

國立彰化師範大學103學年度碩士班招生考試試題

系所： 工業教育與技術學系 組別： 乙組(選考丙)

科目： 電路學

☆☆請在答案紙上作答☆☆

共 2 頁，第 1 頁

1. Use Loop analysis method to find the power associated with the dependent source in the following Fig. 1. (15%)

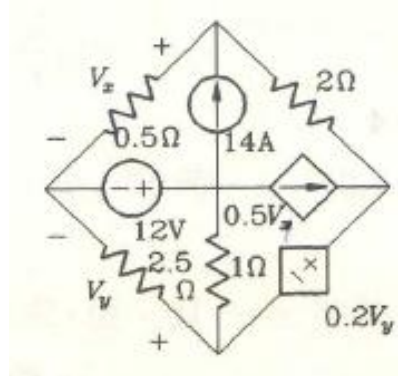


Fig. 1

2. Calculate the sinusoidal steady state response $i(t)$ shown in Fig. 2. (15%)

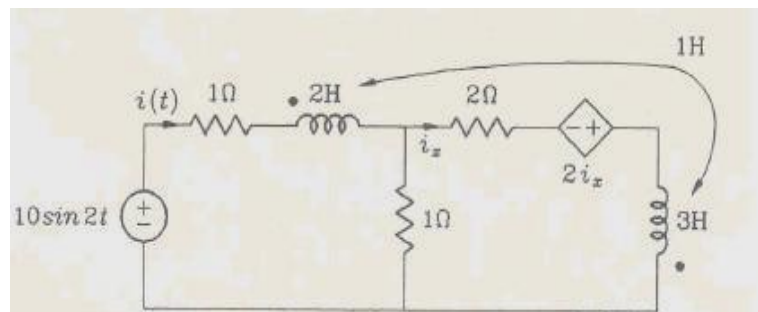


Fig. 2

3. In the typical application of a two-port model, the circuit is driven at port 1 and loaded at port 2. Figure 3 shows the s-domain circuit diagram for a typically terminated two-port model. Please find the following problem in the Fig. 3 using the z-parameters to model the two-port portion of the circuit. Find the Thevenin voltage and impedance (V_{Th} , Z_{Th}) with respect to port 2. (20%)

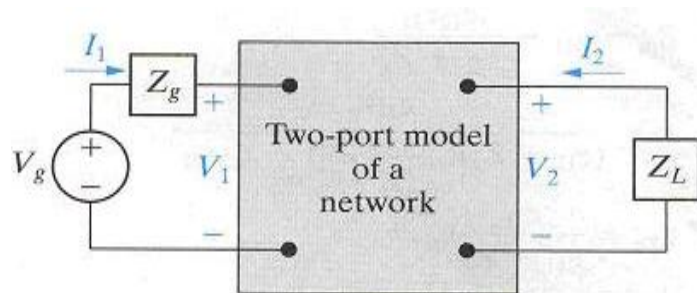


Fig. 3

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4. Find the current i in the circuit shown in Fig. 4. (15%)

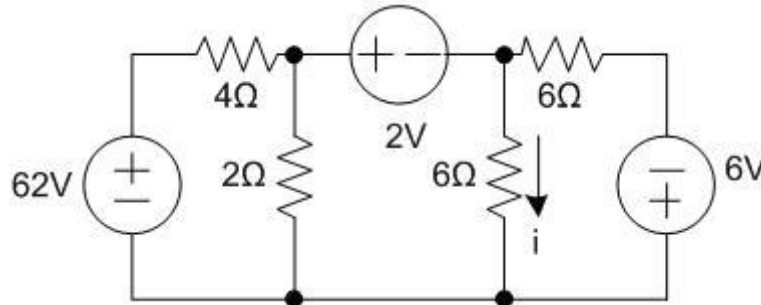


Fig. 4

5. Find the unit impulse response for the current $i(t)$ in Fig. 5. (15%)

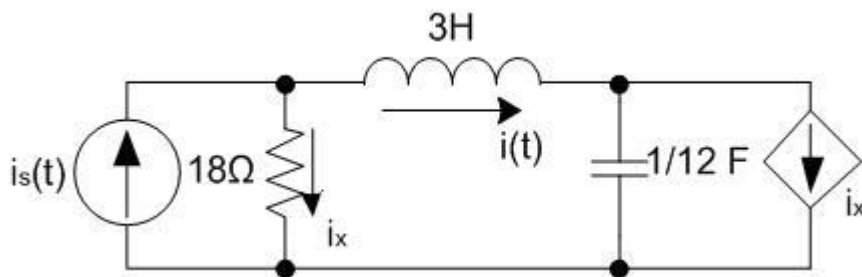


Fig. 5

6. Find the s-domain response $V(s)$ and $I(s)$ corresponding to the voltage $V(t)$ and the current $i(t)$ shown in Fig. 6 in terms of the independent source waveforms $V_{g1}(s)$ and $V_{g2}(s)$. Use nodal analysis. (20%)

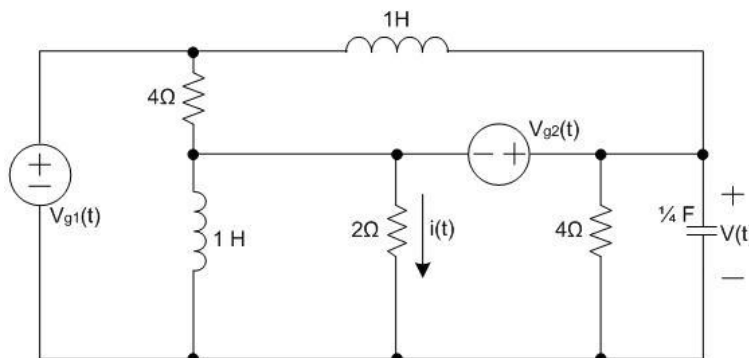


Fig. 6