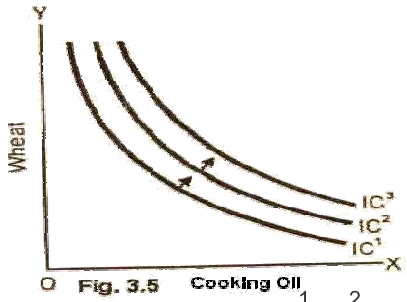

Fig. 3.5

In this diagram (3.5) there are three indifference curves, IC^1, IC^2 and IC^3 which represents different levels of satisfaction. The indifference curve IC^3 shows greater amount of satisfaction and it contains more of both goods than IC^2 and IC^1 ($IC^3 > IC^2 > IC^1$).

(3) Indifference Curve are Convex to the Origin:

This is an important property of indifference curves. They are convex to the origin (bowed inward). This is equivalent to saying that as the consumer substitutes commodity X for commodity Y, the marginal rate of substitution diminishes of X for Y along an indifference curve.

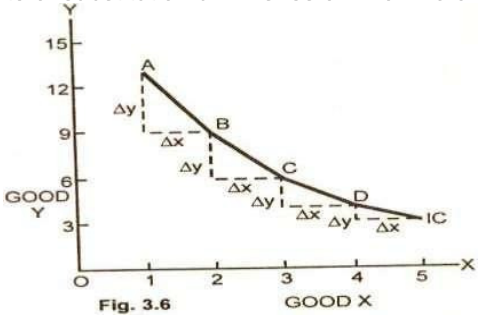

Fig. 3.6

In this figure (3.6) as the consumer moves from A to B to C to D, the willingness to substitute good X for good Y diminishes. This means that as the amount of good X is increased by equal amounts, that of good Y diminishes by smaller amounts. The marginal rate of substitution of X for Y is the quantity of Y good that the consumer is willing to give up to gain a marginal unit of good X. The slope of IC is negative. It is convex to the origin.

(4) Indifference Curve Cannot Intersect Each Other:

Given the definition of indifference curve and the assumptions behind it, the indifference curves cannot intersect each other. It is because at the point of tangency, the higher curve will give as much as of the two commodities as is given by the lower indifference curve. This is absurd and impossible.

In fig 3.7, two indifference curves are showing cutting each other at point B. The combinations represented by points B and F given equal satisfaction to the consumer because both lie on the same indifference curve IC_2. Similarly the combinations shows by points B and E on indifference curve IC_1 give equal satisfaction top the consumer.

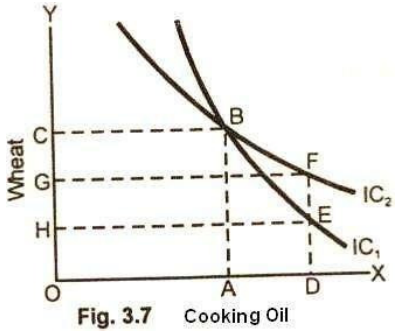

Fig. 3.7

If combination F is equal to combination B in terms of satisfaction and combination E is equal to combination B in satisfaction. It follows that the combination F will be equivalent to E in terms of satisfaction. This conclusion

looks quite funny because combination F on IC_2 contains more of good Y (wheat) than combination which gives more satisfaction to the consumer. We, therefore, conclude that indifference curves cannot cut each other.

(5) Indifference Curves do not Touch the Horizontal or Vertical Axis:

One of the basic assumptions of indifference curves is that the consumer purchases combinations of different commodities. He is not supposed to purchase only one commodity. In that case indifference curve will touch one axis. This violates the basic assumption of indifference curves.

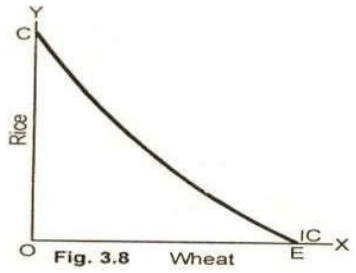

Fig. 3.8

In fig. 3.8, it is shown that the indifference IC touches Y axis at point C and X axis at point E. At point C, the consumer purchase only OC commodity of rice and no commodity of wheat, similarly at point E, he buys OE quantity of wheat and no amount of rice. Such indifference curves are against our basic assumption. Our basic assumption is that the consumer buys two goods in combination.

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3(b) by the help of budget line and indifference curve how a consumer reaches the highest level of satisfaction?

6. What is the price elasticity of demand?

A measure of the relationship between a change in the quantity demanded of a particular good and a change in its price. Price elasticity of demand is a term in economics often used when discussing price sensitivity. The formula for calculating price elasticity of demand is:

Price Elasticity of Demand = % Change in Quantity Demanded / % Change in Price

If a small change in price is accompanied by a large change in quantity demanded, the product is said to be elastic (or responsive to price changes). Conversely, a product is inelastic if a large change in price is accompanied by a small amount of change in quantity demanded.

Price elasticity of demand measures the responsiveness of demand to changes in price for a particular good. If the price elasticity of demand is equal to 0, demand is perfectly inelastic (i.e., demand does not change when price changes). Values between zero and one indicate that demand is inelastic (this occurs when the percent change in demand is less than the percent change in price). When price elasticity of demand equals one, demand is unit elastic (the percent change in demand is equal to the percent change in price). Finally, if the value is greater than one, demand is perfectly elastic (demand is affected to a greater degree by changes in price).

For example, if the quantity demanded for a good increases 15% in response to a 10% increase in price, the price elasticity of demand would be **15% / 10% = 1.5**.

7. what relationship does the price elasticity of demand bear with marginal revenue and average revenue?

There is a crucial relationship dose the price elasticity of demand bear with marginal revenue and average revenue which is used extensively in the theory of pricing. The relationship is expressed in the form of formula,

$$AR = MR\left(\frac{e}{e-1}\right)$$

The above formula can be derived with the help of the Fig. 2.23

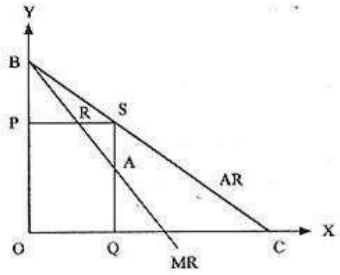

Fig. 2.23

At point 'P', elasticity (e) is

$$\frac{SC}{SB}$$ (Point elasticity of demand = lower segment/upper segment)

Now,

$$\frac{SC}{SB} = \frac{SQ}{PB}$$ ($\because$ $\Delta SQC \sim \Delta BPS$ by AA similarity)

Therefore, $e = \frac{SQ}{PB} = \frac{SQ}{SA} = \frac{SQ}{SQ - AQ}$ ... (2.9)

But, AQ is marginal revenue and SQ is average revenue corresponding to point 'B' at OQ level of output. Hence, equation (2.9) can be written as

$$e = \frac{AR}{AR - MR}$$

The equation (2.10) can be rewritten as

$$AR = e\,(AR - MR) = e.AR - e.MR$$

$$\therefore \quad eMR = eAR - AR$$

$$\text{Or,} \quad MR = AR - \frac{AR}{e} = AR\left(1 - \frac{1}{e}\right)$$

The above relationship can be utilised to find out the marginal revenue corresponding to the average revenue at any given level of quantity sold, provided the price elasticity of demand is known.

The relation between AR, MR and elasticity of demand (e) can now be written as

$$e = \frac{AR}{AR - MR}, \; MR = AR\left(\frac{e-1}{e}\right) \text{ and } AR = MR\left(\frac{e}{e-1}\right)$$

With the help of the above formula, it is possible to find MR, given AR (price) and elasticity of demand. For example, for AR = 10 and e = 2,

$$MR = 10\left(\frac{2-1}{2}\right)$$

$$= 5$$

Also, for e = 1

$$MR = AR\left(\frac{1-1}{1}\right)$$

$$= 0$$

Thus, for e = I, MR = 0. This is very useful relationship and should be noted carefully. Here, total revenue outlay is not affected by change in price, as discussed under 'Total Outlay Method' in Chapter 2 on Elasticity of Demand.

It can also be shown that at every point on the demand curve, where elasticity is greater than unity, MR is positive (but, less than AR). Further, at every point on the demand curve where elasticity is less than unity, MR is negative. This can be verified by substituting the value of elasticity in equation (14.9). An increase in the price will result in an increase and a decrease of the total revenue in these two cases respectively and vice-versa. AR, being price is always positive.

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8.what are the characteristics of a perfectly competitive market?

Generally, a perfectly competitive market exists when every participant is a "price taker", and no participant influences the price of the product it buys or sells. Specific characteristics may include:

- **Infinite buyers and sellers** – An infinite number of consumers with the willingness and ability to buy the product at a certain price, and infinite producers with the willingness and ability to supply the product at a certain price.
- **Zero entry and exit barriers** – A lack of entry and exit barriers makes it extremely easy to enter or exit a perfectly competitive market.
- **Perfect factor mobility** – In the long run factors of production are perfectly mobile, allowing free long term adjustments to changing market conditions.
- **Perfect information** - All consumers and producers are assumed to have perfect knowledge of price, utility, quality and production methods of products.
- **Zero transaction costs** - Buyers and sellers do not incur costs in making an exchange of goods in a perfectly competitive market.
- **Profit maximization** - Firms are assumed to sell where marginal costs meet marginal revenue, where the most profit is generated.
- **Homogenous products** - The qualities and characteristics of a market good or service do not vary between different suppliers.
- **Non-increasing returns to scale** - The lack of increasing returns to scale (or economies of scale) ensures that there will always be a sufficient number of firms in the industry.
- **Property rights** - Well defined property rights determine what may be sold, as well as what rights are conferred on the buyer.
- Rational buyers - buyers capable of making rational purchases based on information given
- No externalities - costs or benefits of an activity do not affect third parties

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