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Ch: Consumer Equilibrium

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Consumer Equilibrium

Equilibrium - best optimum / saturation situation where every economic agent wants to stay.

1) Minimum expenditure
2) Maximum satisfaction
} for consumer

1) Minimise cost of production
2) Maximization of profit
} for producer

Satisfaction — Utility (in economics)

(*) want satisfying power of a commodity is known as its utility

the amount of satisfaction (OR) derived from consuming a commodity.

Q. What is utility?

concept of utility first given by Sir Alfred Marshall
↳ cardinal economist
(utility of stisfaction can be measured)
↓
Measured by cardinal numbers

UTILITY (quite scientific in nature)

Cardinal view	Ordinal view
↓	↓
Alfred Marshall	J.R. Hicks (*)

'utils' - unit of measurement (by Sir Alfred Marshall)

(*) utility cannot be measured
" can be ranked according to preferential order

Q. Differentiate between cardinal and ordinal view of utility.

A.

Cardinal view	Ordinal view
1) It was given by Prof. Alfred Marshall	1) It was given by Prof. J.R. Hicks
2) Utility was considered to be measured.	2) Utility can never be measured but can be ranked according to preferential orders
3) It can be measured with the help of cardinal nos like 1,2,3... and have 'utils' as an unit of measure -ment.	3) It can be ranked according to preferential order like 1st, 2nd, 3rd... etc.

(of utility)
Measurement

TU (Total utility) ↓

The total amount of satisfaction derived by consuming all the units of a commodity is known as total utility. It is denoted as TU.

e.g. 6 rasgullas - 120 utils
↓ ↓
amount commodity
→ 7 rasgullas - 120 utils

MU (Marginal utility) ↓

Change in the total utility due to 1 unit additional consumption is known as Marginal utility.

$MU = \frac{\Delta TU}{\Delta Q} = \frac{\text{change in TU}}{\text{(change in consumption)}}$

e.g. 20 units (MU)

TU & MU (concept given by Sir Alfred Marshall)

$$MU = \frac{\Delta TU \text{ (change in TU)}}{\Delta Q \text{ (change in consumption)}}$$

Also,

$MU_n = TU_n - TU_{n-1}$

e.g. $MU_{2022} = TU_{2022} - TU_{2021}$

TU ↑ = MU ↓

TU (max) = MU = 0

TU ↓ = MU = (-ve)

(Given MU = Given TU − Previous TU)

Q. Find out the MUs from the given data.

Q	TU	MU	
0	0	0-0 = —	Law of diminishing MU ↓
1	8	8-0 = 8	
2	14	14-8 = 6	
3	18	18-14 = 4	
4	20	20-18 = 2	
5	20	20-20 = 0	MU = 0
6	18	18-20 = −2	MU = (-ve)

Q. State the relationship between TU and MU.

A. a) When TU rises, MU falls but remains +ve
b) When TU reaches its maximum, MU becomes 0. (zero)
c) When TU falls, MU becomes -ve.

represent (2 panel diagram)

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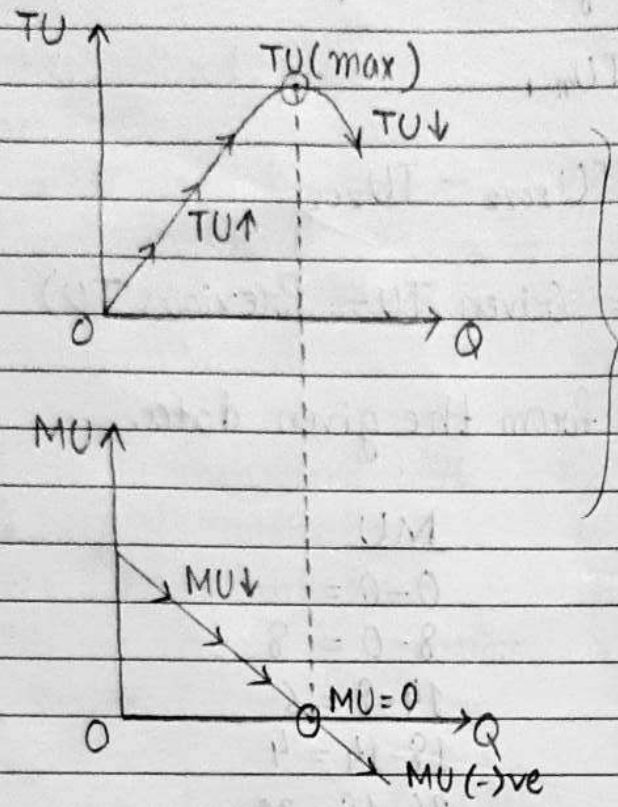
(TWO PANNEL DIAGRAM)



Q. State the law of diminishing MU.

A. The Law states that as more and more standard units of a commodity are consumed continuously, the marginal utility derived from every additional units falls, goes to zero and turns negative.

Consumer
↓
Equilibrium

Single commodity Case approach
(Assumption
Condition
Diagram
Explanation)

Double commodity case approach.
OR Equimarginal utility approach

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(Defination
Assumption
Condition
Diagram
Explanation)

~~Maximum utility~~

Q. Explain the consumer Equilibrium in a single commodity case.

-> Consumer equilibrium refers to a situation where a consumer gets maximum satisfaction out of his given income and he or she have no tendency to change his/her expenditure. It is assumed that he wants to maximise his satisfaction by minimum expenditure.

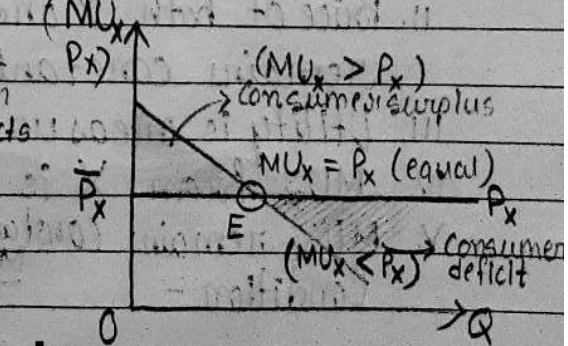
Assumption -

I. There is only one commodity produced and sold in the market. (Let that commodity be x.)
II. The consumer is assumed to be rational, who thinks about his own self interest.
III. We are assuming that utility here is measurable in terms of cardinal numbers such as 1, 2, 3... etc. (cardinal utility approach)
IV. MU of money (MU_m) remains constant for every consumer.
↓
MU of money refers to the net worth of satisfaction from a rupee coin.
V. Let the price of commodity be P_x which remains constant.

Condition -

I. $MU_x = P_x$

II. $\frac{MU_x}{P_x} = MU_m$ → Rupee worth of satisfaction that a consumer expects
$\frac{MU_x}{P_x}$ → actual satisfaction that a consumer by spending a price on it (reality)
net worth of satisfaction that a consumer actually gets



deficit (loss)

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(ii) $\frac{MU_x}{P_x} = MU_m$

Let us assume $MU_m = 2$

$P_x = 4$

hypothetical - arbitary / imaginary

hypothetical table →

Q	MU_x	$\frac{MU_x}{P_x}$
1	20	$20/4 = 5 \neq MU_m$
2	18	$18/4 = 4.5 \neq MU_m$
3	16	$16/4 = 4 \neq MU_m$
4	8	$8/4 = 2 = MU_m$

∴ The consumer have achieved equilibrium, where he have consumed 4 units of the commodity as he is getting the $\frac{MU_x}{P_x}$ to be equal to MU_m.

DOUBLE COMMODITY CASE APPROACH: (to achieve Equilibrium) (Equimarginal Utility Approach)

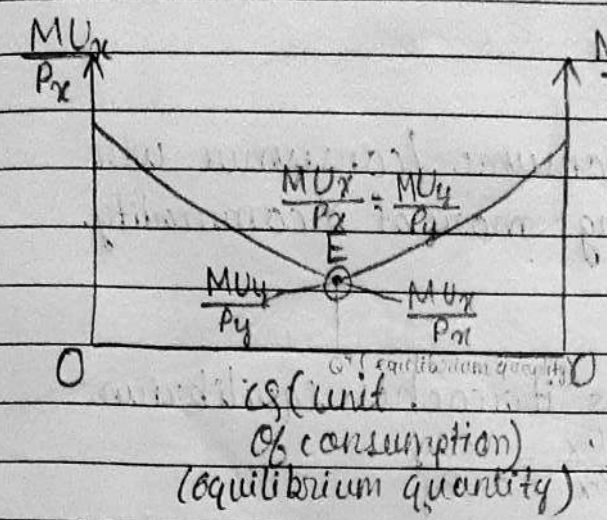
Q. Explain the Double Commodity Case Approach to achieve/ reach Equilibrium

→ (Defination of Consumer Equilibrium...)

Assumptions-

1. There are two commodities in the market, X and Y respectively.
2. Price of both X and Y are given as P_x and P_y that remains constant.
3. Utility is measured cardinally.
4. MU_x from X is denoted as MU_x and from Y as MU_y.
5. MU_m remains constant.

Condition - $\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU_m$



(not to be included)

e.g. Total income = ₹10

$\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU_m$

$\frac{20}{5} = \frac{16}{4} = 4$

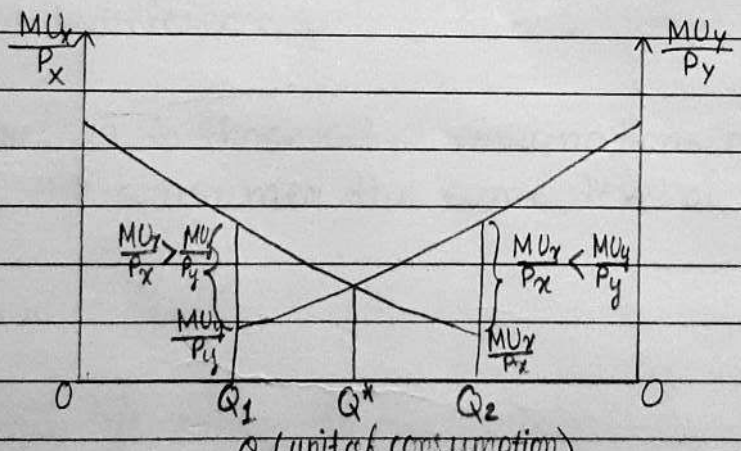
also, $MU_x = \frac{MU_x}{P_x}$

e.g. $100 = \frac{100}{1}$

From the above condition we can say that the rupee worth of marginal utility should be same across good X and Y, and it must be equal to the MU_m

It simply means that the rupee worth of MU derived from either commodities (X, Y) is exactly equal to the rupee ~~of~~ worth of satisfaction as expected by the consumer.

- Disequilibrium situations -



(I)

$\left[\frac{MU_x}{P_x} > \frac{MU_y}{P_y} \rightarrow \frac{MU_x}{P_x} = \frac{MU_y}{P_y}\right]$

If ~~when~~, $\frac{MU_x}{P_x} > \frac{MU_y}{P_y}$:-

The consumer will consume / consumer will start consuming more of X.

Thus, $MU_x \downarrow$ {until or unless it reaches equilibrium i.e. $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$}

↳ according to law of diminishing MU

(II) If $\frac{MU_x}{P_x} < \frac{MU_y}{P_y}$

The consumer will consume / consumer will start consuming more of Y commodity.

Thus $MU_y \downarrow$

Until or unless it reaches equilibrium

i.e. $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$