TELECOMMUNICATION NETWORKS

MODERATE ASSIGNMENT

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BATCH : E2

① Total no. of subscriber = 1000

Peak hour = 40 % of 1000

= 400

External Traffic = $\frac{400}{5} = 80$

② $SAR = \frac{\sqrt{N}}{3}$

(a) $N = 228$, $SAR = \frac{\sqrt{228}}{3} = 3.72$

(b) $N = 32768$, $SAR = \frac{\sqrt{32768}}{3} = 60.34$

③ $M = N = 512$, $P = q = 16$, $\alpha = 0.7$

~~$P = \frac{\alpha}{S(1-}$~~ $P_B = \frac{(M-S)(N-S)\alpha}{MN}$

(a) $S = 16 \Rightarrow P_B = \frac{172262}{262144} = 0.657$

(b) $S = 24 \Rightarrow P_B = \frac{166366}{262144} = 0.635$

(c) $S = 31$, $P_B = \frac{161211}{262144} = 0.615$

Error = $\frac{0.615 - 0.61}{0.61} \times 100 = 0.820$

(4) Inlet utilization = 0.1

$$P_B = 0.002 = \frac{(M-S)(N-S)\alpha}{MN}$$

$$S = N - \sqrt{N \ln\left(\frac{1}{P_B}\right)}$$

(a) $N = 128$

$$S = 128 - \sqrt{128 \ln(500)}$$

$$= 100$$

(b) $N = 2048$

$$S = 2048 - \sqrt{2048 \ln(500)}$$

$$= 1935$$

(c) $N = 8192$

$$S = 8192 - \sqrt{8192 \ln(500)}$$

$$= 7967$$