the short run production function.

LONG RUN PRODUCTION FUNCTION

- It deals with effect on output due to change in all the factors of production.
- All factors are variable in the long run
- Law of Returns to Scale explains the Long Run Production Function.

TOTAL PHYSICAL PRODUCT (TPP OR TP)

Total Physical Product is the total quantity of a good produced by a firm by employing all the units of a variable factor.

$$TP_n = MP_1 + MP_2 + MP_3 + \dots + MP_n$$

OR

$$TP = \sum MP$$

MP  Marginal Product

MARGINAL PHYSICAL PRODUCT (MPP OR MP)

- Marginal product is the addition to total product when the firm employs one more unit of a variable factor.

$$MP_n = TP_n - TP_{n-1}$$

OR

$$MP = \frac{\Delta TP}{\Delta Q}$$

Q  Number of units of a variable factor

AVERAGE PRODUCT

- It is the output per unit of a variable factor.
- It can be calculated by dividing the total product with the number of units of the variable factor used.
- $$AP = \frac{\textit{Total Product (TP)}}{\textit{Number of Units of the variable factor used}(Q)}$$

- LAW OF VARIABLE PROPORTIONS(LAW OF RETURNS TO A FACTOR)
- Other things remaining the same, when a firm employs more and more units of a variable factor, keeping the other factors constant,
- initially total product increases at an increasing rate(Marginal Product increases);
- Later the total product increases at a diminishing rate(Marginal Product falls but remain positive) and
- finally Total Product falls(Marginal Product becomes negative).

• Schedule:

LAND	LABOUR	MARGINAL PRODUCT	TOTAL PRODUCT	
1	1	20	20	INCREASING RETURNS
1	2	30	50	
1	3	40	90	
1	4	30	120	DIMINISHING RETURNS
1	5	20	140	
1	6	0	140	NEGATIVE RETURNS
1	7	(-) 10	130	

• **DIAGRAM**

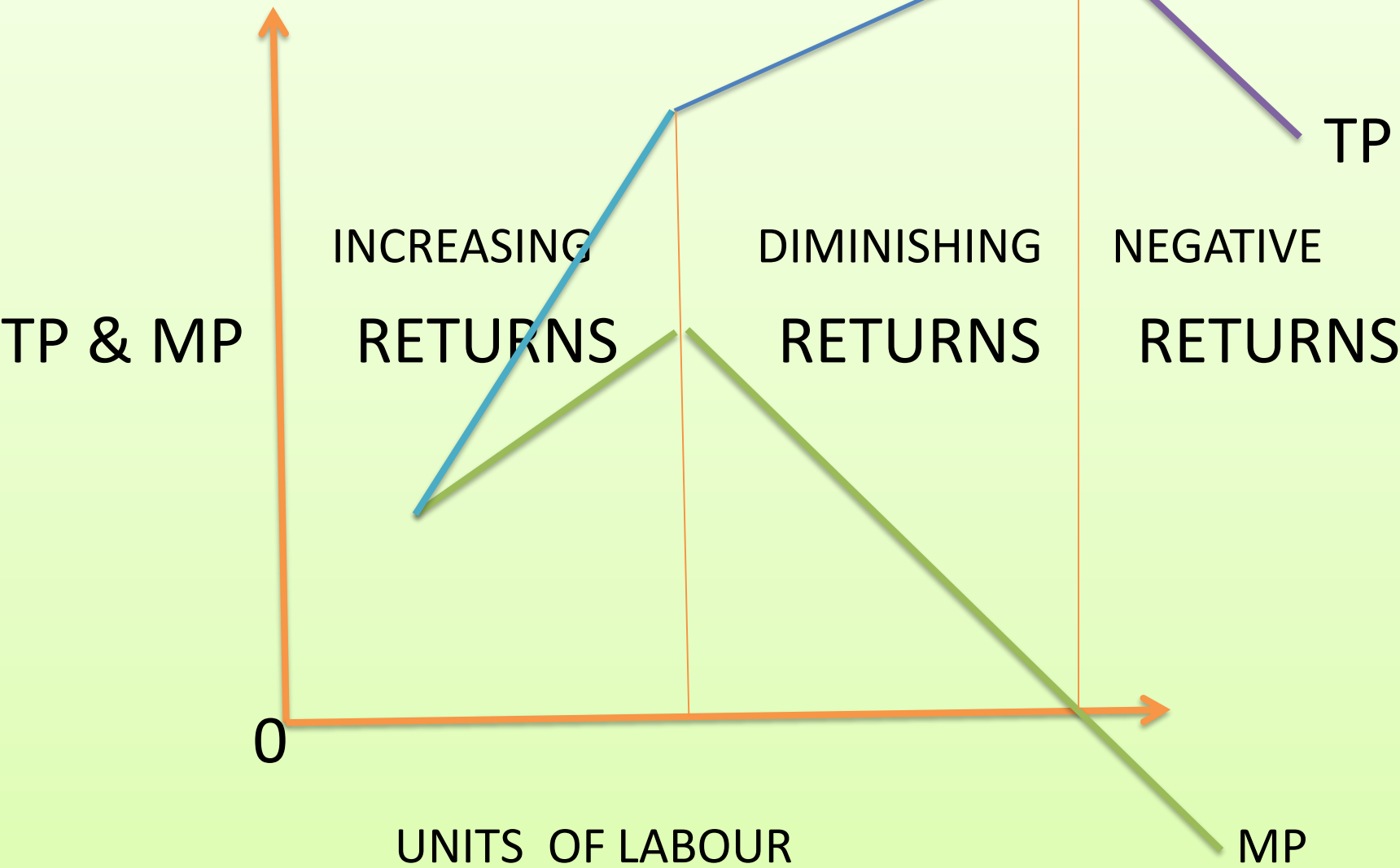
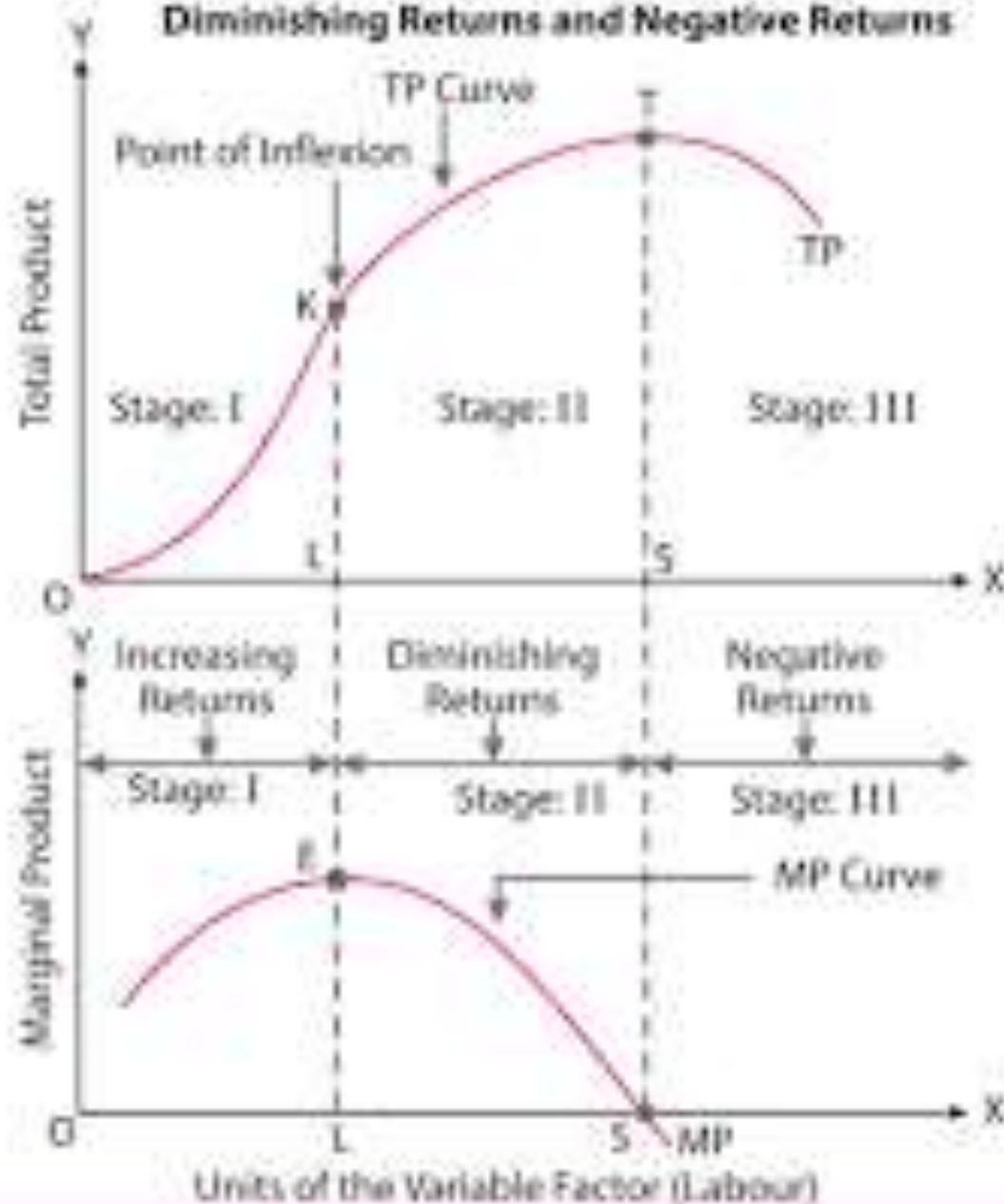


FIGURE 2

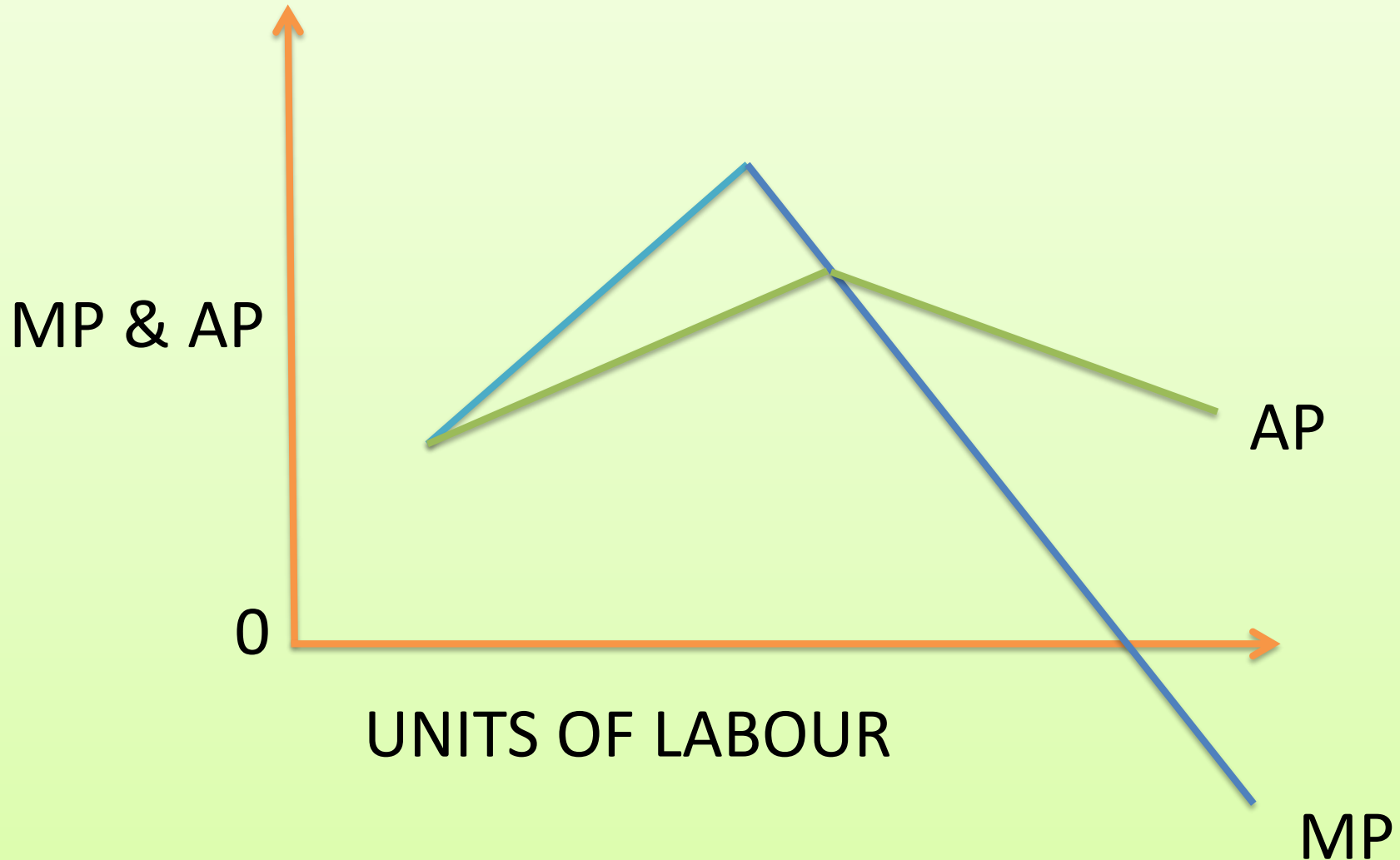
Law of Variable Proportions—Increasing Returns, Diminishing Returns and Negative Returns



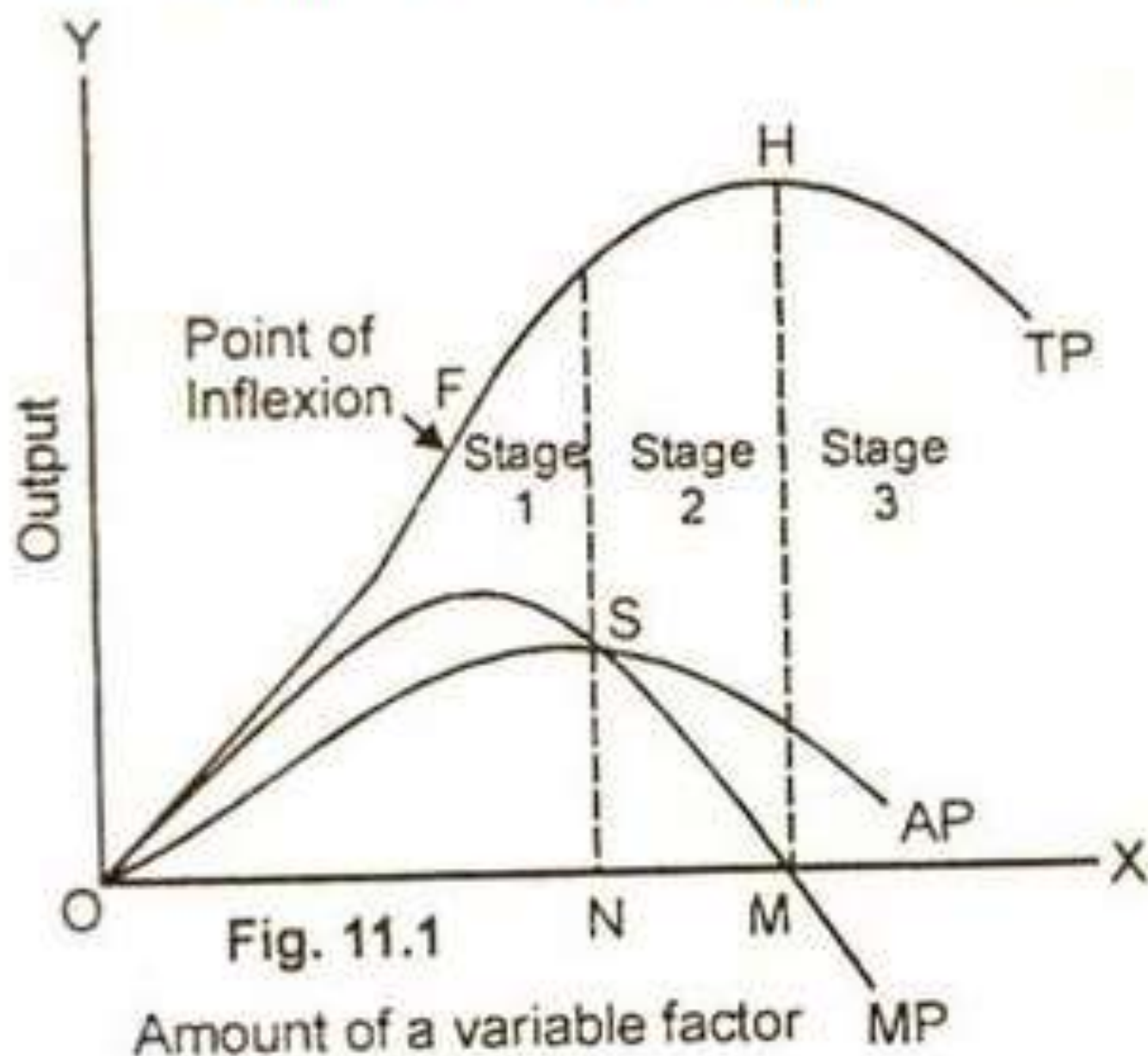
- RELATIONSHIP BETWEEN TOTAL PRODUCT AND MARGINAL PRODUCT

- When Marginal Product increases, Total Product increases at an increasing rate.
- When Marginal Product falls but remains positive, Total Product increases at a diminishing rate.
- When Marginal Product is zero, Total Product is maximum.
- When Marginal Product is negative, Total Product falls.

RELATIONSHIP BETWEEN MARGINAL PRODUCT AND AVERAGE PRODUCT



Diagrammatic Representation of Law.



- When MP is greater than AP , AP rises.
- When MP is less than AP, AP falls.
- AP is maximum when MP and AP are equal.
- MP can be zero or negative. AP can never be zero or negative.

REASONS BEHIND THE LAW OF VARIABLE PROPORTIONS

- REASONS BEHIND INCREASING RETURNS
- When the quantity of variable factor is increased, the unused fixed factors will come under use. This may lead to increase in Marginal Product.
- When the variable factor is increased the ratio between factors of production may become more technologically efficient.
- Some fixed factors are indivisible. When the variable factors are increased, those fixed factors can be used to their full capacity. This will lead to increase in Marginal Product.

- REASONS BEHIND THE DIMINISHING AND NEGATIVE RETURNS
- Once the firm has completely used all its fixed factors, a further increase in variable factor will lead to fall in Marginal Product.
- When the firm keep on increasing the variable factor, the ratio between factors of production may become technologically inefficient.
- Variable factors cannot substitute fixed factors. For example labour cannot be used as a substitute for land. So, increase in variable factor keeping the fixed factors constant may lead to fall in Marginal Product.

THANK
YOU

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