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Daffodil International University

Department of Electrical and Electronic Engineering

Faculty of Engineering

Midterm Examination, Spring-2026

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

Section: A,B,C,D,E,F,G | Level-Term: L1-T2 | Teacher's Initial: MSA,KMT,KNA

Full Marks: 25 | Exam Date: February 22, 2026 | Time: 1.5 Hours

Question no. 1 is Compulsory. Answer ANY FOUR from the remaining Questions.

Q1. **Derive** the relationship between load impedance and thevenin equivalent impedance for maximum average power transfer through a load impedance Z_L in Fig. 1. CO-1 C(2) 5

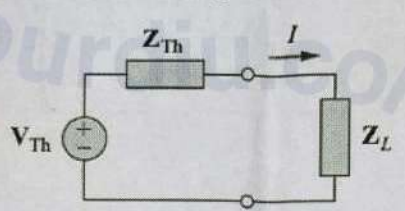


Fig. 1

Q2. A current source $i(t)$ has the waveform shown in Fig. 2. CO-1 C(3) 3

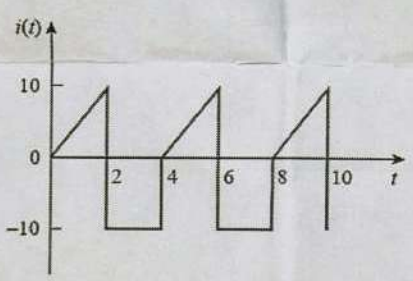


Fig. 2

(a) **Determine** the RMS value of current *source* $i(t)$.

(b) **Calculate** the average value of the current source $i(t)$. 2

Q3. (a) **Apply** an appropriate circuit analysis technique and find the value of i_0 in Fig. 3. CO-2 C(3) 5

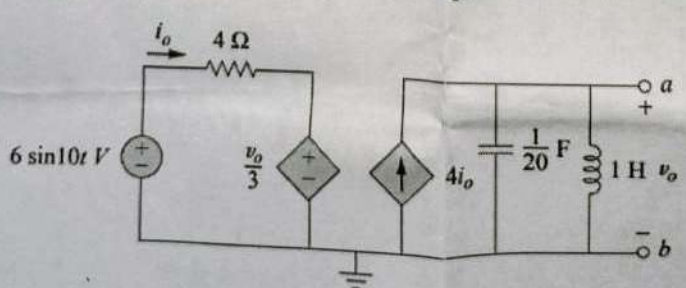


Fig. 3

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Q4. In an R-L-C series circuit, R = 100 Ω, L = 67 mH and C = 33 μF. If the supply voltage, v(t) = 35 sin(150t) V, **compute** — CO-1 C(3) — 3
(a) Real and Reactive power of the circuit.
(b) The expression of instantaneous power of the circuit. — 2

Q5. **Find** the equivalent impedance of the following circuit, when $\omega = 10^3$ rad/s in the Fig 5. — CO-1 C(3) — 5

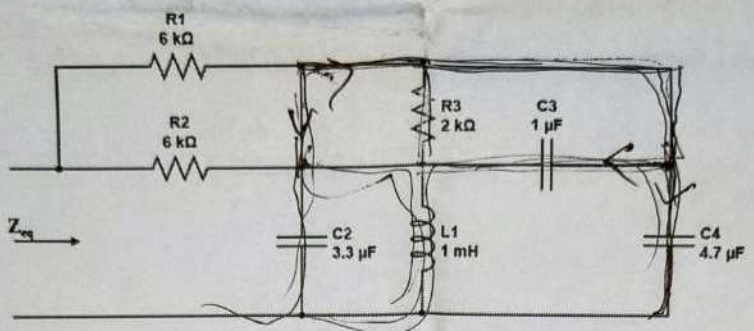


Fig. 5

Q6. **Determine** the Thevenin equivalent of the circuit seen from terminal a-b in the Fig 6. — CO-2 C(3) — 5

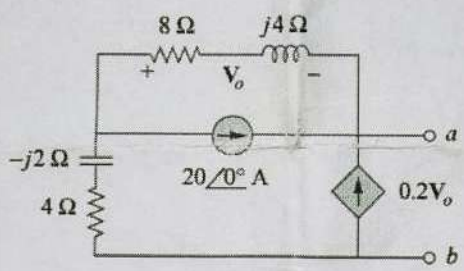


Fig. 6

Q7. Given the parallel circuit shown in Fig. 7, **calculate** I, I_1, I_2. Also determine the power factor and complex power supplied by the source. Consider f = 50 Hz. — CO-1 C(3) — 5

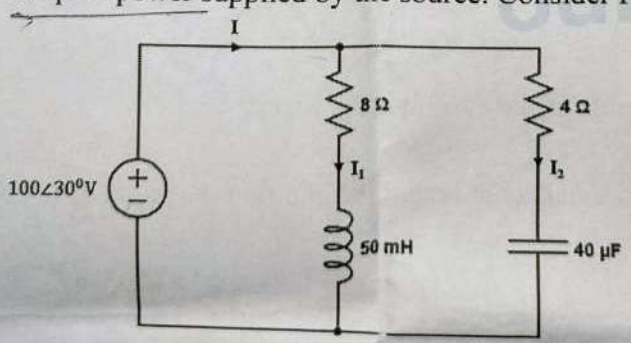


Fig. 7