11 August 2023 09:11 PM

✓ **Total Revenue = TR = Price × Quantity**

$TR = P \times Q$

✓ **Average Revenue = AR** $= \frac{\text{Total Revenue}}{\text{Quantity}} = \frac{TR}{Q} = \frac{P \times Q}{Q} = P$

AR is the demand curve
(because it shows the relation between price and quantity)

Marginal Revenue, MR $= \frac{\text{change in total Revenue}}{\text{change in Quantity}} = \frac{\Delta TR}{\Delta Q}$

$\Delta TR = TR_1 - TR_0$ and $\Delta Q = Q_1 - Q_0$

$\therefore MR = \frac{TR_1 - TR_0}{Q_1 - Q_0} = \frac{\Delta TR}{\Delta Q}$

Total cost ⇒ **TC ie cost of factors of Production**

like cost of Labour → wages (w)
cost of capital → rent (r)

$\therefore$ TC = cost of Labour + cost of capital

$TC = w \cdot L + r \cdot K$

Marginal Cost, MC $= \frac{\text{change in TC}}{\text{change in Q}} = \frac{\Delta TC}{\Delta Q} = \frac{TC_1 - TC_0}{Q_1 - Q_0}$

Average cost, AC $= \frac{TC}{Q}$ and

Profit of a firm, Π = Total Revenue − Total Cost

or, $\Pi = TR - TC$

What is the objective of a firm?

To maximise profit.

How can a firm maximise profit?

① by increasing TR.
② by decreasing cost (TC).

Types: if TR > TC, then profit $\Pi > 0$ (super normal profit)

if TR < TC, then profit $\Pi < 0$ (Loss)

if TR = TC, then profit $\Pi = 0$ (Normal profit at breakeven point)

Objective of firm is to maximise profit

and Profit, $\Pi = TR - TC$

change in profit due to change in output production $\left(\frac{\Delta \Pi}{\Delta Q}\right)$ = change in TR $\left(\frac{\Delta TR}{\Delta Q}\right)$ − change in TC $\left(\frac{\Delta TC}{\Delta Q}\right)$

$$\frac{\Delta \Pi}{\Delta Q} = \frac{\Delta TR}{\Delta Q} - \frac{\Delta TC}{\Delta Q}$$

$$\boxed{\frac{\Delta \Pi}{\Delta Q} = MR - MC}$$

change in profit due to change in output

For profit maximisation ...hrium,

for profit maximisation or in equilibrium,

change in profit due to change in output is 0.

i.e $\frac{\Delta \Pi}{\Delta Q} = 0$

or, $MR - MC = 0$

or, $\boxed{MR = MC}$ ⇒ This is the condition for firm's profit maximisation or determination of equilibrium output.

Q A shopkeeper bought a pair of pencils for ₹25 and sold it for ₹30. Calculate the profit and profit percentage.

profit = SP − CP
(per unit; SP per unit; CP per unit)

$\Pi = 30 - 25$

$\Pi = ₹5$

↳ for one unit $\bar{\Pi} = ₹5$

∴ percentage of profit,

$= \frac{\text{profit}}{CP} \times 100$

$= \frac{5}{25} \times 100$

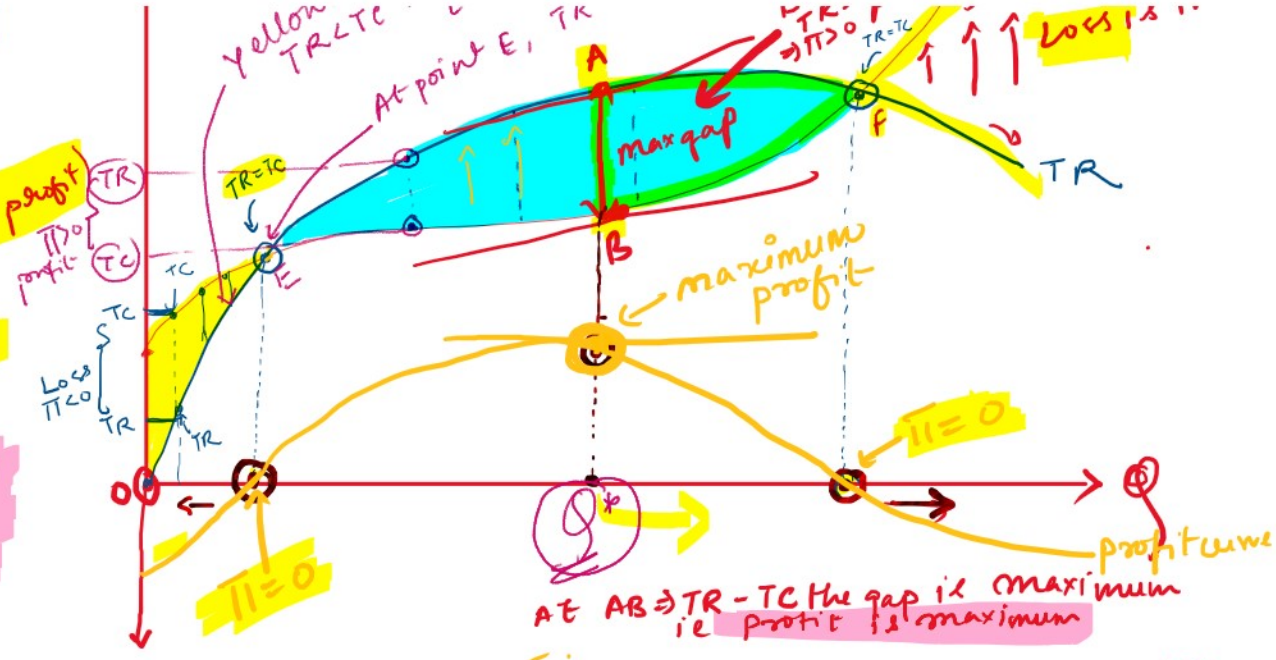
$= 20\%$

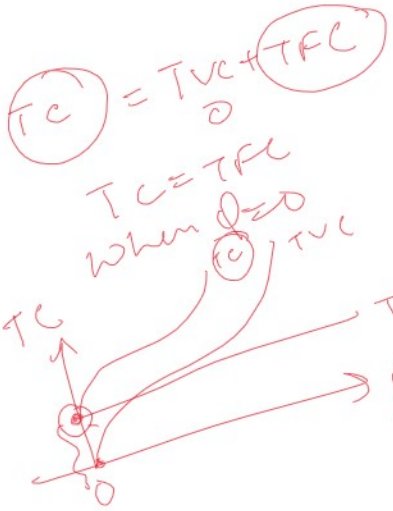
Diagrammatic presentation of MR (Marginal Revenue) MC (Marginal cost) and Profit Maximisation :

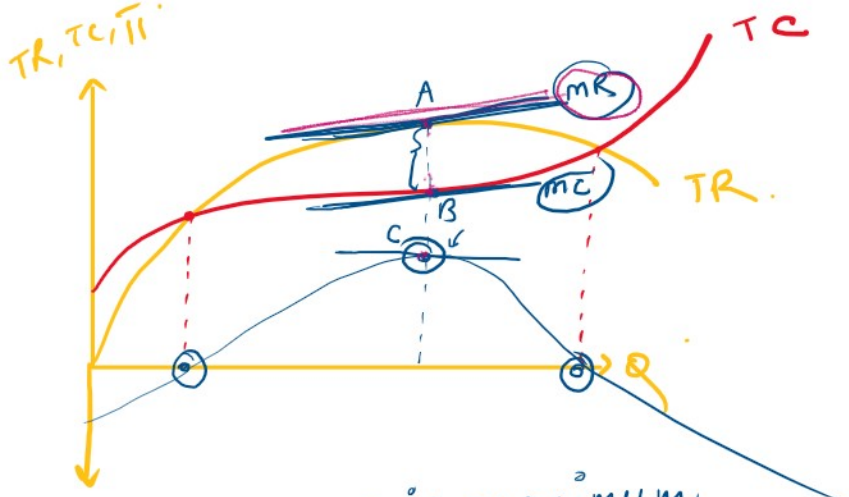
1. $\bar{\Pi} > 0$ (Supernormal profit)
⇒ TR > TC
or TR − TC > 0

2. $\bar{\Pi} = 0$ (Normal profit)
TR = TC
i.e. TR − TC = 0

3. $\bar{\Pi} < 0$ (Loss)
TR < TC
i.e. TR − TC < 0







At point AB ⇒ TR is maximum
⇒ TC is minimum

at pt A ⇒ TR is maximum ⇒ change in TR i.e. $\frac{\Delta TR}{\Delta Q}$ = MR is 0.

at pt B ⇒ TC is minimum ⇒ change in TC i.e. $\Delta TC/\Delta Q$ = MC = 0

∴ at point C ⇒ TR − TC = Profit = maximum
and MR − MC = change in profit = 0

Hence MR = MC ⇒ is the profit maximisation condition.

vvimp condition