

Answers

1. (b) $R_1 \times R_4 = \frac{L}{C}$ (c) $\omega = \frac{1}{C\sqrt{R_3 \times R_4}}$
2. (c) Gain $\cong 10$, $f \cong \frac{1}{2\pi CR_3} \cong 21$ MHz
3. (a) 40 k Ω , 2.5 k Ω (b) -11.5
4. 0.525 A
5. (a) 400 W, 246 V (b) 1.35 mF
6. (b) $Y = \overline{\overline{A+C+B+C}}$
7. (b) $Y = \overline{\overline{\overline{A.D.C.E.B.E}}}$
8. (a) 2^{33} bits = $2^{30}/10^6$ Mbytes
(b) (i) Decrement until zero (ii) Infinite loop
9. (c) $J_A = I.Q_B$, $K_A = \overline{I.Q_B} + I.\overline{Q_B}$, $J_B = \overline{I}$, $K_B = I$
(d) (i) 2 bistables (ii) 2 bistables
10. (c) Vertically downwards
11. (a) $B = \frac{\mu_0 I a^2}{2(z^2 + a^2)^{3/2}}$
12. (a) 2.28×10^{-4} N (b) 5×10^{-5} Wb, 0.05 μ C (c) 0.019 V (amplitude)