



KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE

Answer any TEN Questions
(10 X 10 = 100 Marks)

1. For the circuit shown in Figure 1. Determine the node voltages

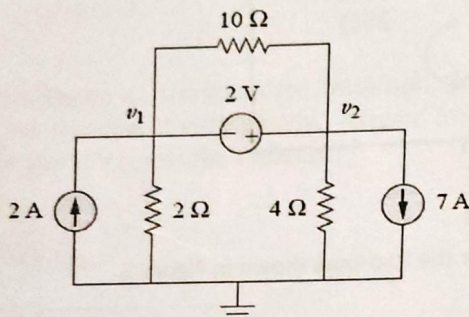


Figure 1

2. Determine the load impedance that maximizes the average power drawn from the circuit of Figure 2. What is the maximum average power?

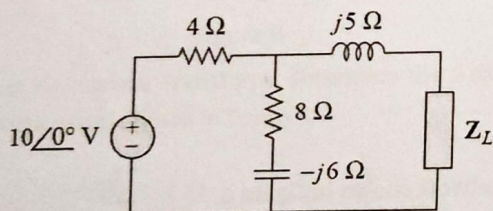


Figure 2

3. For the circuit in Figure 3, find $i(t)$ for $t > 0$.

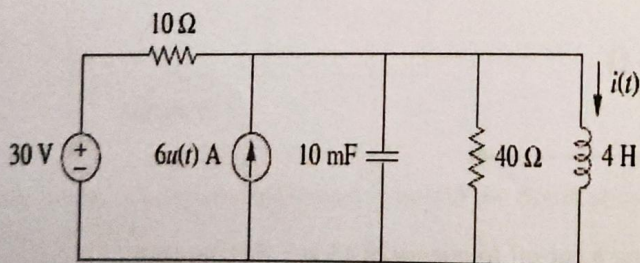


Figure 3

4. Construct the network graphs for the given circuit diagram as shown in Figure 4 and also find out the Incidence matrix, tie set matrix and cut-set matrix.

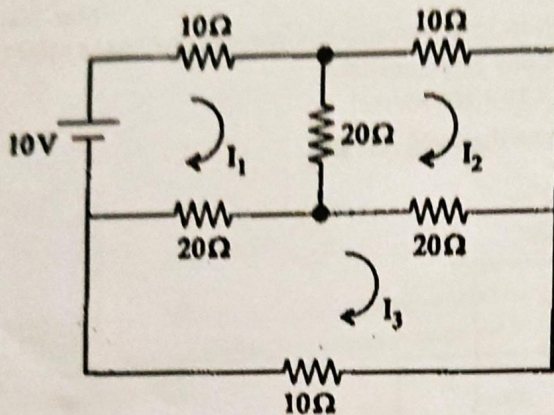


Figure 4

5. Determine the y parameters for the two-port shown in Figure 5

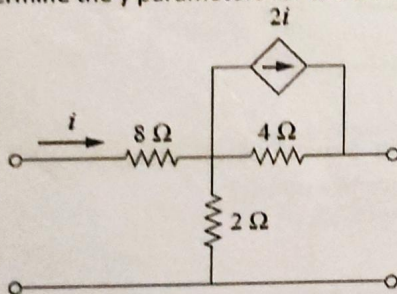


Figure 5

6. Find the hybrid parameters for the two-port network shown in Figure 6.

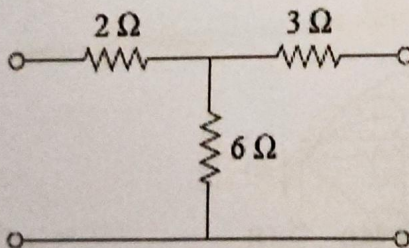


Figure 6

7. A low-pass T section filter having a cut-off frequency of 15 kHz is connected in series with a high-pass T section filter having a cut-off frequency of 10 kHz. The terminating impedance of the filter is 600 Ω .
- Determine the values of the components comprising the composite filter.
 - Sketch the expected attenuation against frequency characteristic.

8. Determine what type of filter is in Figure 7. Calculate the corner frequency

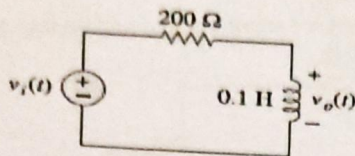


Figure 7

9. Consider the circuit in Figure 8. Using Laplace Transform, find the value of the voltage across the capacitor if $v_s(t) = 10u(t)$ V. Assume at $t=0$, -1 A flows through the inductor and +5V across the capacitor.

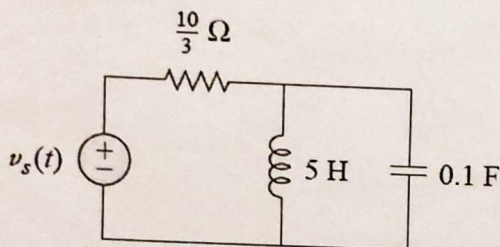


Figure 8

10. By using Laplace Transform, determine the transfer function $H(s) = V_o(s)/I_o(s)$ for the circuit shown in figure 9.

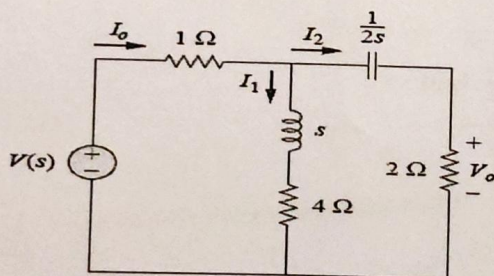


Figure 9

11. Use the Fourier transform to Determine $v_o(t)$ in the circuit shown in figure 10 for $v_i(t) = 2e^{-3t}u(t)$.

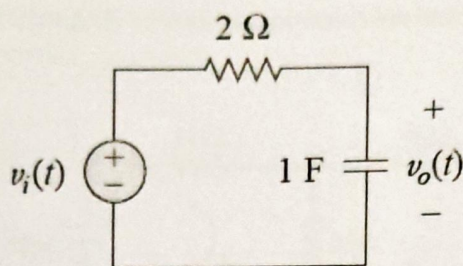


Figure 10

12. If the square wave shown in Figure 11 (a) is applied to the circuit in Figure 11 (b), find the Fourier series for $v_o(t)$.

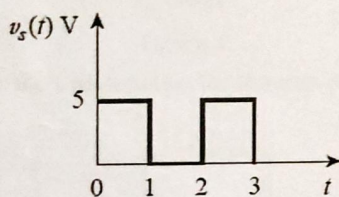


Figure 11(a)

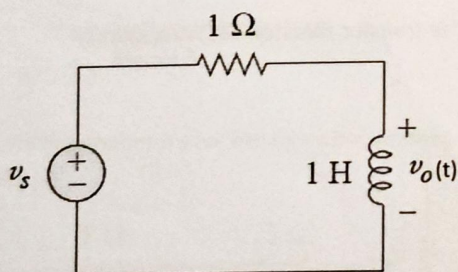


Figure 11(b)

