

九十八學年度四年制二、三年級轉學生招生考試

四技三年級 電機工程系

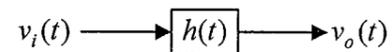
第三節 專業科目 (二) 電路學 試題

第一頁 共一頁

注意事項：

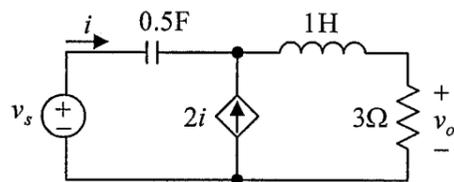
1. 本試題共 9 題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. For the following system, when the input voltage is $v_i(t) = 2\delta(t)$ V, the output is $v_o(t) = 10e^{-2t} - 6e^{-4t}$ V. Find the output when the input is $v_i(t) = 4e^{-t}u(t)$ V. (10%)

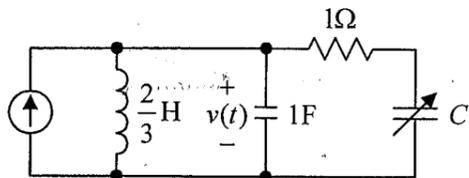


2. The voltage and current at the terminals of a circuit are
 $v(t) = 80 + 120 \cos 120\pi t + 60 \cos(360\pi t - 30^\circ)$ V
 $i(t) = 5 \cos(120\pi t - 10^\circ) + 2 \cos(360\pi t - 60^\circ)$ A
 Find the average power absorbed by the circuit. (10%)

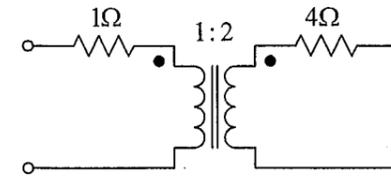
3. Obtain the transfer function $H(s) = V_o(s)/V_s(s)$ for the following circuit. (10%)



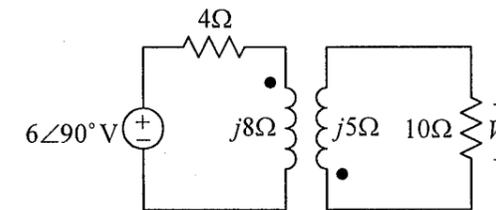
4. In the following circuit, $i(t) = 10 \sin t$ A. Calculate the value of C such that $v(t) = V_o \sin t$ V. Find V_o . (10%, 10%)



5. Determine the h parameters for the following circuit. (10%)

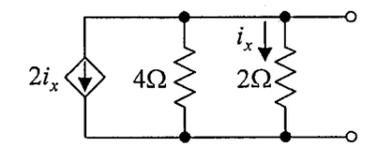


6. Determine the voltage V_o in the circuit. (10%)



7. When connected to a 120V(rms), 60Hz power line, a load absorbs 4kW at a lagging power factor of 0.8. Find the value of capacitance necessary to raise the PF to 0.95. (10%)

8. Determine the Thevenin equivalent of the following circuit. (10%)



9. Consider the Wheatstone bridge shown in the following circuit. Calculate V_{ab} . (10%)

