



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering

Final Examination, Fall – 2023 (Day)

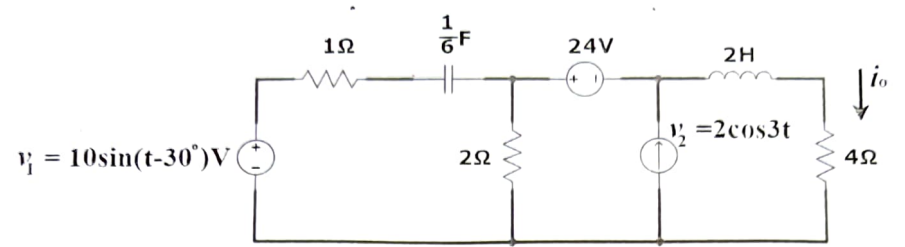
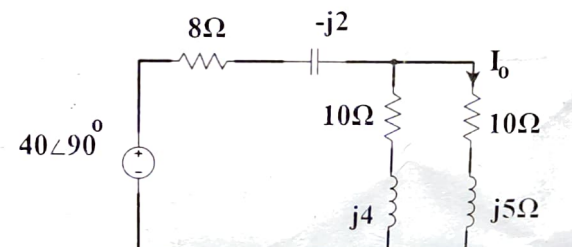
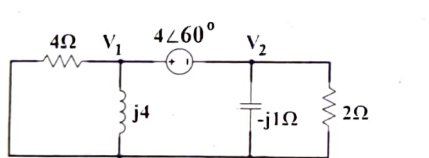
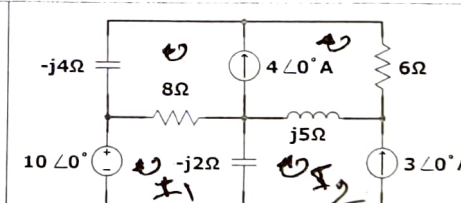
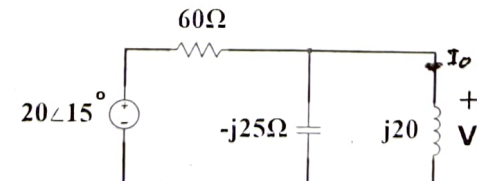
Course Code: 0713-121
Section: A, B, C, D
Full Marks: 25

Course Title: Electrical Circuits II
Level-Term: L1-T2
Exam Date: September 23, 2023

Teacher's Initial: MSA, KNN
Time: 1.5 Hours

Answer any five out of seven

<p>✓ Q.1</p>	<p>If $v_s(t) = 20 \sin(100t - 40^\circ)$ volt, find $i_x(t)$ in the following figure Q.1.</p> <div style="text-align: center;"> </div> <p style="text-align: center;">Fig: Q.1</p>	<p>CO-1 C(2)</p>	<p>5</p>
<p>Q.2</p>	<p>Find the equivalent impedance $Z_{eq(1)}$ in the following figure Q.2(a) & $Z_{eq(2)}$ in figure Q.2(b).</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p style="text-align: center;">Fig: Q.2(a)</p> </div> <div style="text-align: center;"> <p style="text-align: center;">Fig: Q.2(b)</p> </div> </div>	<p>CO-1 C(2)</p>	<p>5</p>
<p>Q.3</p>	<p>(a) Find the r.m.s. value of the full wave rectified voltage in figure Q.3(a). (b) Calculate the phase shift angle by the RL circuit in figure Q.3(b).</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p style="text-align: center;">Fig: Q.3(a)</p> </div> <div style="text-align: center;"> <p style="text-align: center;">Fig: Q.3(b)</p> </div> </div>	<p>CO-2 C(2)</p>	<p>5</p>

<p>Q.4</p>	<p>(a) Determine i_o in the following figure Q.4, when DC voltage source is active only. (b) Calculate the reactances when (1) v_1 is active only, and (2) v_2 is active only</p>  <p style="text-align: center;">Fig: Q.4</p>	<p>CO-2 C(3) 5</p>
<p>Q.5</p>	<p>Calculate I_o in the following circuit using (a) Norton's theorem, and (b) Thevenin's theorem.</p>  <p style="text-align: center;">Fig: Q.5</p>	<p>CO-2 C(3) 5</p>
<p>Q.6</p>	<p>(a) Obtain the nodal equations for the following figure Q.6(a). (b) Obtain the equation for the super mesh in the following figure Q.6(b).</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="287 1187 718 1388">  <p style="text-align: center;">Fig: Q.6(a)</p> </div> <div data-bbox="734 1164 1197 1411">  <p style="text-align: center;">Fig: Q.6(b)</p> </div> </div>	
<p>Q.7</p>	<p>(a) Using current divider rule, calculate I_o in the following figure Q.7. (b) Using concept of source theorem, calculate also I_o.</p>  <p style="text-align: center;">Fig: Q.7</p>	