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Ans 1 b) Microeconomics and macroeconomics are two fields of study involving looking at behaviour in certain area of the economy over a period of time.

Microeconomics is specific and smaller in scale, looking at the behaviour of consumers, the supply and demand equation in individual markets, and the hiring and wages-setting practices of individual companies.

Microeconomics is a branch of economics that studies the behaviour of individuals and firms in making decisions regarding the allocation of scarce resources and the interactions among these individuals and firms.

One goal of microeconomics is to analyze the market mechanisms that establish relative prices among goods and services and allocate limited resources among alternative uses. Microeconomics shows conditions under which free markets lead to desirable allocations. It also analyzes market failure, where markets fail to produce efficient results.

Microeconomics focuses on how individual consumers and firms make decisions; these individuals can be a single person, a household, a business organization or a government agency. Analyzing certain aspects of human behaviour, microeconomics tries to explain they respond to changes in price and why they demand what they do at particular price levels.

Microeconomics tries to explain how and why different goods are valued differently, how individuals make financial decisions, and how individuals best trade, coordinate and cooperate with one another.

Microeconomics' topics range from the dynamics of supply and demand to the efficiency and costs associated with producing goods and services; they also include how labour is divided and allocated, uncertainty, risk.

Macroeconomics

Macroeconomics is a branch of economics that studies how an overall economy - the market systems that operate on a large scale - behaves.

Macroeconomics studies economy-wide phenomena such as inflation, price levels, rate of economic growth, national income, gross domestic product (GDP), and changes in unemployment.

Macroeconomics analyzes all aggregate indicators and the microeconomic factors that influence the economy.

Government and corporations use macroeconomic models to help in formulating of economic policies and strategies.

Ques 1 e) Opportunity Cost

The loss of potential gain from other alternatives when one alternative is chosen. It is a key concept in economics and has been described as expressing "the basic relationship between scarcity and choice".

The opportunity cost of any good is the next best alternative foregone.

The ~~opposite~~ opportunity cost of producing a good is not any other alternative good that could be produced with the same factors, it is only the most valuable other good which the same factors could produce.

Examples of opportunity cost:

- i) If you were not attending college, you could earn ₹ 20000 per year. So, your opportunity cost of attending college for one year is ₹ 20000.
- ii) Spending on new roads: If the government builds a new road, then that money can't be used for alternative spending plans, such as education and healthcare.
- iii) A company invests cash reserves internally for return of 10%, could have invested externally for 12%. For this opportunity cost is 12%.

Ans 2(a) Economics

It is the study of how people allocate scarce resources for production, distribution and consumption both individually and collectively.

It studies how individuals, businesses, governments and nations make choices about how to allocate resources.

It concerned with the study of economic problem that arises because human wants are unlimited and resources to satisfy those wants are not only scarce but they have alternative uses.

Economics focuses on the four factor of production i.e., land, labour, capital and entrepreneur. These include any resources needed for the creation of good or services.

Micro Economics

1. It is that branch of economics which deals with the economic decision making of individual economic agents such as producer, the consumer, etc.
2. It deals with the process of price determination in case of individual products and factors of production.
3. It is concerned with the optimization goals of individual consumers and producers.
4. It takes into account small components of the whole economy.
5. It is known as price theory.

Macro Economics

1. It is that branch of economics which deals with aggregates and averages of the entire economy.
Eg: aggregate output, national income, etc.
2. It deals with general price level in any economy.
3. It is concerned with the optimization of the growth process of the entire economy.
4. It takes into consideration the economy of the country as whole.
5. It is also known as income theory.

Ans 3a) The Law of Variable Proportions

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 a variable factor is increased, keeping other factors constant, how output changes is the concern of this law. Suppose land, plant and equipment are the fixed factors and labor the variable factor.

When the no. of labourers is increased successively to have larger output, the proportion b/w fixed and 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.

The law of variable proportions (or the law of non-proportional returns) is also known as the law of diminishing returns. But, as we shall see below, the law of diminishing returns is only one phase of the more comprehensive law of variable proportions.

The law of diminishing returns is based on the following assumptions:

- 1) Only one factor is variable while others are held constant.
- 2) All units of the variable factor are homogeneous.
- 3) There is no change in technology.
- 4) It is possible to vary the proportions in which different inputs are combined.
- 5) It assumes a short-run situation, for in the long-run all factors are variable.

Units of Labour	Total Product (Quintals)	Marginal Product (Quintals)	Average Product (Quintals)
L	Q	$\frac{\Delta Q}{\Delta L}$	$\frac{Q}{L}$
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 : Returns to Labour

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

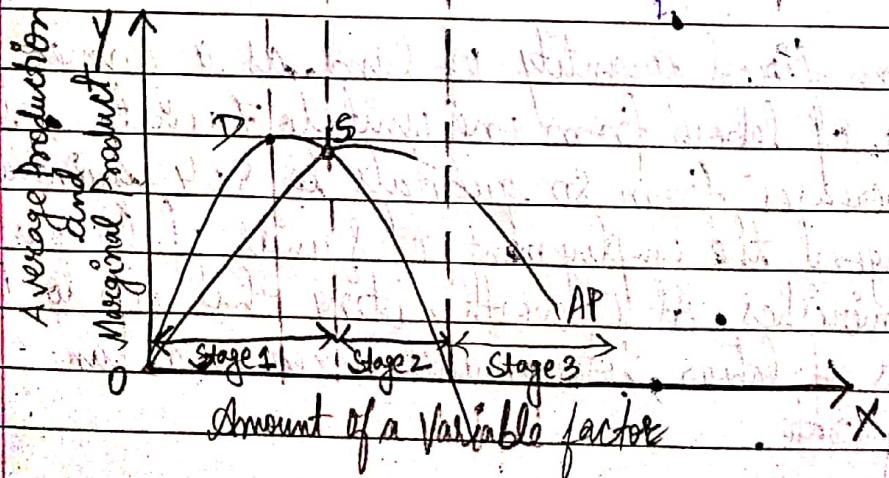
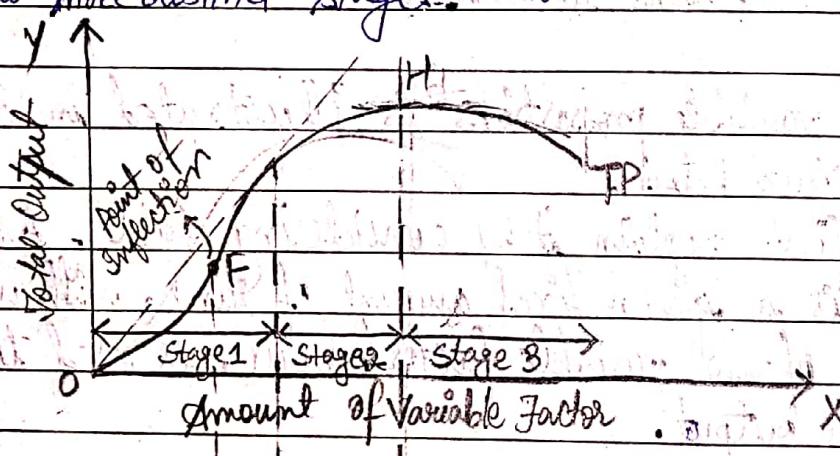
We shall first explain it by considering table. Assume that there is a given fixed amount of land, with which more units of the variable factor labour, is used to produce agricultural output.

With a given fixed quantity of land, as a farmer raises employment of labour from one unit to 7 units, the total product increases from 80 quintals to 504 quintals of wheat. Beyond the employment of 8 units 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 and 5th units of labour marginal product of labour falls to 98 and 62 respectively. Beyond the use of eight units of labour, total product diminishes and therefore marginal product of labour becomes negative. As regards average product of labour, it rises upto the use of fourth unit of labour and beyond 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 three 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 and marginal product are measured. How the total product, average product & marginal product, a variable factor change as a result of the increase in its quantity, that is, by increasing the quantity of one factor to a fixed quantity of the others will be seen from figure.

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 (the total product curve TP 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 is positive.

The point F where the total product stops increasing at an increasing rate and 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 and 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 0L amount of the variable factor used.

Thus, during Stage I, 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 diminishing 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 I and Stage III are completely symmetrical. In Stage I the fixed factor is too much relative to the variable factor. Therefore in Stage I, 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.