

國立臺北科技大學九十四學年度學士班轉學考試

電子系 電路學試題

填准考證號碼

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第一頁 共一頁

注意事項：

1. 本試題共 5 題，共 100 分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在試卷答案欄內，否則不予計分。

解題目前，請先將電路圖畫於答案卷上

1. Find the input resistance of the following symmetric circuit. (10%)

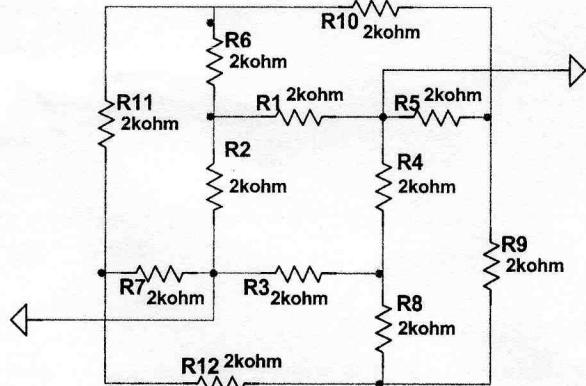


Fig. 1

2. (a) For the circuit shown in Fig. 2, determine the impedance Z_L that results in maximum average power transferred to Z_L . (15%)
- (b) What is the maximum average power transferred to the load impedance determined in (a)? (10%)

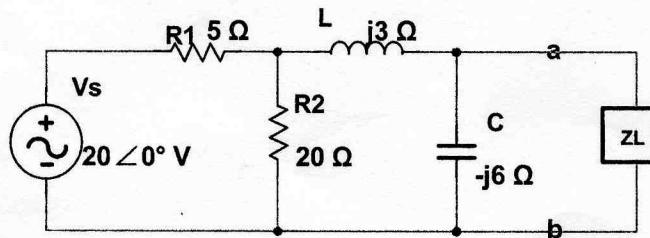


Fig. 2

3. Consider the circuit in Fig 3. Write the node voltages equations that use the matrix method. Assume that $v_c(0)V$ is across the capacitor and $i_{L1}(0)A$ and $i_{L2}(0)A$ flow through the inductor. (25%)

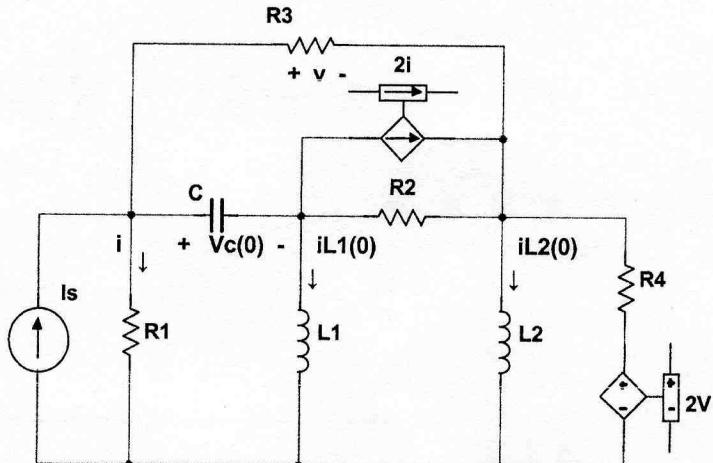


Fig 3

4. Find the y parameters of the two-port in fig 4. (20%)

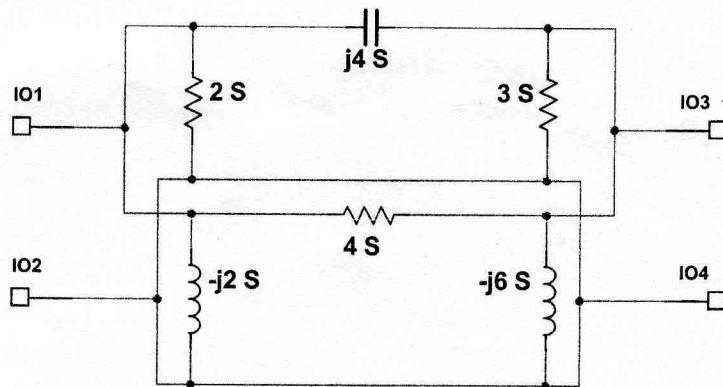


Fig 4

5. For the series RC circuit in Fig 5:

- Find the transfer function between the source voltage and output voltage. (10%)
- Determine an equation for the cutoff frequency in the series RC circuit. (5%)
- Choose values for R and C that will yield a low-pass filter with a cutoff frequency of 3 kHz. (5%)

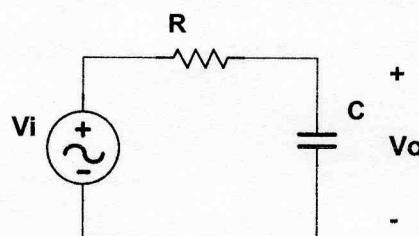


Fig 5