Tut-9 (Cost)

Q1 $P = 20$ Profit contribution $= P - AVC$

$= \frac{60}{100} \times 20$

$P - AVC = 12$

$AVC = 8$

1) Quantity at breakeven pt $= \frac{TFC}{P - AVC} = \frac{840,000}{12}$

2) $TFC = 12,00,000$ $AVC = 5$

$= \frac{1200,000}{15}$ $80,000$

3) $\frac{840,000}{12} = \frac{1200000}{P-5}$

$840P - 4200 = 14400$

$840P = 18600$

$P = \frac{1860}{84} = 22.14$

Q2 $P = 40$ $TFC_L = TFC_B - 8000$ ③

$AVC_L = 33$

$33 = \frac{110}{100} AVC_B$ $AVC_B = 30$

$\frac{TFC_L}{P - AVC_L} = \frac{85}{100}\left(\frac{TFC_B}{P - AVC_B}\right)$

$Profit_L = Profit_B - 12,000$

$BEQ_L = \frac{FC_L}{P - AVC_L} = \frac{FC_L}{40-33} = \frac{FC_L}{7}$ $\therefore FC_L = 7 \times BEQ_L$ ①

$FC_B = 10 \times BEQ_B$ ②

$BEQ_L = 0.85 BEQ_B$ ④

$\frac{TFC_B - 8000}{8} = \frac{0.85 \times TFC_B}{10} \times 0.198$

0.016

$TFC_B - 8000 = TFC_B$

$TFC_B = \frac{8000}{0.8}$ 10,000

19753.08

Date
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Q3 $TC = TFC + AVC \times Q$

$MC = \frac{\Delta TC}{\Delta Q}$

Q	FC	AVC	TC	MC
1	60	30	90	30
2	60	27	114	24
3	60	27	141	27
4	60	30	180	39

$180 = TFC + 30 \times 4$

$TFC = 60$

$\frac{180 - 141}{1} = \frac{141 - 60}{3} = \frac{81}{3} = 27$

$90 = 60 + 1 \times AVC$

Q4 $Q = 2\sqrt{KL}$ $K = 100$ $r = 1$ $w = 4$

(i) $\sqrt{KL} = \frac{Q}{2}$

$KL = \left(\frac{Q}{2}\right)^2$

$L = \frac{Q^2}{4K}$

$C = wL + rK$

$STC = 4\left(\frac{Q^2}{4K}\right) + 100 \times 1$

$STC = 100 + \frac{Q^2}{100}$

$SAC = \frac{STC}{Q} = \frac{100}{Q} + \frac{Q}{100}$

$SMC = \frac{\Delta STC}{\Delta Q} = \frac{2Q}{100}$

(ii) $STC = 106.25$

$SAC = 4 + 0.25 = 4.25$

$SMC = 0.5$

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Q5. $TC = 200 + 50 - 0.040Q^2 + 0.001Q^3$

$MC = 5 - 0.08Q + 0.003Q^2$

↓ fixed cost. $TFC = 200$

a) $AFC = \frac{200}{Q}$

$ATC = \frac{TC}{Q} = \frac{200}{Q} + 5 - 0.04Q + 0.001Q^2$

$TVC = 50 - 0.04Q^2 + 0.001Q^3$

$AVC = 5 - 0.04Q + 0.001Q^2$

(ii) $\frac{d(AVC)}{dQ} = 0$

$= -0.04 + 0.002Q = 0$

$Q = \frac{0.040}{0.002} = 20$

(iii) NO CHANGE

Ans 2 — Continued $FC_B = 19753$

$FC_L = 11753$

$P_L = TR_L - TC_L$

$P_L = 40Q_L - (11753 + 33Q_L)$

$P_L = 7Q_L - 11753$ — (5)

$P_B = 10Q_B - 19753$ — (6) ← Similarly

$P_L = P_B - 12000$ (8) $Q_L = 0.75Q_B$ (7)

$7(0.75Q_B) - 11753 = 10Q_B - 19753 - 12,000$