

1. (a) As Fig. 1 depicts, what value of Z will yield maximum average power transfer to Z ? (5%)
 (b) Please calculate the maximum average power delivered to Z . (10%)

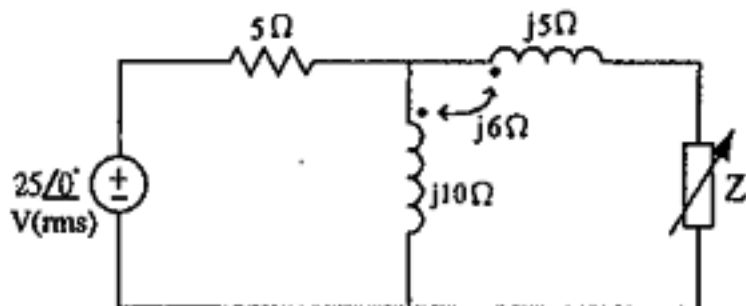


Fig. 1

2. (a) Find the rms (root mean square) value of the voltage source $V(t)$ shown in Fig. 2. (5%)
 (b) If this voltage is applied to a $5\ \Omega$ resistor, what is the average power dissipated in the resistor? (5%)

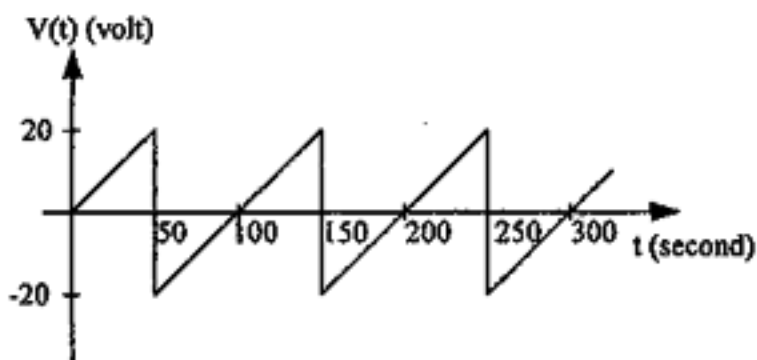


Fig. 2

3. In Fig. 3, if $v(t) = 100 \sin(100t) + 20 \sin(200t)$,
 (a) Find the value of average power delivered to the $200\ \Omega$ resistor? (5%)
 (b) Calculate the power factor of the load? (5%)

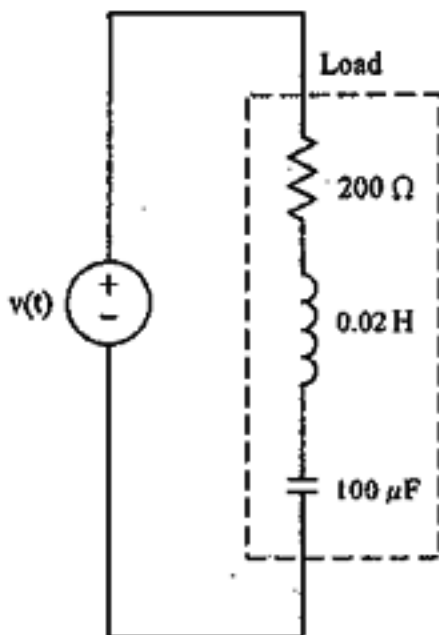


Fig. 3

4. Find the unit step response $V_o(t)$ for all t for the amp circuit shown in Fig. 4. (Initial condition: $V_c(0^-) = 0$) (20%)

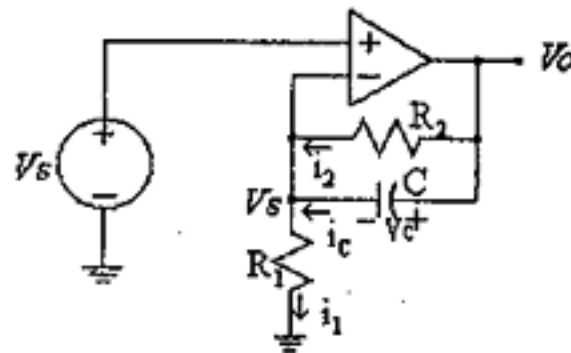


Fig. 4

5. In the circuit shown in Fig. 5, find a single expression for $i(t)$ for all t . (Initial condition: $i(0^-) = 0$) (15%)

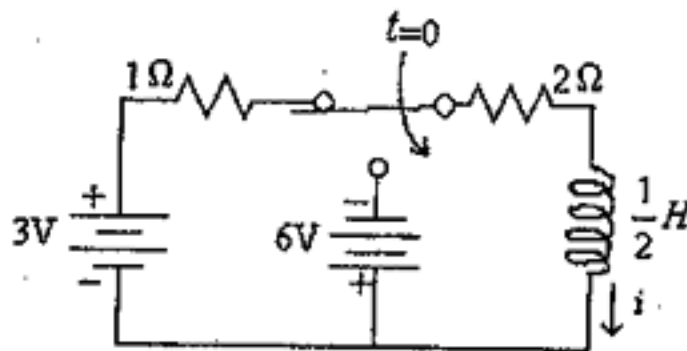


Fig. 5

6. Determine the z and y parameters for the circuits shown in Fig. 6. (15%)

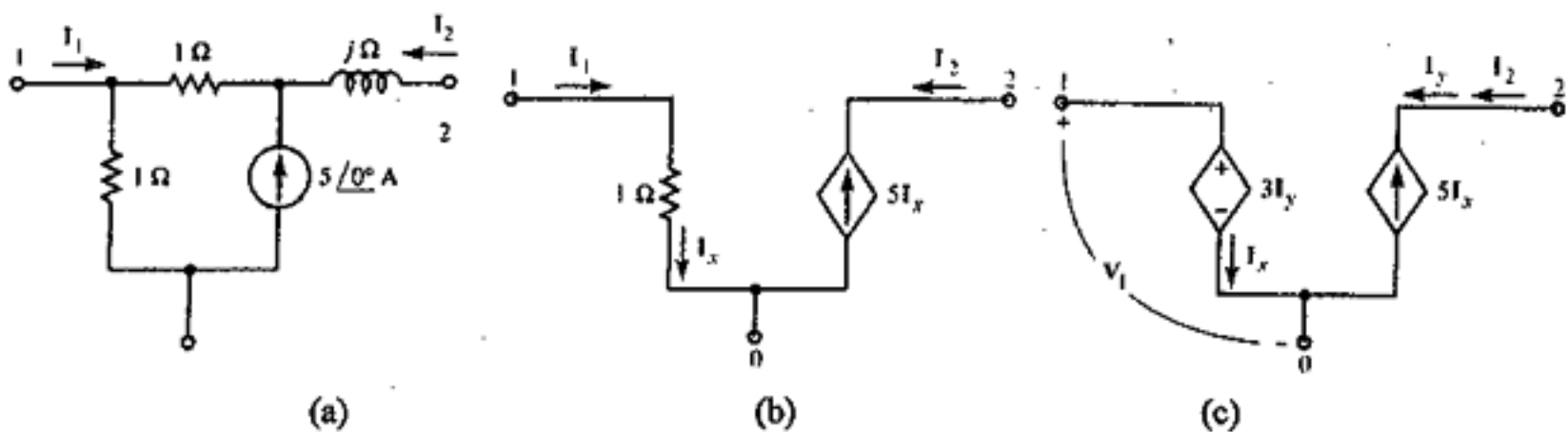


Fig. 6

7. (a) Find readings of the AC voltmeter in Fig. 7 under both abc and acb phase sequences. Assume the line-to-line rms voltage is 208 V and the AC voltmeter is ideal. (10%)
 (b) If the AC voltmeter in Fig. 7 is replaced by a small neon lamp in series with a resistance, explain the brightness of the neon lamp. (5%)

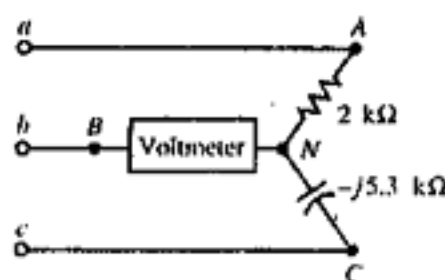


Fig. 7