

Isoquant

★ Meaning

An isoquant is a firm's counterpart of the consumer's indifference curve. An isoquant is a curve that shows all the combination of inputs that yield the same level of output. The term Iso-quant or Iso-product is composed of two words; 'Iso' means Equal and 'quant' means quantity. Therefore, an isoquant represents a constant quantity of output. The isoquant curve is also known as an "Equal Product curve" or "Production Indifference curve" or "Iso-Product curve."

★ Definition:

★ Isoquant Schedule:

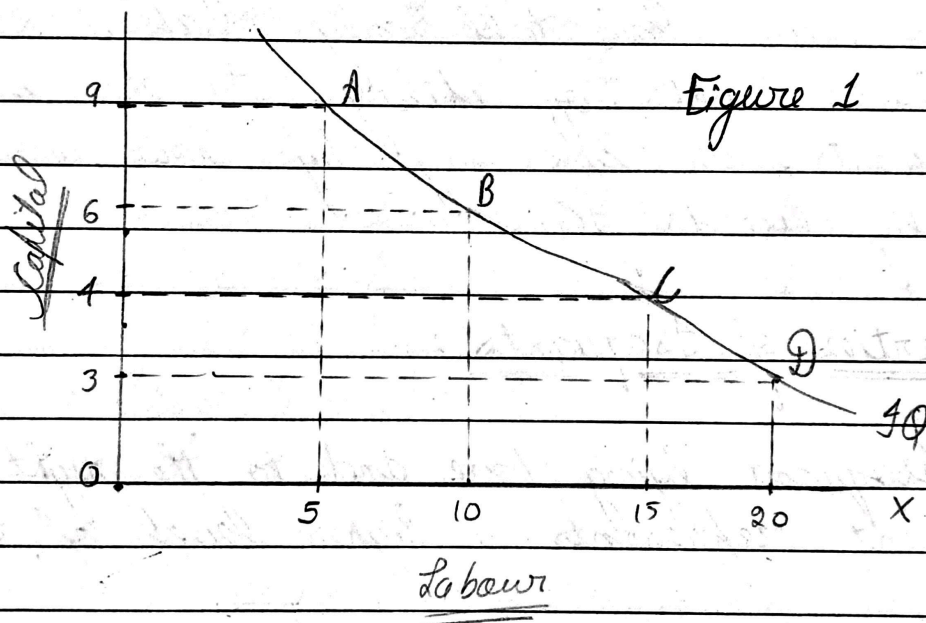
Table 1:

Combination of Labour and Capital	Unit of Labour (L)	Unit of Capital (K)	Output of Cloth (meters)
A	5	9	100
B	10	6	100
C	15	4	100
D	20	3	100

The above table is based on the assumption that only two factors of production, namely, Labor and Capital are used for producing 100 meters of cloth.

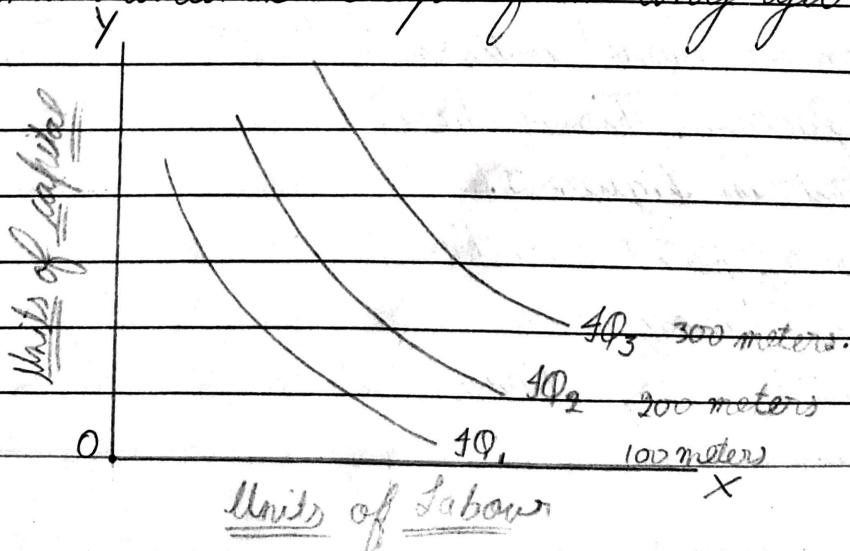
- Combination A = $5L + 9K = 100$ meters of cloth
- Combination B = $10L + 6K = 100$ meters of cloth
- Combination C = $15L + 4K = 100$ meters of cloth
- Combination D = $20L + 3K = 100$ meters of cloth

The combinations A, B, C and D show the possibility of producing 100 meters of cloth by applying various combinations of labour and capital. Thus, an isoquant schedule is a schedule of different combinations of factors of production yielding the same quantity of output.



★ Isoquant Map:

An isoquant map is a set of isoquants that shows the maximum attainable output from any given combination inputs.



* Isoquants v/s Indifference Curves

An isoquant is 'analogous' to an indifference curve in more than one way. The properties of isoquants are similar to the properties of indifference curves. However, some of the differences may also be noted.

Firstly, in the indifference curve technique, utility can't be measured. In the case of an isoquant, the product can be precisely measured in physical units.

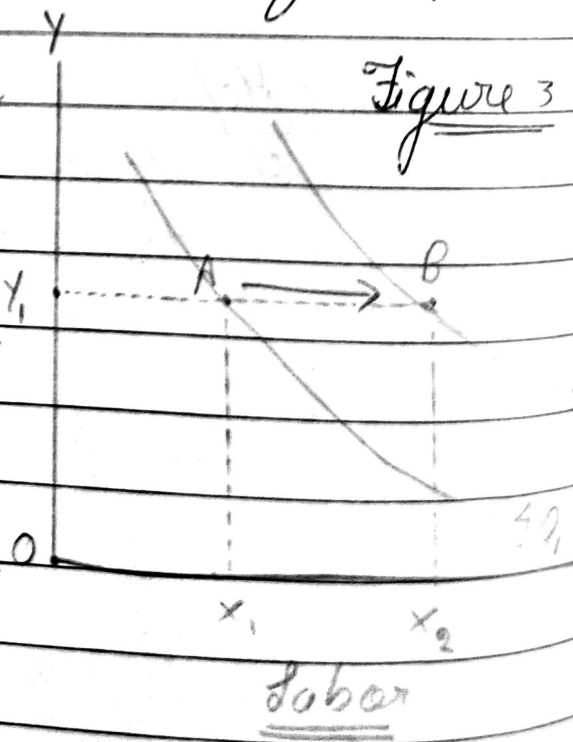
Secondly, in the case of indifference curves, we can talk only about higher or lower levels of utility. In the case of isoquants, we can say by how much Q_2 actually exceeds Q_1 .

* Properties of Isoquants:

1. An Isoquant lying above and to the right of another isoquant represents a higher level of output.

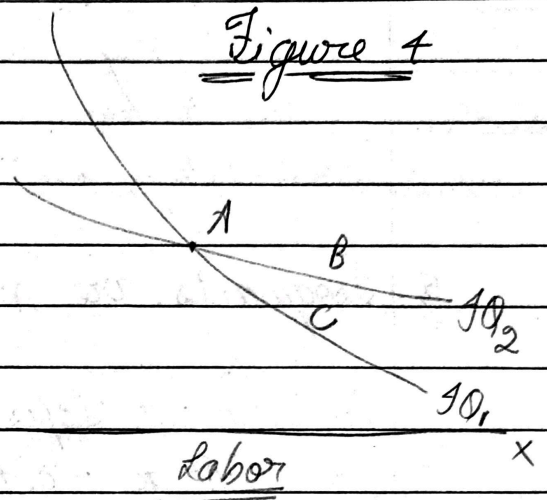
This is because of the fact that on the higher isoquant, we have either more units of one factor of production or more units of both the factor. This has been illustrated in figure 3.

In figure 3, point A and B lie on the isoquant Q_1 and Q_2 respectively.



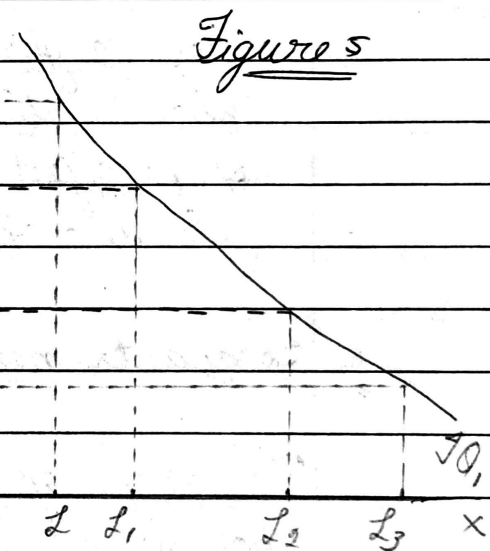
2. Two Isoquants can't cut each other.

Just as two indifference curves can't cut each other, two isoquants also can't cut each other. If they intersect each other, there would be a contradiction and we will get inconsistent results. This can be illustrated with the help of a diagram as in figure 4.



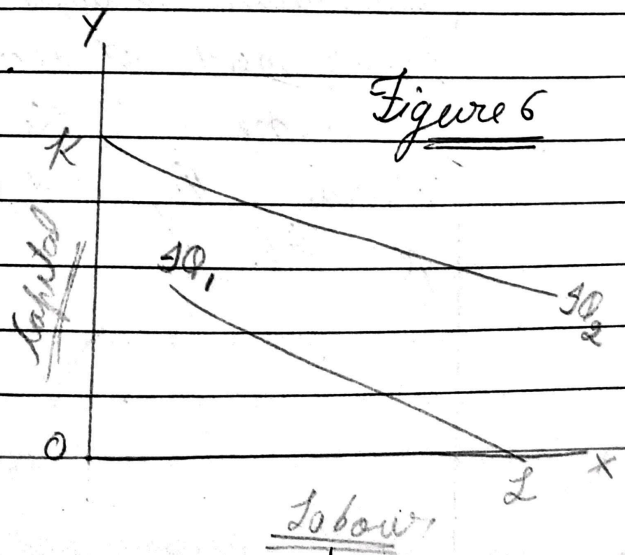
3. Isoquants are convex to the origin.

An isoquant must always be convex to the origin. This is because of the operation of the principle of diminishing marginal rate of technical substitution. MRTS is the rate at which marginal unit of an input can be substituted for another input making the level of output remain the same.



4. No isoquant can touch either axis.

If an isoquant touches the X-axis it would mean that the commodity can be produced with 01 units of Labour and without any unit of capital.



Point k on the Y -axis implies that the commodity can be produced with OK unit of capital and without any unit of labour. However, this is wrong because the firm can't produce a commodity with one factor alone.

5. Isoquants are negatively sloped.

An isoquant slopes downwards from left to right. The logic behind this is the principle of diminishing marginal rate of technical substitution. In order to maintain a given output, a reduction in the use of one input must be offset by an increase in the use of another input.

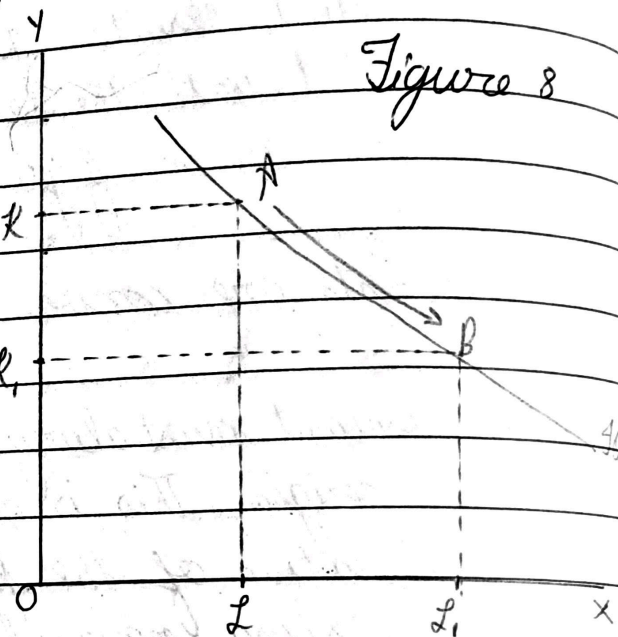


Figure 8

6. Isoquants need not be parallel.

The shape of an isoquant depends upon the marginal rate of technical substitution. Since the rate of substitution between two factors need not necessarily be the same in all the isoquant schedules, they need not be parallel.

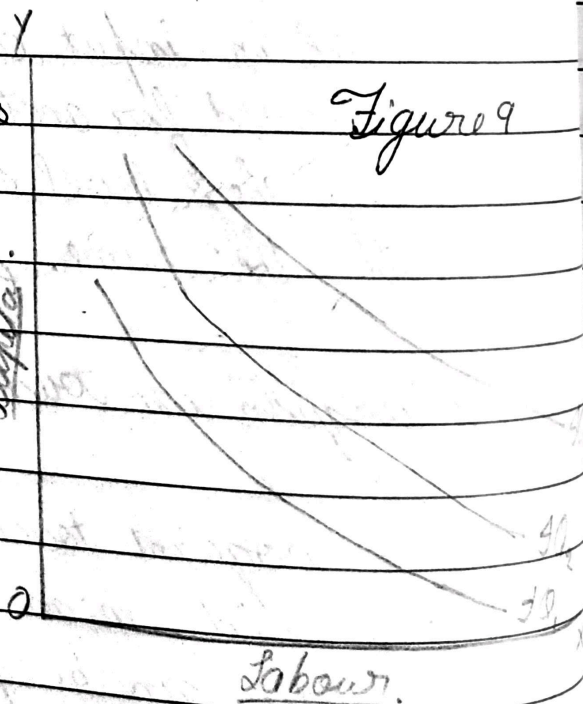


Figure 9