國立中正大學
114學年度碩士班招生考試
試 題

[第3節]

科目名稱	電路學
系所組別	電機工程學系-電力與電能處理甲組

—作答注意事項—

※作答前請先核對「試題」、「試卷」與「准考證」之系所組別、科目名稱是否相符。

1. 預備鈴響時即可入場，但至考試開始鈴響前，不得翻閱試題，並不得書寫、畫記、作答。
2. 考試開始鈴響時，即可開始作答；考試結束鈴響畢，應即停止作答。
3. 入場後於考試開始40分鐘內不得離場。
4. 全部答題均須在試卷（答案卷）作答區內完成。
5. 試卷作答限用藍色或黑色筆（含鉛筆）書寫。
6. 試題須隨試卷繳還。

國立中正大學 114 學年度碩士班招生考試試題

科目名稱：電路學　　本科目共 2 頁　第 1 頁

系所組別：電機工程學系-電力與電能處理甲組

1. Given the network in Fig. 1, find the power dissipated in the 3-Ω resistor and the energy stored in the capacitor 2F. (15 points)
2. Find the input/output relationship (i.e. i_{in}/i_o) in term of R_F, R_L, R_I for the current amplifier shown in Fig. 2. (15 points)
3. Use the differential equation approach to find Vo(t) for t > 0 in the network in Fig. 3. (15 points)
4. Find the equivalent impedance Zeq for the circuit in Fig. 4. (15 points)
5. Find $i_C(t)$ and i(t) in the network in Fig. 5. (20 points)
6. Given the network in Fig. Fig. 6, find the average power supplied and the average power absorbed by each element. (20 points)

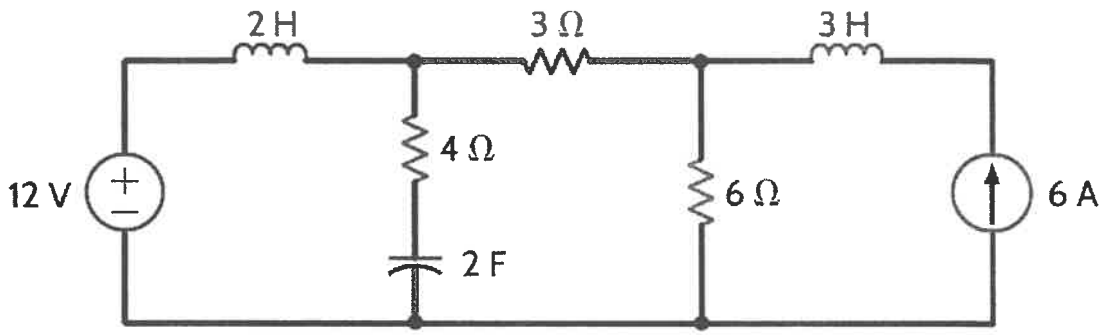

Fig. 1. To find the power dissipated in the 3-Ω resistor and the energy stored in the capacitor.

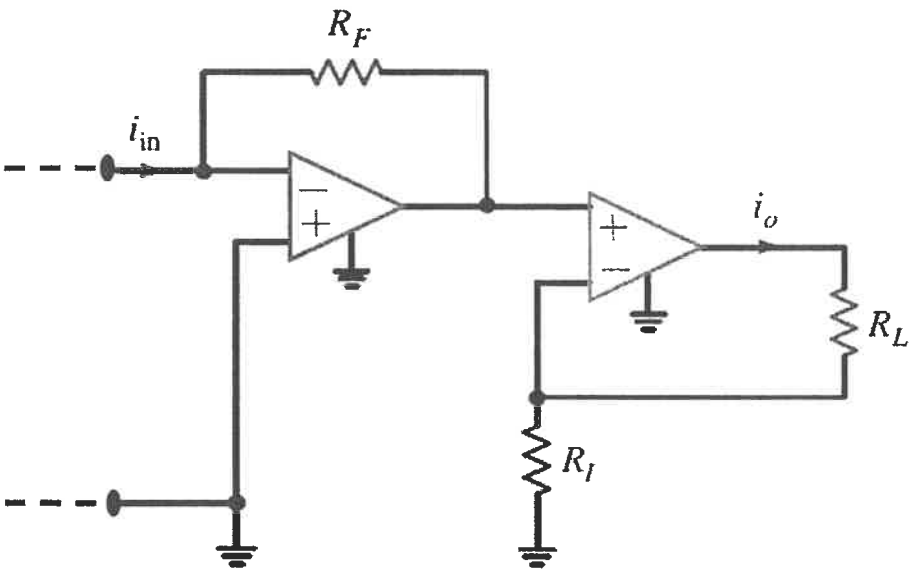

Fig. 2. Find the input/output relationship (i_{in}/i_o) for the current amplifier.

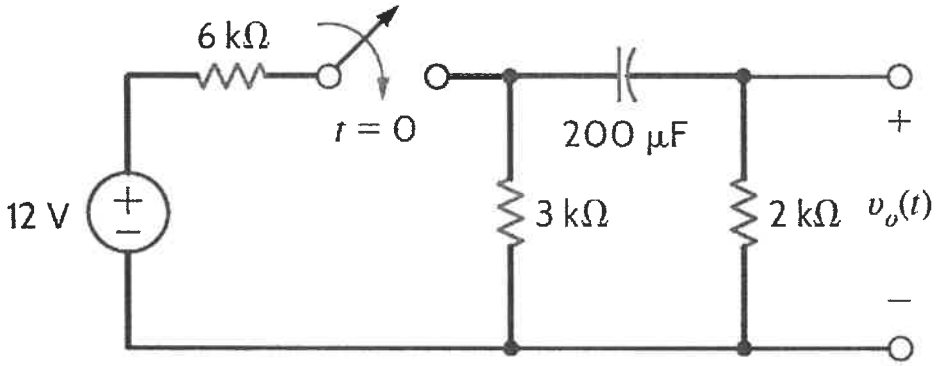

Fig. 3. Use the differential equation approach or Laplace transform to find Vo(t) for t > 0 in the network.

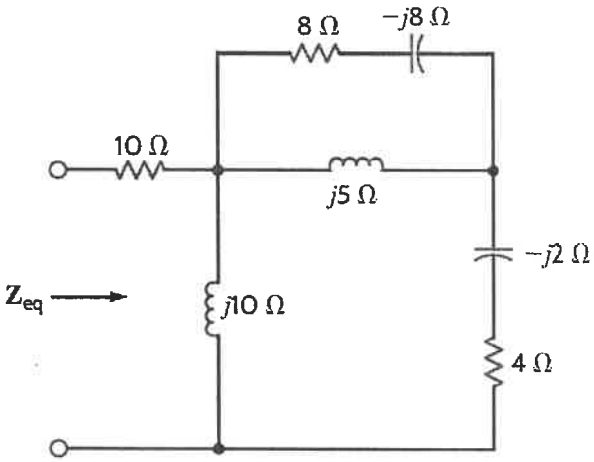

Fig. 4. Find the equivalent impedance Zeq.

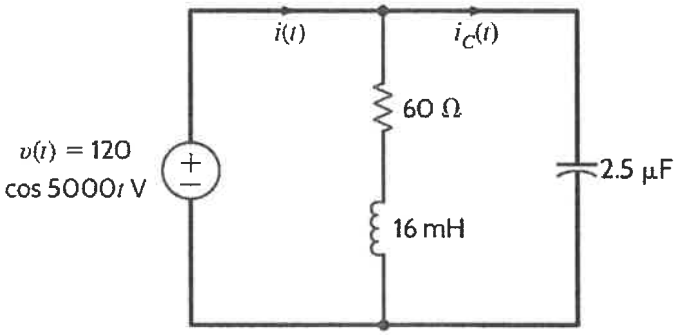

Fig. 5. Find $i_C(t)$ and i(t) in the network.

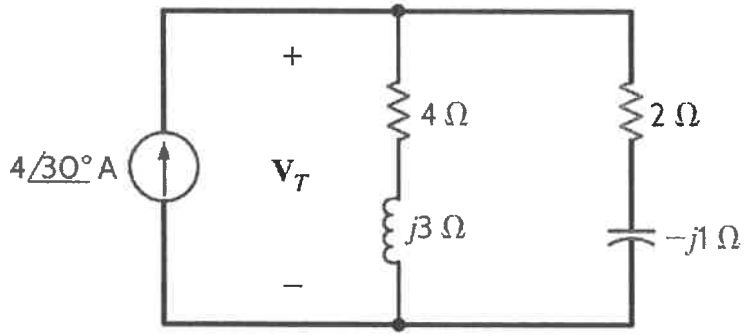

Fig. 6. To find the average power supplied and the average power absorbed by **each element**.