Daffodil International University

Department of Electrical and Electronic Engineering

Faculty of Engineering

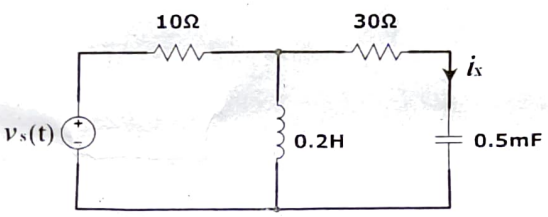
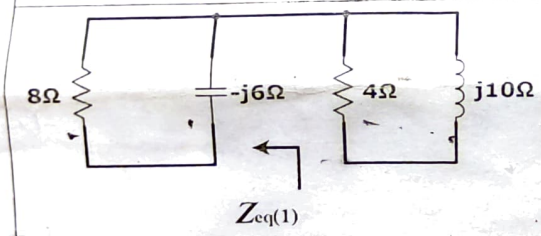
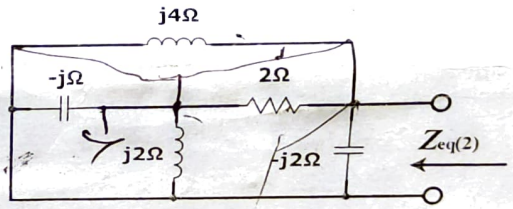
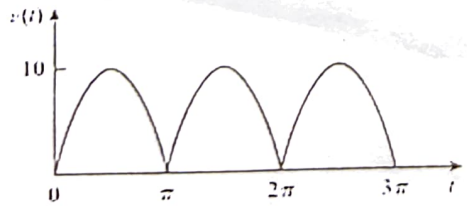
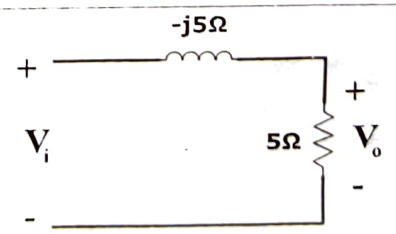
Final Examination, Fall – 2023 (Day)

Course Code: 0713-121 | Course Title: Electrical Circuits II

Section: A, B, C, D | Level-Term: L1-T2 | Teacher's Initial: MSA, KNN

Full Marks: 25 | Exam Date: September 23, 2023 | Time: 1.5 Hours

Answer any five out of seven

Q.1	If $v_S(t) = 20 \sin(100t - 40°)$ volt, **find** $i_S(t)$ in the following figure Q.1.  Fig: Q.1	CO-1 C(2)	5
Q.2	**Find** the equivalent impedance $Z_{eq(1)}$ in the following figure Q.2(a) & $Z_{eq(2)}$ in figure Q.2(b).  Fig: Q.2(a)  Fig: Q.2(b)	CO-1 C(2)	5
Q.3	(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).  Fig: Q.3(a)  Fig: Q.3(b)	CO-2 C(2)	5

Q.4	(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	CO-2 C(3)	5

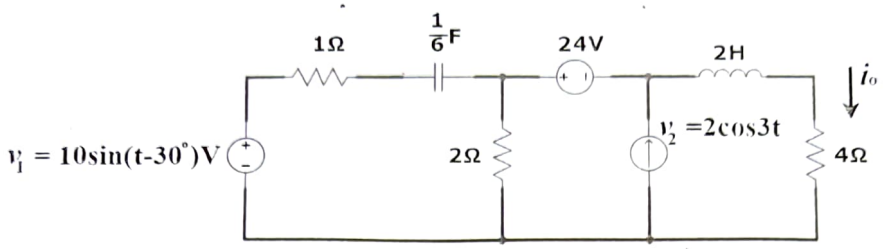


Fig: Q.4

Q.5	Calculate I_o in the following circuit using (a) Norton's theorem, and (b) Thevenin's theorem.	CO-2 C(3)	5

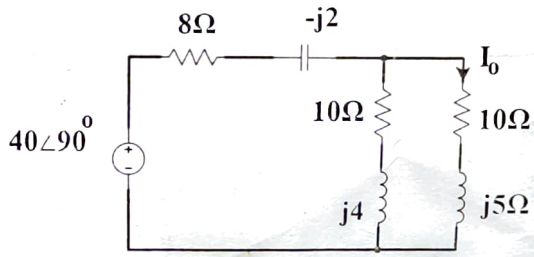


Fig: Q.5

Q.6 (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).

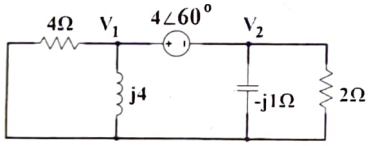


Fig: Q.6(a)

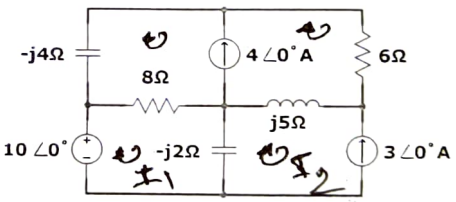


Fig: Q.6(b)

Q.7 (a) Using current divider rule, calculate I_o in the following figure Q.7.
(b) Using concet of source theorem, calculate also I_o.

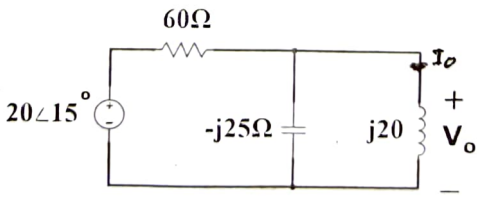


Fig: Q.7