

1.  $\lambda = 1000 \text{ pelanggan} \times 4 \text{ panggilan/jam} = 4000 \text{ panggilan/jam}$   
 $\mu = 400 \text{ panggilan/jam}$

$$A = \frac{\lambda}{\mu} = \frac{4000}{400} = 10 \text{ erlang}$$

$$t = \frac{A}{N} = \frac{10}{8} = 1,25 \text{ jam} = 75 \text{ menit}$$

2.  $T = 5 \text{ jam}$

$$A = \frac{V}{T} = \frac{(2 \times 35 \text{ menit}) + (2 \times 55 \text{ menit})}{5 \times 60 \text{ menit}} = \frac{100}{300} = 0,6 \text{ erlang}$$

3.  $A = \frac{V}{T} = \frac{30 \cdot 60}{3 \cdot 600} = \frac{1800}{3600} = 0,5 \text{ erlang}$

4. 1)  $N = 20$ ,  $A = 1,25 \text{ erlang}$

$$A \text{ per sirkuit} = \frac{1,25}{20} = 0,0625 \text{ erlang}$$

$$\text{Sirkuit sbbuk} = 0,0625 \text{ jam} = 3,75 \text{ menit}$$

2)  $N = 4$ ,  $A = 36 \text{ cos} = 1 \text{ erlang}$

$$A \text{ per sirkuit} = \frac{1}{4} = 0,25 \text{ erlang}$$

$$\text{Sirkuit sbbuk} = 0,25 \text{ jam} = 15 \text{ menit}$$

3)  $N = 15$ ,  $A = 10 \text{ erlang}$

$$A \text{ per sirkuit} = \frac{10}{15} = \frac{2}{3} = 0,667 \text{ erlang}$$

$$\text{Sirkuit sbbuk} = 0,667 \text{ jam} = 40 \text{ menit}$$

$$5. \quad 1) \quad A = \frac{A_1 \cdot T_1 + A_2 \cdot T_2 + A_3 \cdot T_3 + A_4 \cdot T_4}{T}$$

$$A = \frac{15 \cdot \frac{1}{4} + 70 \cdot \frac{1}{4} + 54 \cdot \frac{1}{4} + 20 \cdot \frac{1}{4}}{1}$$

$$A = 3,75 + 17,5 + 13,5 + 5 = 39,75 \text{ erlang}$$

$$2) \quad A = \frac{V}{T} = \frac{15 + 70 + 54 + 20}{1} = 159 \text{ erlang}$$

$$3) \quad t_p = 5 \text{ menit}$$

$$A = \frac{1}{T} \sum p \cdot t_p = \frac{1}{1} \cdot \left( \frac{15 \cdot \frac{5}{60} + 70 \cdot \frac{5}{60} + 54 \cdot \frac{5}{60} + 20 \cdot \frac{5}{60}}{1} \right)$$

$$A = 13,25 \text{ erlang}$$

$$6. \quad C = 8500$$

$$h = 10 \text{ menit}$$

$$1) \quad A = C \cdot \frac{h}{T} = 8500 \cdot \frac{10}{60} = 1416,67 \text{ erlang}$$

$$2) \quad A_c = (8500 - 55) \cdot \frac{10}{60} = 1407,5 \text{ erlang}$$

$$3) \quad A_R = 55 \cdot \frac{10}{60} = 9,167 \text{ erlang}$$

$$4) \quad B = \frac{R}{A} = \frac{55}{1700} = \frac{11}{1700} = 6,47 \times 10^{-3}$$

$$5) \quad \text{Waktu kongesti} = \frac{11}{1700} \text{ jam} = 23,29 \text{ detik}$$

7.

| Day / Time | 13.00 | 14.00 | 15.00 | 16.00 | 17.00       |
|------------|-------|-------|-------|-------|-------------|
| Rabu       | 256   | 623   | 420   | 567   | 369         |
| Kamis      | 212   | 400   | 590   | 160   | 985         |
| Jumat      | 780   | 547   | 329   | 240   | 609         |
| Jumlah     | 1248  | 1570  | 1339  | 967   | <u>2043</u> |

$$\text{Trasik TCBH} = \frac{2043}{3} = 681 \text{ erlang}$$

$$\text{Trasik ABBH} = \frac{623 + 985 + 780}{3} = 796 \text{ erlang}$$

8.

$$A = \frac{V}{T} = \frac{3 \times 60 + 2 \times 20 + 3 \times 20}{60 - 10} = \frac{130}{50} = 2,6 \text{ erlang}$$

$$V = 3 \times 60 + 2 \times 20 + 3 \times 20 = 130 \text{ menit}$$