

# 國立高雄師範大學 106 學年度學士班轉學生招生考試試題

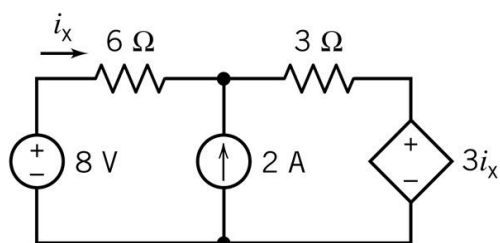
系所別：光電與通訊工程學系三年級

科 目：電路學

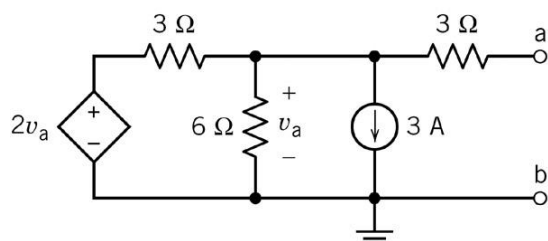
※注意：1.不必抄題，作答時請將試題題號及答案依照順序寫在答案卷上，於本試題上作答者，不予計分。

2.限用藍色或黑色之鋼筆、原子筆作答，以鉛筆或其他顏色作答者不予計分。

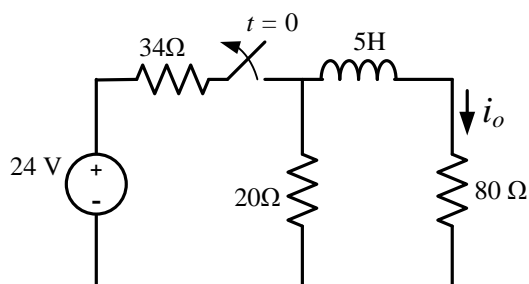
1. Use “superposition” to find  $i_x$ . (15%)



2. Find the Thevenin equivalent at terminals  $a-b$  of the following circuit. (20%)



3. Find  $i_o$  for  $t > 0$ . (15%)



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4. Analyze the circuit shown in the following **Fig. 1**. Determine  $v_{out}$  in terms of  $v_1$ ,  $v_2$ ,  $R_1$ ,  $R_2$ , and  $R_3$ . (15%)

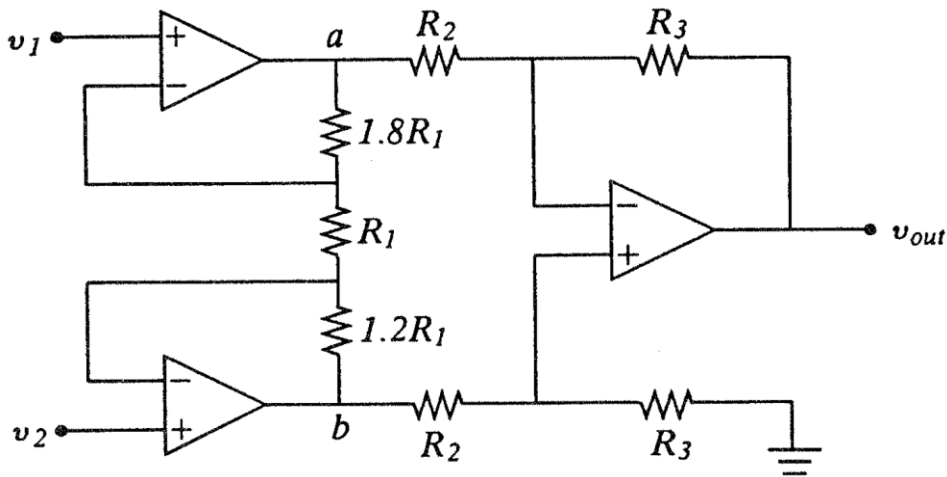


Fig. 1

5. Find the **transfer function** of a second-order bantpass filter with a center frequency of  $10^5$  rad/s, a center-frequency gain of 10, and a 3 dB bandwidth of  $10^3$  rad/s. (15%)
6. For the circuit in **Fig. 3**, find
- (a) the resonant frequency  $\omega_0$  (10%)
  - (b)  $Z_{in}(\omega_0)$  (10%)

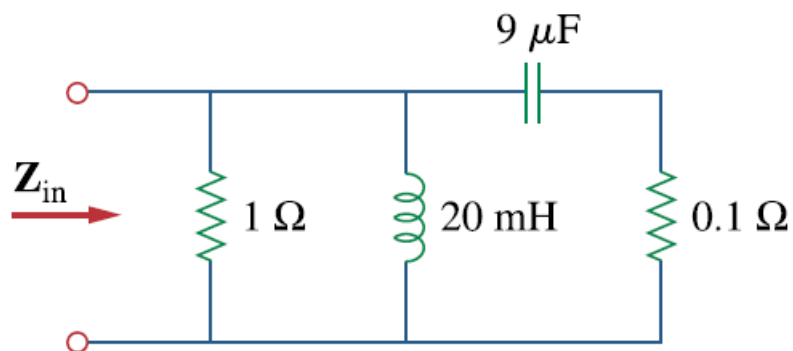


Fig. 3