ISOQUANTS

- Production function with two variable inputs or equal product curves

- According to Ferguson, " An isoquant is a curve showing all possible combinations of inputs physically capable of producing a given level of output"

- An isoquant represents all those combinations of inputs which are capable of producing the same level of output

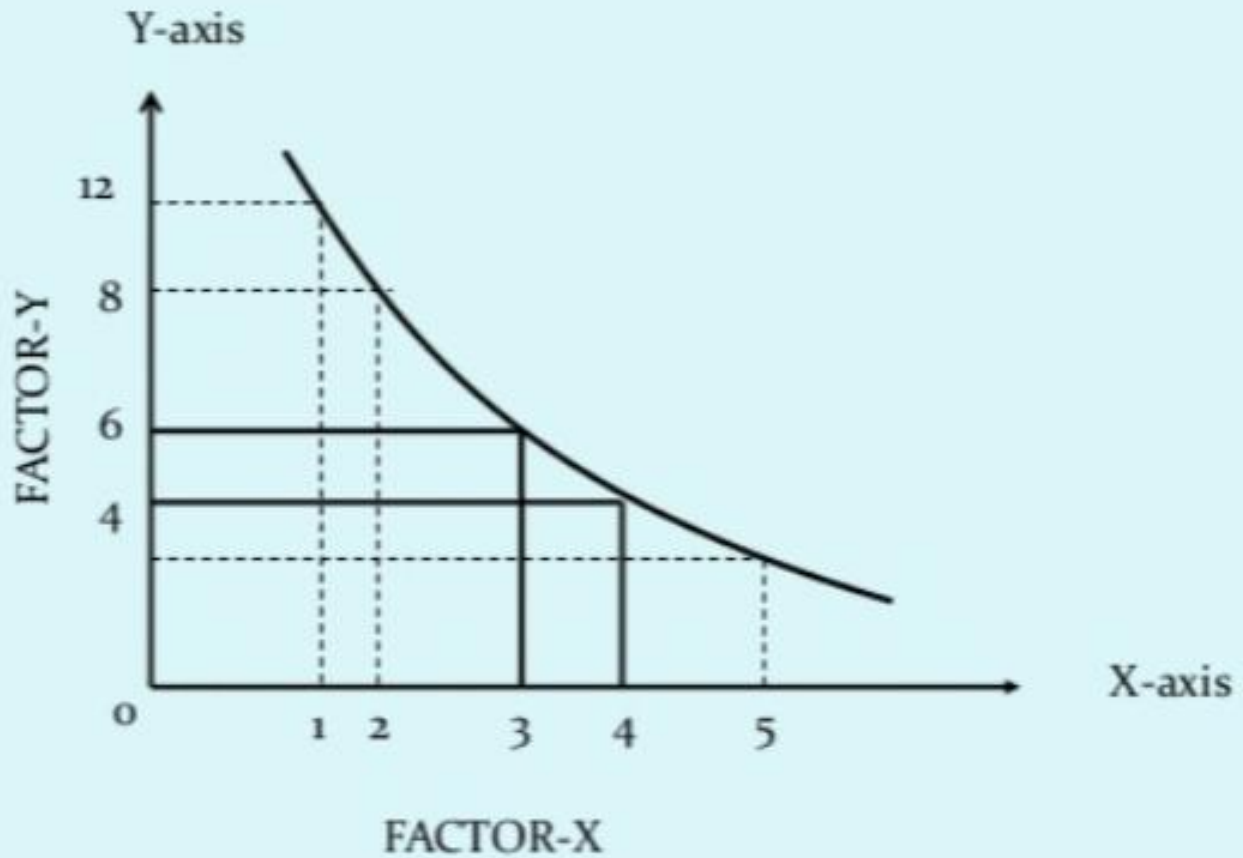
- An isoquant is also known as Production-Indifference curve

Various combination of X and Y to produce a given level of output

Factor Combination	Factor X	Factor Y
A	1	12
B	2	08
C	3	05
D	4	03
E	5	02

Each of the factor combinations A,B,C,D and E represents the same level of production
Say 100 units.

When we plot them, we get a isoquant curve :



ISOQUANT CURVE

Assumptions of Isoquants

- Only two factors or inputs of production
- Factors of production are divisible into small units and used in various proportions
- Technical conditions of production are not possible to change at any point of time
- Different factors of production are used in a most efficient way

Types of Isoquant

- **Linear Isoquant**
- **Right – angle Isoquant**
- **Convex Isoquant**

Linear Isoquant

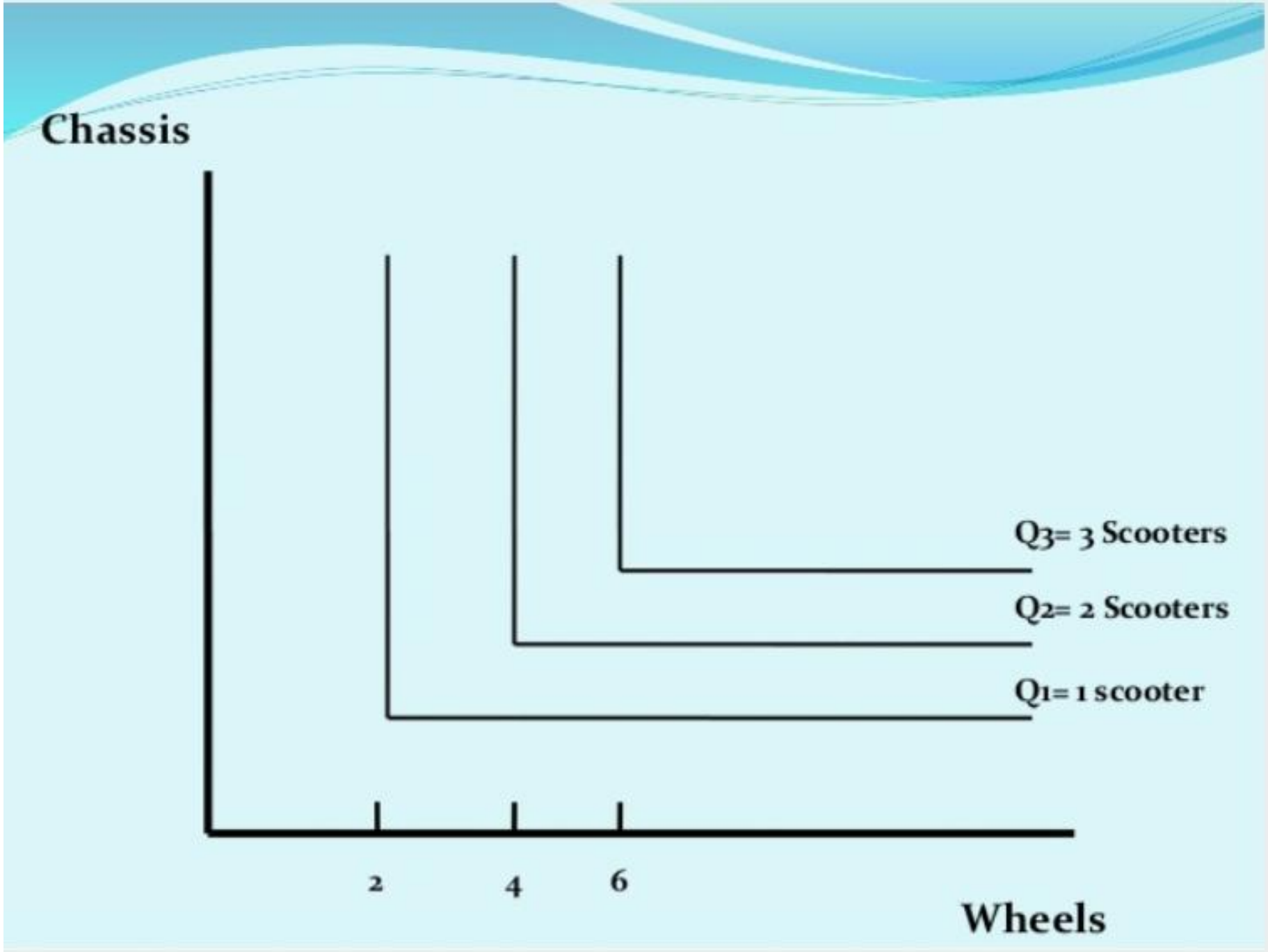
In Linear Isoquant there is perfect subtituability of Inputs

For Example – 100 units can be produced by using only capital or labour or by number of combination of both capital and labour , say 1 unit of labour and 5 units of capital ,or 2 units of labour and 3 units of capital or various amount of electric power can be produced by burning gas only . Oil and gas are prefect substitute here.

Hence , the Isoquants are straight lines.

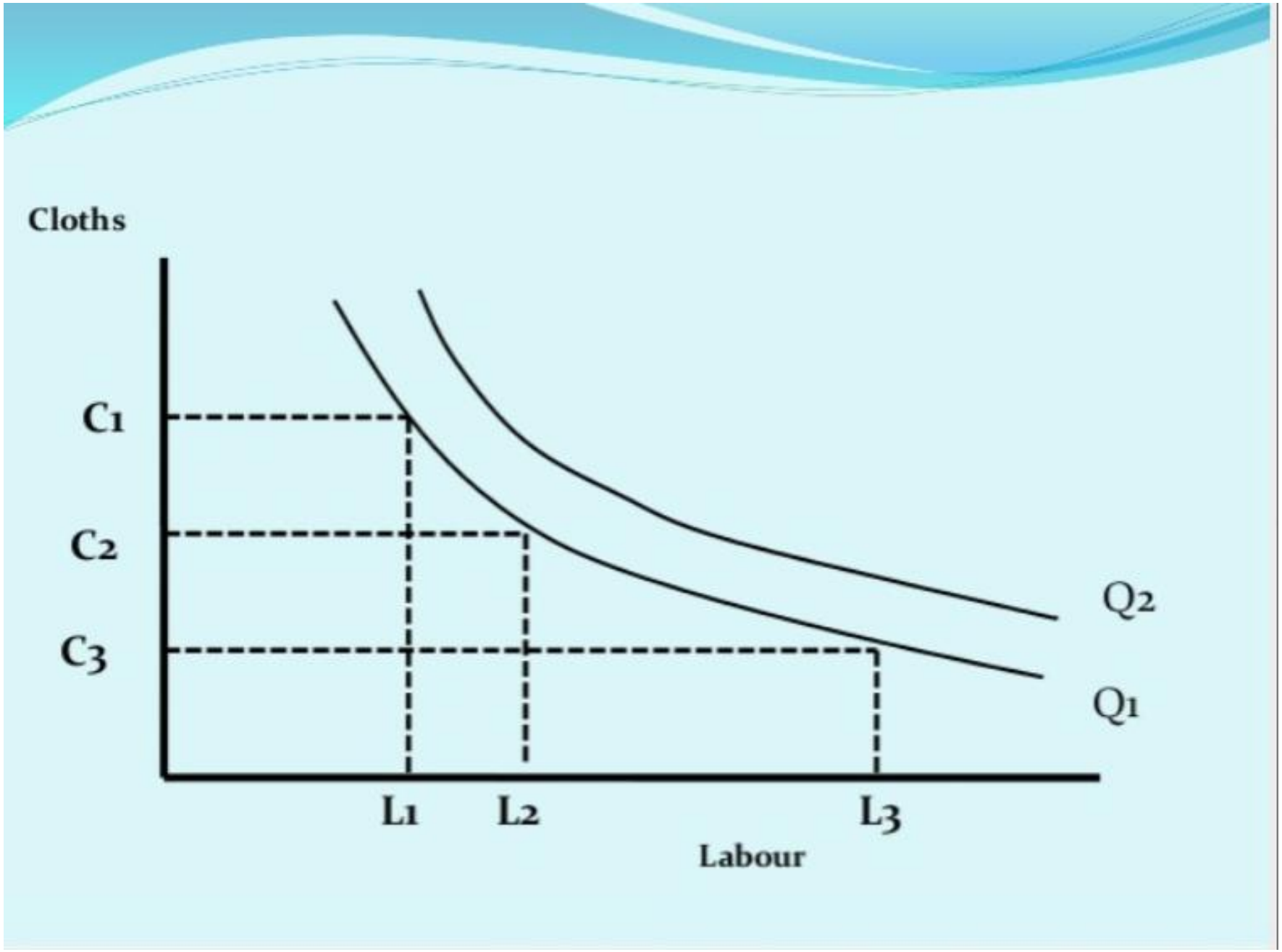
Right – Angle Isoquant

There is complete non – substituability between the inputs


Chassis
Q3= 3 Scooters
Q2= 2 Scooters
Q1= 1 scooter
2
4
6
Wheels

Convex Isoquant

Convex Isoquant assumes substituability of inputs but the substiuability is not perfect


Cloths
C1
C2
C3
Q2
Q1
L1
L2
L3
Labour

Properties of Iso quants

- **Isoquants are Negatively Sloped :** They normally slope from left to right means they are negatively sloped . The reason is when the quantity of one factor is reduced , the same level of output can be achieved only when the quantity of other is increased
- **Higher Isoquants Represents Larger Output** :

Higher isoquant is one that is further from he point of origin. It represents a larger output hat is obtained by using either same amount of one factor and the greater amount of both the factors

- **No Two Isoquants Intersect or Touch each other :** Isoquant do no intersect or touch each other because they represent different level of output

- **Isoquants are convex to the origin :** In most production processes the factors of production have substituability. Labour can be substituted for capital and ice versa .

however the rate at which one factor is substituted for the other in production process i.e marginal rate of technical substitution (MRTS) also tends to fall

SIGHIFICANCE OF ISOQUANT CURVE IN COST ANALYSIS

1. THE ISO-QUANT CURVE HELPS FIRMS ADJUST THEIR INPUT AGAINST THEIR OUTPUT
THE IS A METHOD USED IN MICROECONOMICS TP MEASURE THE INFLUENCE OF INPUT
ON PRODUCATION LEVELS AND OUTPUT POSSIBILITIES.

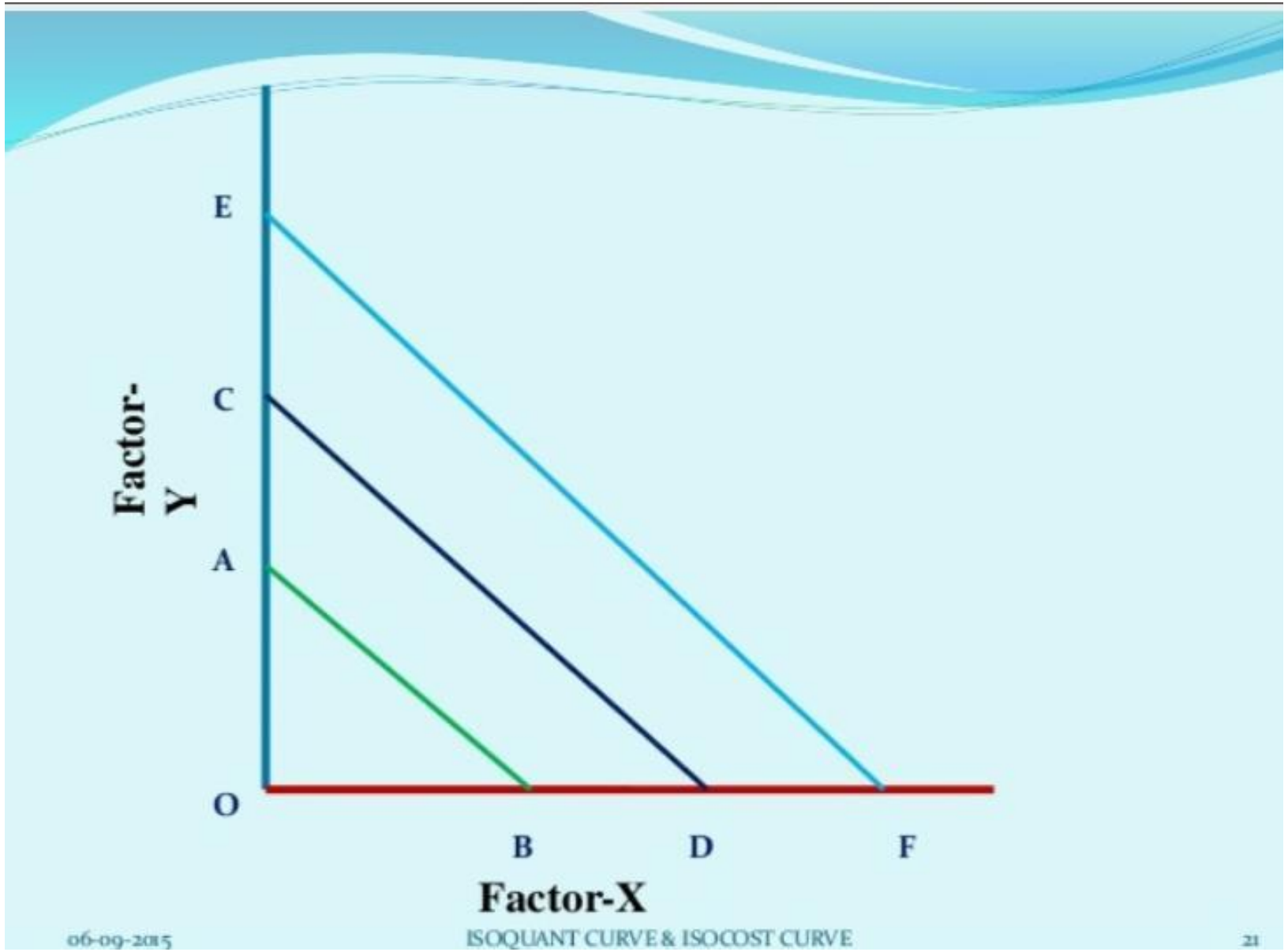
2. THE ISO-QUANT CURVE LINE IS AN IMPORTANT COMPONENT FOR ANALYSING PRODUCER
BEHAVIOUR. THE ISO-COST LINE ILLUSTRATES ALL THE POSSIBLE COMBIMATION OF TWO
FACTOR THAT CAN BE USED AT GIVEN COSTS AND FOR A GIVEN PRODUCER'S BUDGET

ISO-COST / EQUAL-COST LINE :-

Iso-Cost line represent the price of the factor. It shows various combination of two factors which the firm can buy with, given outlay.

Suppose a firm has Rs.1000 to spend on the two factors X and Y.

If the price of factor X is Rs.10 and that of Y is Rs.20, the firm can spend its outlay on X and Y or it can spend the entire outlay on Y and buy 50 units of it with zero units of Y or it can spend the entire outlay on Y and buy 50 units of it with zero units of X factor. In between, it can have any combination of X and Y.


E
C
A
O
Factor-
Y
B
D
F
Factor-X

One can show iso-cost line diagrammatically also. The X-axis shows the units of factor X and Y-axis the units of factor Y. when entire Rs.1000 are spend on factor X we get OB and when entire amount is spent on factor Y we get OA. The straight line AB which joins point A and B will pass through all combinations of factors X and Y which the firms can buy with outlay of Rs.1000. The line AB is called **Iso-cost line .**