

Q.

Theory of Supply:

Q. Define Supply and quantity supplied.

→ Supply refers to the entire schedule showing ^{different} ~~various~~ quantities of a commodity for sale at different possible prices of that commodity. On the other hand, quantity supplied refers to a specific amount offered for sale at a specific price of the commodity.

Q. What are individual supply and market supply?

→ Individual supply refers to supply of a commodity by an individual firm in the market.

Market Supply refers to supply of a commodity by all the firms in the market.

Q. Define supply schedule. Explain the concepts of individual supply schedule and market supply schedule.

→ Supply schedule is a table showing different quantities of a commodity offered for sale.

Corresponding to different possible prices of that commodity. It has the following two aspects-

i. Individual Supply schedule. : It is a table showing different amounts of a commodity that an individual firm is willing to sell at different possible prices of that commodity. The following table is an illustration of an individual supply schedule.

Table.1: Individual Supply Schedule.

Reserve price) →	Price of Ice-cream	Q _t . Supplied
	5	0
	10	10
	15	20
	20	30

From the table it is clear that as the price rises, supply extends. At ₹5 per ice-cream, the firm is not willing to sell any unit. When price is ₹10 then supply is of 10 units. and when it rises to ₹20, the supply also extends to 30

30 units.

ii. Market Supply schedule : It is a table showing different amounts of a commodity that all firms are willing to sell at different possible prices of that commodity. The following table shows a market supply schedule. However, in constructing the schedule, it is assumed that there are only two firms (A and B) in the market.

Fig. Table. 2 : Market Supply Schedule.

Price of Ice-cream	Supply by firm A	Supply by firm B	Market Supply.
5	0	0	0
10	10	5	15
15	20	10	30
20	30	20	50

The above table shows that when price of ice-cream is ₹ 5, the firms will not supply any quantity. When price increases to ₹ 10, firm A supplies 10 units and firm B supplies 5 units. Thus the market supply is $10 + 5 = 15$ units.

It is thus evident that as price rises, market supply also rises.

Q. What is a supply curve? Draw the shapes of individual supply curve and market supply curve.

→ Supply curve is a graphic representation of a supply schedule, indicating positive relationship between price of a commodity and its quantity supplied. It has the following two aspects:

i. Individual Supply curve :- It is a graphic presentation of supply schedule of an individual firm. Sloping upwards it indicates positive relationship between price of a commodity and its quantity supplied. The following fig. is an illustration of an individual supply curve.

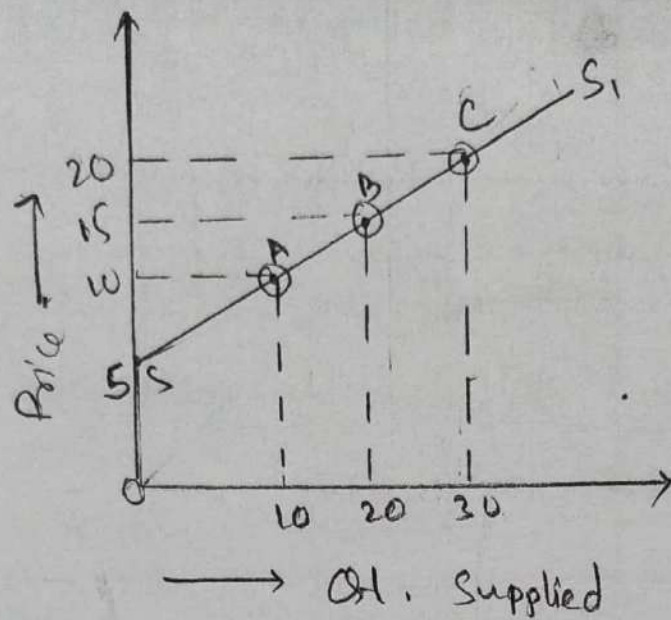
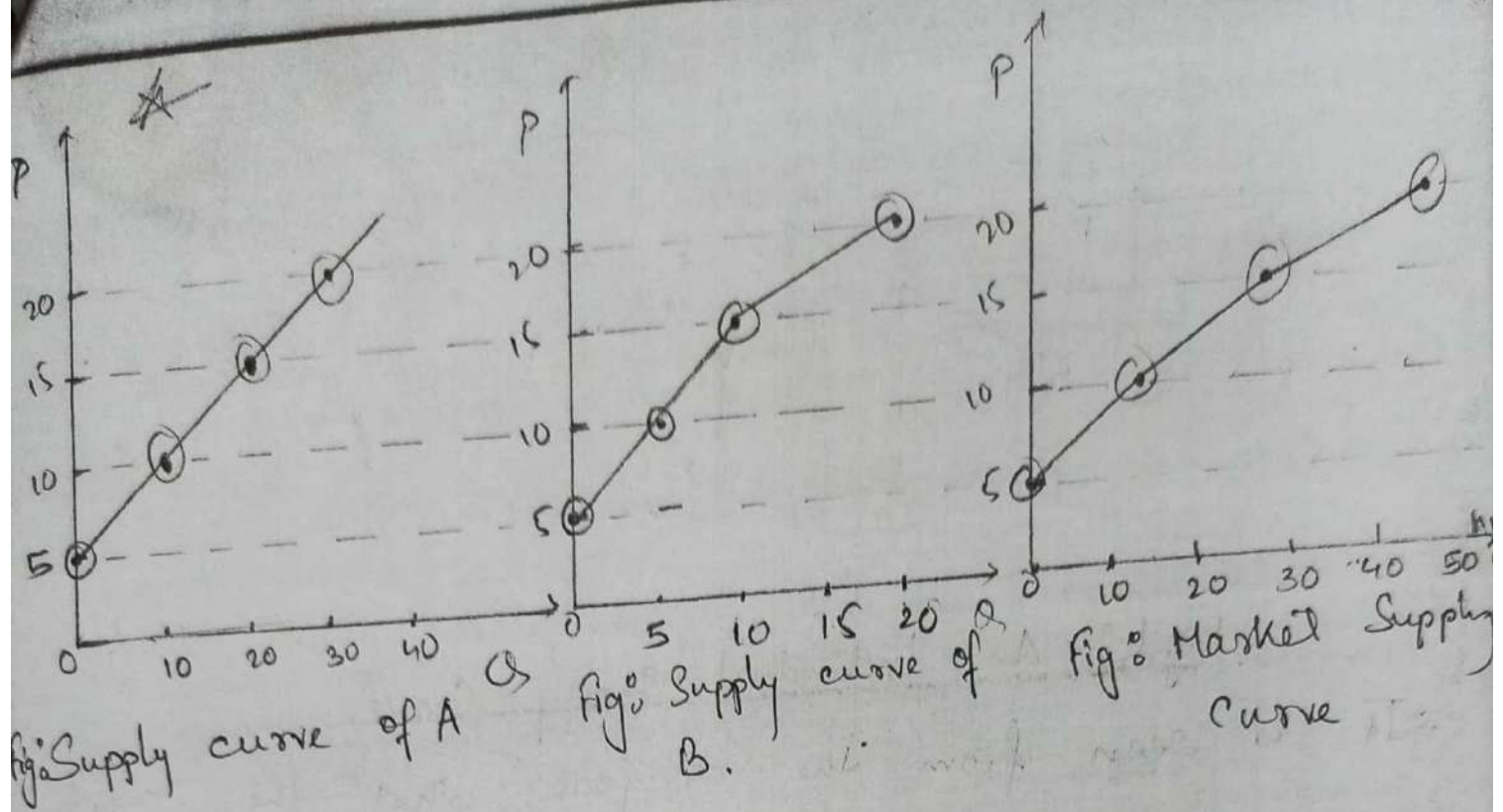


Fig 1: An Individual Supply Curve.

It is seen from the diagram that the supply curve $S S_1$ slopes upward to the right. It shows that more of a commodity supplied at high price.

ii. Market Supply Curve : It is a graphic presentation of a market supply schedule. In fact, market supply curve is a horizontal summation of individual supply ~~curves~~ curves. It shows different quantities of a commodity that all the firms in a market are ready to sell at different possible prices of that commodity. The following fig. (c) is an illustration of market supply curve.



Q. A) Define supply function.

B) Explain the various determinants / factors

of supply of a commodity.

→ A) Supply function studies the functional relationship between supply of a commodity and its various determinants.

B) Following is a brief explanation about the various determinants of a supply —

i. Price of the commodity :- There is a direct relationship between price of a commodity

and its quantity supplied. Generally, higher the price, higher the quantity supplied and vice versa.

ii. Price of related goods : The supply of a good depends upon price of related goods. Eg: Let us consider a firm sells tea. Now, if the price of coffee rises in the market, the firm will be willing to sell less tea at the existing price. ~~Or~~ or it will be willing to sell the same quantity of tea only at a higher price.

iii. No. of firms : Increase in the number of firms implies increase in supply and decrease in the no. of firms implies decrease in sales.

iv. Price of FOP / inputs : If factor price decreases, cost of production also reduces and accordingly more of the commodity will be supplied at the existing price.

v. Change in technology : Improvement in technique of production reduces cost of production

and consequently ~~of~~ $\pm$ more of the commodity is supplied at its existing price.

vi. Govt. policy : Increase in taxation tends to reduce supply. On the other hand, subsidies tend to increase supply of the commodity.

Q. Explain law of supply with assumptions and exceptions.

→ * According to the law of supply, other things being constant, the qt. supplied of a commodity rises directly with its price. In other words when price of a commodity rises qt. supplied increases and vice versa. The reason behind the law is that, rise in price of a commodity implies an increase in the profit margin of the producer. This incentive of higher profit promotes the producer to produce more of the commodity. Similarly, a fall in price would imply a fall in the profit margin of the producer, which in turn will compel the producer to reduce the supply of the commodity.

supply of the commodity

Q. What is reserve price?

→ The price below which the producers or sellers are not willing to sell their good is called reserve price or minimum supply price.

* Factors upon which reserve price depends :-

- i. Cost of production : If the cost of production is expected to fall in future the reserve price will be lower and vice versa.
- ii. Cash requirements : The seller's urgency for cash requirement is another determining factor. If the requirement is more urgent, the lower will be the reserve price.
- iii. Durability : The greater the durability, higher the reserve price & vice versa.

Assumptions :-

- i. There is no change in the price of FOP.
- ii. There is no change in technique of production.
- iii. There is no change in the price of related goods.

Exceptions :-

- i. Agricultural goods : The supply of agricultural goods depend more on the factors like rainfall, fertility of soil etc. and less on their price.

ii. Goods of auction : The law also doesn't apply in case of goods of auctions because their supply is limited and it cannot be changed even if the price increases or decreases.

iii. Rare goods :

iv. Disposal of old stocks : When sellers want to clear off their old stocks of good, they would like to sell more goods by reducing their prices.

B. Write a ~~note~~ note on change in qt. supplied and change in supply.

→ Change in qt. supplied refers to increase or decrease in qt. supplied of a commodity in response to increase or decrease in price of the same commodity, other things remaining constant. It refers to movement along the same supply curve or extension or contraction of supply.

Change in supply, on the other hand, refers to increase or decrease in qt. supplied of a commodity in response

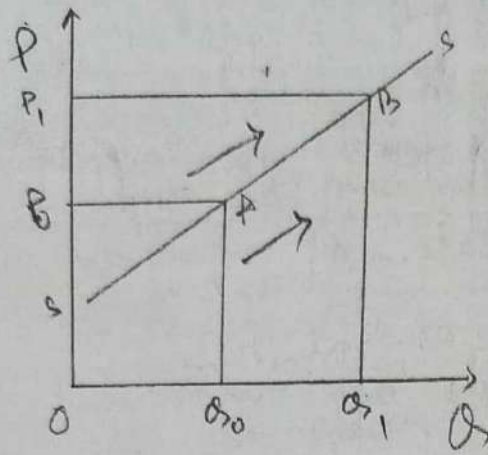
to change in other determinants of supply, other than price of the same commodity. It refers to shifts in supply curve — rightward shift (in case of increase in supply) and leftward shift (in case of decrease in supply).

Q. (A) Explain the concepts of movement along the supply curve or extension or contraction of supply.

(B) Shift in supply curve or increase or decrease in supply.

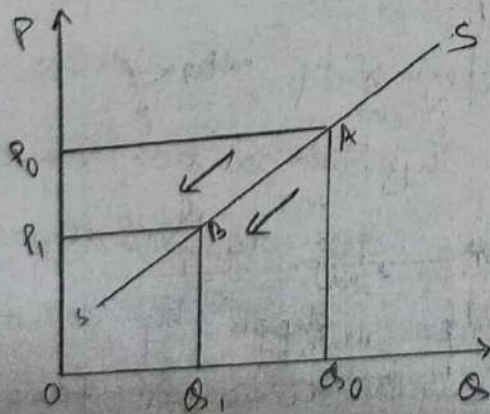
→ A. The movement along the same supply curve refers to change in the ~~quant~~ quantity supplied because of a price change of the commodity. ~~itself~~ When the q.t. supplied rises as a result of rise in price we call it ~~ext~~ expansion of supply. On the other hand, when q.t. supplied decreases due to a fall in price it is known as contraction of supply. Here, we assume factors affecting supply of a commodity other than its price remain constant. This expansion or contraction of q.t. supplied which arises due to change in the commodity's price can be shown by a movement along the same supply curve as follows:—

Expansion of Supply



Here, in the above diagram when ~~price is P~~ Price is P_0 Qt. Supplied is Q_0 again when the price rises to P_1 the producer is forced to expand his supply to Q_1 . Thus, the rise in price of the commodity ~~causes~~ makes the producer move from pt. A to B which lies on the same supply curve. This movement from a lower pt. (A) to a higher pt. (B) on the same supply curve depicts expansion of supply.

Contraction of Supply



Here the initial price was P_0 and the corresponding qt. is Q_0 . Now, due to fall in the price (P_1) the qt. supplied has been reduced to P_1 . Thus the fall in the price has forced the producer

to move from a higher point (A) to a lower point. Such movement from A to B depicts contraction of supply.

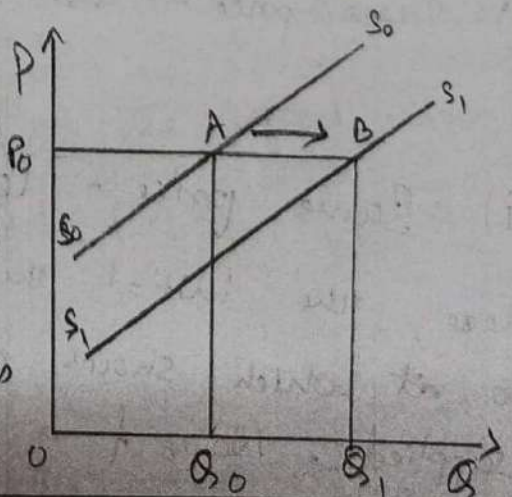
B. Shift in supply curve

A shift in supply curve means that at each price a different qt. is supplied. Such change in supply arises due to changes in factors other than commodity's own price. When a larger quantity of a commodity is supplied due to change in other factors it is called increase in supply. On the other hand, if qt. supplied ^{falls} ~~decreases~~ due to change in other factors it is known as decrease in supply.

a. Increase in supply : It may occur in two ways : (i) In same price, more supply
(ii) Less price - same supply.

(i) Same price - more supply

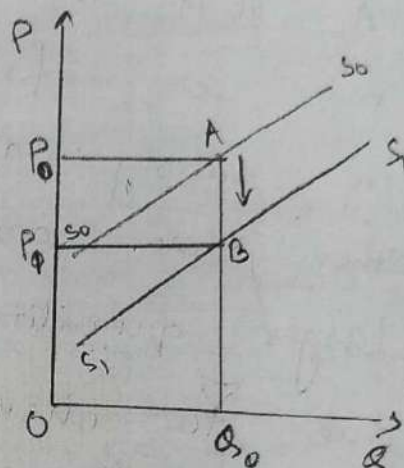
Here, S_0 is the initial supply curve which shows that at the given price P_0 , qt. supplied is



Q_0 . Now, if an increase in supply takes place (shown by a rightward shift in the supply curve S_1, S_1) the firm will be able to supply more of the commodity (Q_1 at the given price P_0)

ii. Less price - Same supply. %

Here, $S_0 S_0$ is the initial supply curve which shows that at the price P_0 Q_0 is supplied. However, due to increase in supply the price has fallen to P_1 . However due to increase in supply depicted by a rightward shift in the supply curve, the same quantity (Q_0) is supplied even at a lower price (P_1)

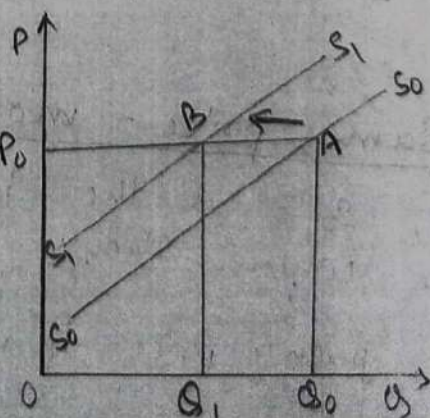


b. Decrease in supply % It may also occur in two ways %

(i) Same price - less supply, (ii) More price - ^{same} less supply.

(i) Same price - less supply %

Here, the initial supply curve is $S_0 S_0$ at which shows at P_0 , Q_0 is supplied. Now, if a decrease in

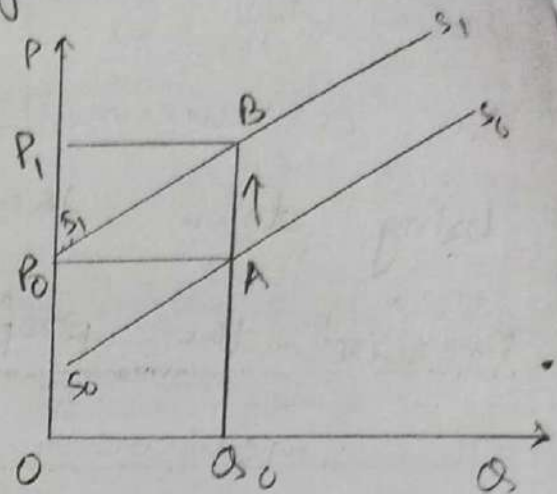


supply takes place (shown by a leftward shift in the supply curve to S_1, S_1') a lesser amount of the commodity Q_1 is supplied at the prevailing price P_0 .

ii. More price - same supply :

Here, initial supply curve is S_0, S_0 which shows that at P_0 , Q_0 is supplied. Now, if a decrease in supply takes place

(shown by a leftward shift in the supply curve to S_1, S_1') a same amount of the commodity Q_0 is supplied at a higher price P_1 .



~~Case~~

Q. Causes behind shift of the supply curve :

i. Change in price of inputs / FOP : An increase in the price of raw materials or FOP will cause the production cost of the producer to increase. A higher production cost implies a lower profit margin for the producer. Therefore, the producer will cut down the production of the good when faced with a rise in the price of the commodity and vice versa.

ii. Change in technology : A change in technology implies an improvement or deterioration of the state of technology ~~used~~ being used in production.

An advancement in production technology will bring down the \$ cost of production and increase the profit margin of a firm. Thus, this increment in profit margin will further induce the firm to produce more and increase the supply and vice versa.

iii. Change in excise tax rate : Excise tax is levied on the production of goods and services. Imposition of such tax increases the production of the producers and this may also affect the supply of the commodity.

iv. Change in the no. of firms :

Q. What happens to supply curve when there is a change in technology, change in input price, and change in govt. policy (tax or subsidy) and changes in the price of related or competing good;

Q. What are the shapes of supply curve in different time periods?

→ Economists have broadly classified time horizon into 3 periods viz :-

- i. Very short period / Market period.
- ii. Short period.
- iii. Long period.

Very short period is the period of time during which production cannot be changed at all.

Accordingly, supply curve happens to be a vertical straight line as shown in the ~~above~~ diagram

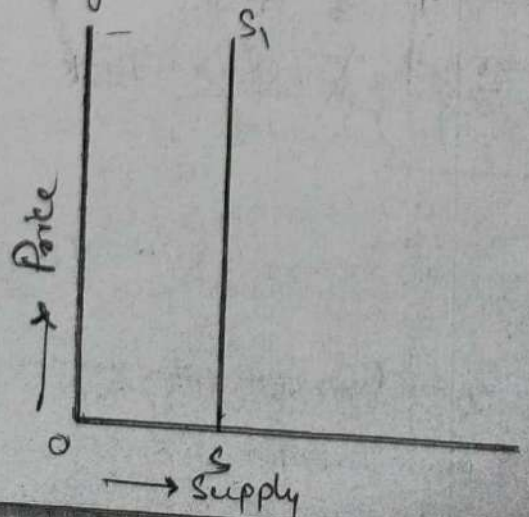
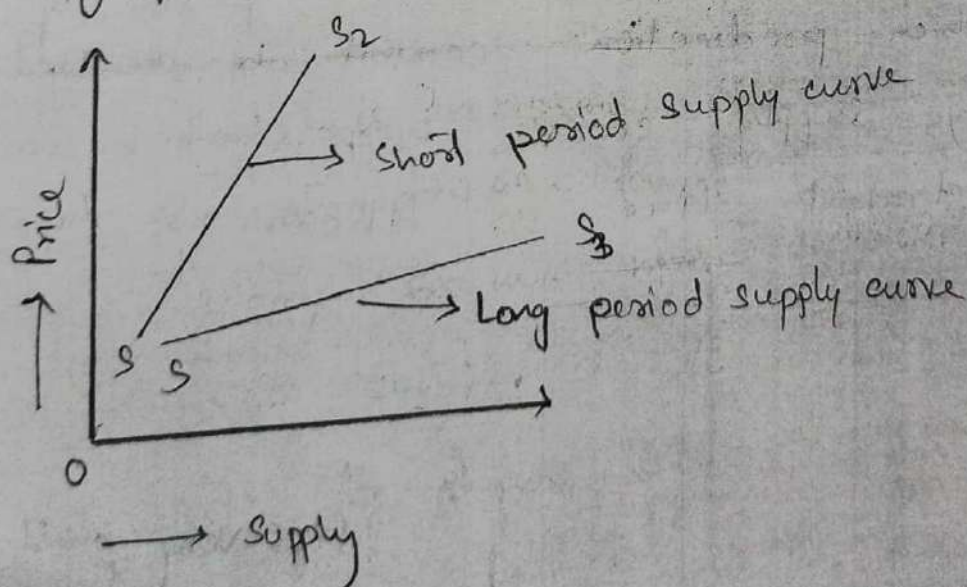


Fig: Very short period supply curve.

Short period is a period of time when output can be ^{partly} increased through greater application of the variable factors but fixed factors cannot be changed. Accordingly, supply responds to changes in price but only to a limited extent.

Long period is a period of time when production can be increased through greater application of all factors of production. Accordingly, supply becomes more responsive to changes in price compared to short period.

The following fig shows both short period and long period supply ~~cur~~ curve.



Q. Define price elasticity of supply. Discuss the different methods for measuring price elasticity of supply.

→ Price elasticity of supply is a measurement of % change in qt. supplied of a commodity in response to some % change in its price.

There are two well known methods for measuring price elasticity of supply —

1. Proportionate / Percentage method : According to this method, elasticity of supply (E_s) is the ratio between % change in qt. supplied and % change in price of the commodity.

~~Therefore~~

$$E_s = \frac{\% \text{ change in qt. supplied}}{\% \text{ change in price}}$$

$$E_s = \frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100}$$

$$= \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

$$= \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Q. Point out few determinants of elasticity of supply.

→ following are the factors :-

i. Possibility of shifting from production.

ii. Length of time

iii. Behaviour of cost of production : If an increase in output by the firm causes only a slight increase or decrease in their cost per unit, supply will be fairly elastic. If on the other hand, an ~~is~~ increase in supply leads to a large ~~increase~~ increase in cost of production, the supply would be relatively inelastic.

iv. Risk taking.

Q. If price of sugar rises from ₹ 15 to ₹ 18 per kg, the qt. supplied expands from 100 kg to 150 kg. What is the E_s .

$$\begin{aligned} \rightarrow \therefore E_s &= \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q} \\ &= \frac{50}{30} \times \frac{15.5}{100} \\ &= \frac{5}{2} \\ &= 2.5 \end{aligned}$$

Q. When price of a product increases by 30%, its qt. supplied rises by 60%.

$$\begin{aligned} \rightarrow \therefore E_s &= \frac{\% \text{ change in qt. supplied}}{\% \text{ change in price}} \\ &= \frac{60\%}{30\%} \\ &= 2 \end{aligned}$$

Q. Price elasticity of supply = 2. When price falls ₹ 10 to ₹ 8 per unit, its qt. supplied falls by 500 units. Calculate the qt. supplied at the reduced price.

$$\rightarrow E_s = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$\therefore 2 = \frac{500}{2} \times \frac{10}{500} \times \frac{10}{Q}$$

$$\therefore 2 = \frac{2500}{Q}$$

$$\therefore 2Q = 2500$$

$$\therefore Q = \frac{2500}{2} = 1250$$

$$\therefore \text{C. } Q = 1250$$

$$\begin{array}{r} 1250 \\ - 500 \\ \hline 750 \end{array}$$

$$\therefore Q = 1250 - 500$$

$$= 750$$

Q. (A) when price of a commodity falls by 10%, its supply decreases from 80 units to 60 units calculate E_s .

(B). Quantity supplied of a commodity increases by 25% when its price rises from ₹4 to ₹5 per unit. Calculate E_s .

→ (A) Price = 10%

$$\text{Qt. Supply} = \frac{\Delta Q}{Q} \times 100$$

$$= \frac{20^5}{80} \times \frac{5}{100}$$

$$= 4$$

$$\therefore E_s = \frac{5\%}{4\%} \times 25\%$$

$$= 2.5$$

B. Qt. Supplied = 25%

$$\text{Price} = \frac{1}{A} \times 100 \times 25$$

$$= 100 \times 25$$

$$\therefore E_s = \frac{25\%}{25\%}$$

$$= 1$$

Q. When the price of a commodity rises from ₹ 10 to ₹ 11 per unit, its qt. supplied rises by 100 units. If $E_s = 2$, calculate qt. supplied at the increased price.

$$\rightarrow \therefore E_s = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$\Rightarrow 2 = \frac{100}{1} \times \frac{10}{Q}$$

$$\Rightarrow 2 = \frac{1000}{Q}$$

$$\Rightarrow Q = \frac{1000}{2} = 500$$

$$\therefore Q = 500$$

$$\therefore Q = 500 + 100$$

$$= 600$$

Q. The market price of a good changes from ₹5 to ₹20. As a result the qt. supplied increases by 15 units. If E_s is 0.5, find the initial and final output level of the firm.

$$\rightarrow E_s = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$\rightarrow 0.5 = \frac{15}{15} \times \frac{5}{Q}$$

$$\rightarrow 0.5 = \frac{5}{Q}$$

$$\rightarrow Q = \frac{5}{0.5}$$

$$\rightarrow Q = \frac{5 \times 10}{0.5 \times 10}$$

$$\rightarrow Q = \frac{50}{5} = 10$$

$$\rightarrow Q = 10$$

$\therefore Q = 10$ and ~~10~~ New qt. = 25.

$$\begin{array}{r} 520 \\ - 400 \\ \hline 120 \end{array}$$

Q. The price elasticity of supply of good X is half the price elasticity of supply of good Y. A 10% rise in the price of good Y results in a rise in its supply from 400 to 520.