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CLASS XII ECONOMICS NOTES

CONSUMER's EQUILIBRIUM & DEMAND

Key Notes and Important Questions with Answers

UNIT II

CONSUMER'S EQUILIBRIUM & DEMAND

Points to Remember

❖ **Consumer's Equilibrium**

- **Consumer :** A consumer is one who buys goods and services for satisfaction of wants.
- **Utility :** Wants satisfying capacity of goods and services is called utility.
- **Cardinal Utility :** When utility is expressed in exact unit or quantity.
- **Total utility :** It is the sum of utilities a consumer gets from consumption of all the units of a commodity at a given time.
- **Marginal Utility :** It is a net increase in total utility by consuming an additional unit of a commodity.
- **Ordinal Utility :** When utility is expressed in rank as per quality.
- **Law of Diminishing Marginal Utility :** As consumer consumes more and more units of commodity the Marginal Utility derived from each successive units goes on declining.
- **Consumer's Bundle :** It is a quantitative combination of two goods which can be purchased by a consumer from his given income at given prices.
- **Budget set :** It is quantitative combination of those bundles which a consumer can purchase from his given income at prevailing market prices.

  Budget Set : $Px \cdot X + PY \cdot Y \leq M$
- **Budget Line :** It is a line showing different combinations of two goods which a consumer can buy by spending his whole income at given price of the goods.

Budget Line : $M = Px \cdot X + Py \cdot Y$

- **Consumer's Budget :** It states the real income or purchasing power of the consumer from which he can purchase the certain quantitative bundles of two goods at given price.
- **Monotonic Preferences :** Consumer's preferences are called monotonic when between any two bundles, one bundle has more of one good or both and no less of other goods.
- **Convex Preference :** Consumer preferences are called convex preferences if consuments willingness to exchange or substitution for one good in terms of another goods would go on declining as he has more any more of one goods.
- **Change in Budget Line :** There can be parallel shift (leftwards or rightwards) due to change in income of the consumer and change in price of goods.
- **Marginal Rate of Substitution (MRS) :** It is the rate at which a consumer is willing to substitute good Y for good X.

$$MRS = \frac{\text{Loss of Good Y}}{\text{Gain of Good X}} \text{ or } -\frac{\Delta Y}{\Delta X}$$

- **Indifference Curve :** Indifference curve is a curve showing different combination of two goods, each combinations offering the same level of satisfaction to the consumer.
- **Indifference Map :** It refers to a set of indifference curves placed together in a diagram.
- **Characteristics of IC**

1. **Indifference curves are negatively sloped :** Because to increase quantity of one good some units of other has to be sacrificed to remain on same satisfaction level due to decreasing MRS.
2. **Indifference curves are convex to the point of origin :** Due to decreasing MRS MRS decreases due to law of diminishing marginal utility & convex preferences.
3. **Indifference curves never touch or intersect each other :** Each indifference curve shows different level of satisfactions.

Intersection point shows same satisfaction level which is not possible.

4. **Higher Indifference curve represents higher level of satisfaction :** Due to monotonic preference; Higher indifference curve shows bundles having more of one commodity and not less of other good in comparision of lower Indifference curve (IC).

- **Consumer's Equilibrium :** It is a situation where a consumer is spending his income in such a way that he is getting maximum satisfaction and has no tendency to change.
- **Condition of Consumer's Equilibrium**

(A) Cardinal approach (Utility Analysis) : According to this approach utility can be measured. "Utils" is the unit of utility.

Condition of Consumer's Equilibrium:

(i) In case of one commodity

(a) MUx must be decline.

(b) $MUm = \frac{MUx}{Px}$ [If $MUm = 1$, $MUx = Px$]

Where, MUm = Marginal Utility of money

MUx = Marginal Utility of 'x', Px = Price of 'x'.

(ii) In case of two commodity(s) :

$$\frac{MUx}{Px} = \frac{MUy}{Py} = MUm$$

Where P_x = Price of X & P_y = Price of Y.

(a) MUx and MUy must be decline.

(B) Ordinal approach (Indifference Curve Analysis) :

According to this approach utility can't be measured but can be expressed in order or ranking.

- **Conditions of Consumer's Equilibrium :**

(i) MRS must be decreasing or

Indifference curve must be convex to the origin.

(ii) $MRSxy = \frac{Px}{Py}\left[\begin{matrix} Px = \text{Price of 'x'} \\ Py = \text{Price of 'y'} \end{matrix}\right]$

Slope of IC = Slope of Budget Line

or budget line must be tangent to indifference curve.

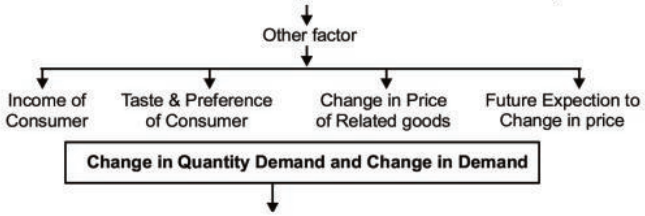
❖ **Demand Analysis**

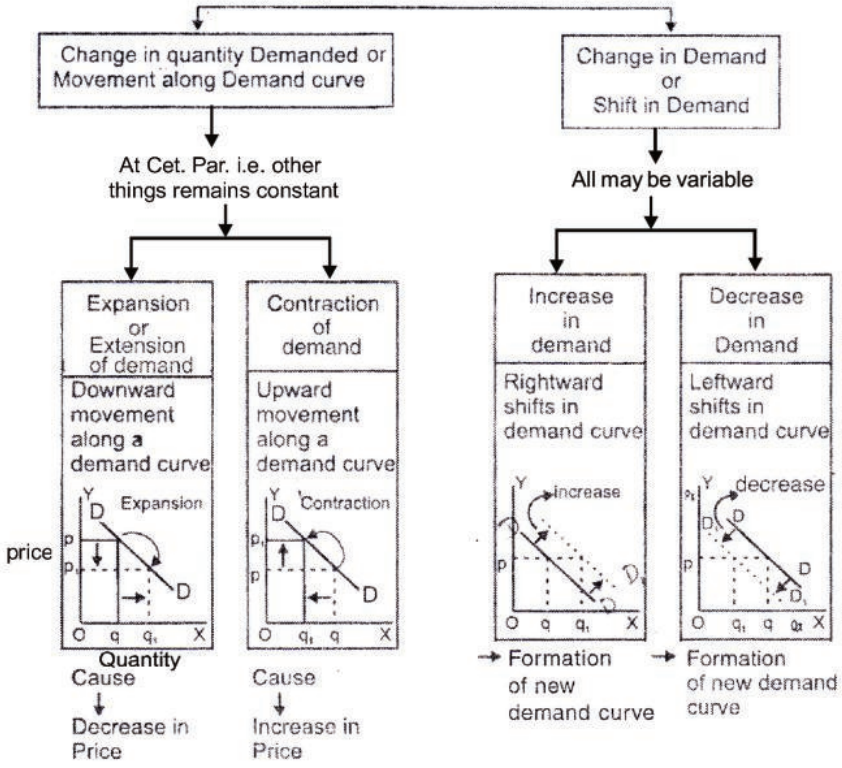
- ❑ **Demand :** The quantity of commodity that a consumer is willing and able to buy at given price, over a given period of time.
- ❑ **Market Demand :** It is the total quantity purchased by all the consumers in the market at given price and in a given period of time.
- ❑ **Demand Function :** It is the functional relationship between the demand of a good and factors affecting edemand.

  D = f(P*x*, P*r*, Y, T, E, N).

- ❑ **Law of Demand :** If remaining things are being constant as price of a commodity increases quantity demanded of the commodity decreases and as price of a commodity decreases quantity demanded of the commodity increases, it is called law of demand.
- ❑ **Determinants of Demand :** When factor other than pricechanges of the goods affect the demand called determinants of demand.

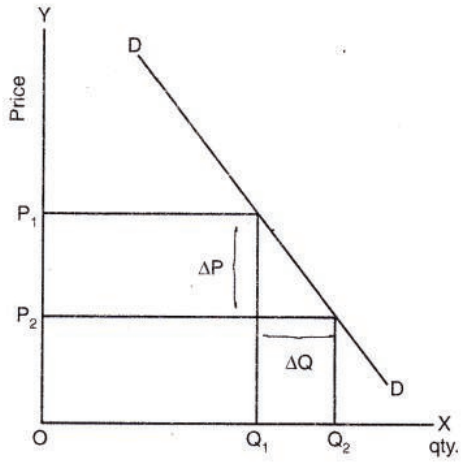
Determinants of Demand (Shift factors of Demand)





- **Change in Demand :** Change in demand is caused for a change in determinants.
- **Change in Quantity Demanded :** Change in quantitiy demanded is caused for a change in its own price of the goods.
- **Demand Schedule :** Demand schedule is a table which shows the quantity demanded of a commoding at various prices.
- **Demand Curve :** It is a graphical presentation of demand schedule, which shows quantity demanded at various prices of commodity.

❑ **Demand curve and its slope :**



$$\text{Slope of demand curve} = \frac{\text{Change in price}}{\text{Change in quanitity demanded}} = \frac{\Delta P}{\Delta Q}$$

❖ **Elastisity of Demand**

❑ **Price Elasticity of Demand :** Price Elasticity of Demand is a measurement of change in quantity demanded in response to a change in price of the commodity.

❑ **Percentage Method :**

$$\text{Ed.} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Ed. → Elasticity of Demand

ΔQ → Change in quantity

ΔP → Change in Price

P → Initial Price

Q → Initial Quantity

$$Ed. = \frac{\text{Percentage Change in Quantity demanded}}{\text{Percentage Change in Price}}$$

$$\text{Percentage change in quantity demanded} = \frac{\Delta Q}{Q} \times 100$$

$$\text{Percentage change in price} = \frac{\Delta P}{P} \times 100$$

- **Factors affecting Price elasticity of Demand**
  - (a) Nature of the Commodity.
  - (b) Availability of Substitute goods.
  - (c) Income of the consumer & spend proportion of income
  - (d) Possibility of postponment of commodity
  - (e) Share of the commodity in total expenditure.
  - (f) Time period of response

Exam. Oriented Questions with Answer

VERY SHORT TYPE ANSWER QUESTIONS (1 MARK)

Q. 1. Why the demand of water is Inelastic?

Ans. Because water is a necessary good.

Q. 2. Define Market Demand.

Ans. Market Demand refers to various quantities that all the consumers in a market are ready and able to purchase at various prices in a given period of time.

Q. 3. What is the meaning of Marginal Rate of Substitution?

Ans. MRS is the rate at which a consumer is willing to substitute good Y for good X, assuming that there is no change in the level of satisfaction.

Q. 4. What is the meaning of 'Monotonic Preference'.

Ans. Consumer's preference is called monotonic when between any two bundles, consumer give preference to that bundle, which contains more quantity of at least one commodity and not less quantity of other commodity.

Q. 5. Write equation of Budget line.

Ans. $M = Px \cdot X + Py \cdot Y$

Q. 6. Write Identity of Budget set.

Ans. $Px \cdot X + Py \cdot Y \leq M$

SHORT ANSWER TYPE QUESTIONS (3-4 MARKS)

Q. 1. Distinguish between increase in demand and increase in quantity demanded of a commodity.

Ans. When demand increase at given Price due to the change of other factor. It is called increase in demand. On the other hand when other things remain constant and demand increase by decrease in the price of a commodity then, it is called increase in quantity demanded.

Q. 2. Given price of a good, how does a consumer decide as to how much of that good to buy?

Ans. Consumer purchases upto the point where marginal utility is equal to the price (MU = P). So long as marginal utility is greater than price, he keeps on purchasing. As he makes purchases MU falls and at a particular quantity of the good MU becomes equal to price. Consumer purchases upto this point.

Q. 3. A consumer consums only two goods X and Y. State and explain the conditions of consumer's equilibrium with the help of utility analysis.

Ans. There are two conditions of consumer equilibrium.

Explain :

(i) $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$

If $\frac{MU_x}{P_x} > \frac{MU_y}{P_y}$ the consumer is not in equilibrium because he can raise his total utility by buying less of Y and more of X and vice versa in case of $\frac{MU_x}{P_x} < \frac{MU_y}{P_y}$

(ii) **MU falls as consumption increases :** If MU does not fall as consumption increases the consumer will end up buying only good which is unrealistic or consumer will never reach the equilibrium position.

Q. 4. Explain how the demand for a good is affected by the price of its substitute goods. Give examples.

Ans. Related goods are either substitutes or complementary.

Substitute Goods : When price of a substitute falls, it becomes cheaper than the given good. So the consumer substitutes it for given good then demand of given good will decreases.

Similarly, a rise in the price of substitute will result in increase in the demand for given good. For example : Tea and Coffee.

Q. 5. Distinguish between Normal Goods and Inferior Goods. Explain with Example.

Ans. **Normal Goods :** These are the goods the demand for which increase as Income of the buyers rise. There is a positive relationship between Income and demand or in case of normal goods income effect is positive.

Inferior Good : There are the goods the demand for which decreases as income of buyer rises. Thus, there is negative relationship between income and demand or income effect is negative.

Q. 6. Explain any four factors that affect price elasticity of demand.

Ans. 1. **Nature of Commodity :** Necessities like Salt, Kerosene oil etc. have inelastic demand and luxuries have elastic demand.

2. **Availability of substitutes :** Demand for goods which have close substitute is relatively more elastic and goods without close substitutes have less elastic demand.

3. **Different uses :** Commodities that can be put to different uses have elastic demand for instance electricity has different uses.

4. **Habit of the consumer :** Goods to which consumer become habitual will have inelastic demand.

   Example : Liquor and Cigarette.

Q. 7. Explain relationship between total utility and marginal utility with help of a schedule.

Ans.

Quantity (Units)	*Total Utility*	*Marginal Utility*
0	0	–
1	8	8
2	14	6
3	18	4
4	20	2
5	20	0
6	18	–2

(1) As long as MU decreases but is positive, TV increases at decreasing rate.

(2) When marginal utility is equal to zero then total utility is maximum.

(3) When marginal utility is negative. Total utility starts diminishing.

Q. 8. Define marginal utility. State the law of diminishing marginal utility.

Ans. **Marginal Utility :** It is addition to the total utility as consumption is increased by one more unit of the commodity.

Law of Diminishing Marginal Utility : It states that as consumer consumes more and more units of a commodity, the utility derived from each successive unit goes on decreasing. According to this law TU increases at decreasing rate and MU decreases.

LONG ANSWER TYPE QUESTION (6 MARKS)

Q. 1. Explain the three properties of indifference curves.

Ans. Three properties of indifference curves are as follows :

1. **Slopes downward from left to right :** To consume more of one good the consumer must give up some quantity of the other good so that total utility remains the same.
2. **Convex towards the origin :** MRS declines continuously due to the operation of the law of diminishing marginal utility.
3. **Higher indifference curves represents higher utility :** Higher indifference curve represent large bundle of goods. Which means more utility because of monotonic preference.

Q. 2. Explain the conditions of consumer's equilibrium using indifference curve analysis. Use diagram.

Ans. There are two conditions for consumer's equilibrium.

(i) MRS = Px/Py

(ii) MRS is continuously falling.

Explanation

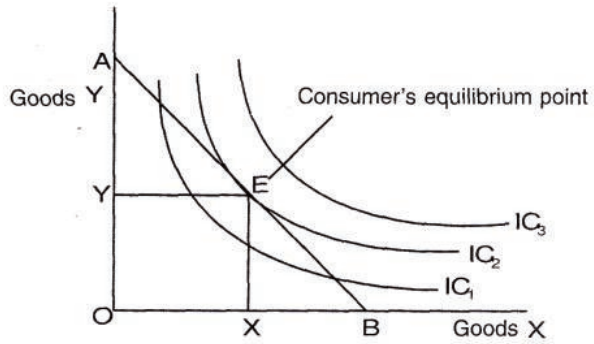
Suppose there are two goods X and Y the first condition of consumer's equilibrium is MRS must be equal to the ratio of prices of two goods $\frac{Px}{Py}$

If MRS > Px/Py, It means consumer values X more than what market values and willing to give more price than market price he will purchase more of X this cause fall in MRS and it will continue upto that when **MRS** = Px/Py.

If MRS $< \frac{Px}{Py}$. It means consumer values X less than what market values. Consumer is willing to give less price than market price and he will purchase less of X, by this MRS will increase and it will continue till MRS $= \frac{Px}{Py}$.

(ii) MRS is continuously falling unless the equality between the MRS

and Px/Py will not be reached.



Consumer is in equilibrium at point E. OX of X and OY of Y is optimum bundle of both goods.

Q. 3. A consumer consumes only two goods X and Y both priced at Rs. 3 per unit. If the consumer chooses a combination of these two goods with Marginal Rate of Substitution equal to 3, is he consumer in equilibrium? Give reason. What will a rational consumer do in this situation? Explain.

Ans. Given Px = 2, Py = 3 and MRS = 3, A consumer is said to be inequilibrium when

$$MRS = \frac{Px}{Py}$$

Substituting the given values, we find that

$$3 > \frac{3}{3}$$

$$\text{i.e., } MRS > \frac{Px}{Py}$$

Therefore consumer is not in equilibrium $MRS > \frac{Px}{Py}$ means that consumer is willing to pay more for one more unit of x as compared to what market demands.

(i) The consumer will buy more and more of x.

(ii) As a result MRS will fall due to the law of Diminishing Marginal Utility.

(iii) This will continue till $MRS = \frac{Px}{Py}$ and consumer is in equilibrium again.

Q. 4. A consumer consumes only two good X and Y whose prices are Rs. 4 and Rs. 5 per unit respectively. If the consumer chooses a combination of the two goods with marginal utility of X equal to 5 and that of Y equal to 4, is the consumer in equilibrium? Give reason. What will a rational consumer do in this situation? Use utility analysis

Ans. Given Px = 4, Py = 5 and MUx = 5, and MUy = Y, consumer will be in equilibrium when

$$\frac{MUx}{Px} = \frac{MUy}{Py}$$

Substituting values, we find that

$$\frac{5}{4} > \frac{4}{5} \text{ or } \frac{MUx}{Px} > \frac{MUy}{Py}$$

Since per rupee MUx, is higher than per rupee MUy, consumer is not in equilibrium.

The consumer will buy more of x and less of y, As a result MUx will fall and MUy will rise. The reaction will continue till $\frac{MUx}{Px}$ and $\frac{MUy}{Py}$ are equal and consumer is in equilibrium again.