Q15/18

T-12

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(i) $TC_1 = 1500 + 55q_1 + q_1^2$

$TC_2 = 1200 + 20q_2 + 2q_2^2$

$P = 200 - q_1 - q_2 \Rightarrow MR = 200 - 2q_1 - 2q_2$

$MR = 1200 - 9q$

$mc_1 = 55 + 2q_1$

$mc_2 = 20 + 4q_2$

$2\Sigma mc = 75 + 2q_1 + 4q_2$

$2\Sigma mc = 75 + 6q$

$75 + 6q = 400 - 8q$

$14q = 325$

$2mc_1 = 130 + 4\theta$

$mc_2 = 20 + 4\theta$

$\frac{6}{2} mc = 130 + 4\theta$

$mc = \frac{130}{3} + \frac{4}{3}\theta$

~~$130 + 4\theta = 600 - 12\theta$~~

$16\theta =$

$130 + 4\theta = 600 - 6\theta$

$10\theta = 476$

$\theta = \underline{47}$

$P = 200 - \frac{2}{2}\theta$

$= 200 - \theta$

$= \underline{153}$

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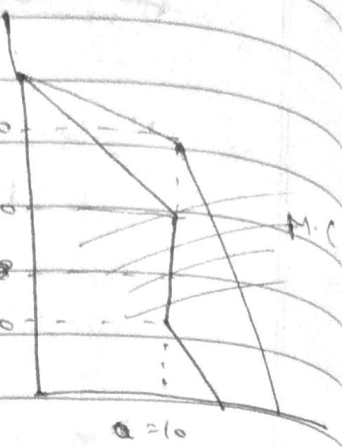
Tut 12 | Q-3 $P = 50$ oligopolistic in nature

$P = 60 - Q_D$ $P > 50$

$P = 80 - 3Q_D$ $P < 50$



i.e., ~~Q_D from 10 to 10~~

$\frac{60 - P}{1} = \frac{80 - P}{3}$

$\therefore 180 - 3P = 80 - P$

$\therefore 100 = 2P$

$P = 50$ $Q = 10$

$M.R._1 = 60 - 2Q = 40$

$M.R._2 = 80 - 6Q = 20$

If $M.C. = b + Q$ $M.C = MR$

$b_1 = 40 - 10 = 30$ $Q = 10$

$b_2 = 20 - 10 = 10$

$\therefore$ b will range from 10 to 30.

Q-2 $Q_D = 119 - 0.5P$

A's $SMC_1 = 6Q_1 + 48$

B's $SMC_2 = 12Q_2 + 18$ $P = ?$ $Q = ?$ $x = ?$

$P = \frac{119 - Q}{0.5}$

$P = 238 - 2Q$

$M.R. = 238 - 4Q$

$\therefore 238 - 4Q = 6Q + 48$ MC_1

$190 = 10Q$

$Q_1 = 19$ $P_1 = 238 - 38 = 200$

$238 - 4Q = 12Q + 18$

$220 = 16Q$

$Q_2 = \frac{220}{16} = \frac{55}{4} = 13.75$

$P_2 = 240.5$

$2(18Q + 55)$

$36Q + 132 = 238 - 2Q$

$38Q = 370$

$Q_1 = \frac{MC_1 - 48}{6}$

$Q_2 = \frac{MC_2 - 18}{12}$

$MC_1 = 6Q + 48$

$MC_2 = 12Q_2 + 18$

$2MC_1 = 12Q_1 + 96$

$3\Sigma MC = 12Q + 114$

$\Sigma MC = 4Q + 38$

$Q = Q_1 + Q_2 = \frac{1}{4}\Sigma MC - \frac{19}{2}$

$\Sigma MC = 4Q + 38$

$MR = 238 - 4Q$

$\therefore \quad 8Q = 200$

$\boxed{Q = 25}$

$P = 94 \times 2 = 188.$

$MR = 238 - 100 = 138.$

$MC_1 = 138$

$6Q_1 + 48 = 138$

$6Q = 90, \quad \boxed{Q_1 = 15}$

$MC_2 = 138$

$12Q_2 + 18 = 138$

$\boxed{Q_2 = 10}$

$Q = Q_1 + Q_2 = 25.$

$\pi_1 = (P - ATC_1)\, Q_1$

$\pi_2 = (P - ATC_2)\, Q_2$