



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Midterm Examination, Fall-2026

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

Course Title: Electrical Circuits II
Level-Term: L1-T2
Exam Date: 28 October, 2026

Teacher's Initial: MSA, KNA, MW
Time: 1.5 Hours

Answer ANY TWO from Questions 1 – 3, and ANY THREE from Questions 4 – 7.

Q1. In a series R-L-C circuit, $R = 100 \Omega$, $L = 67 \text{ mH}$ and $C = 33 \mu\text{F}$. If the supply voltage is, $v(t) = 120 \sin(377t) \text{ V}$, compute –

CO-1
C(3)

- (a) Real and Reactive power of the circuit.
(b) The expression of instantaneous power of the circuit.

Q2. The voltage source $v(t)$ of Fig. 2(b) has the waveform shown in Fig. 2(a).

CO-1
C(3)

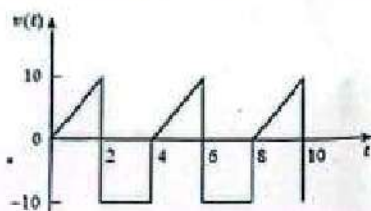


Fig. 2(a)

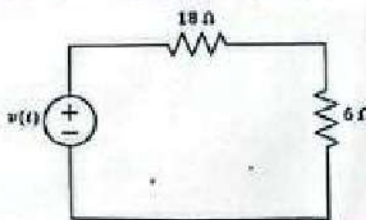


Fig. 2(b)

(a) Determine the RMS value of voltage $v(t)$.

(b) Calculate the average power absorbed by the 6Ω resistor.

$$2 = 2\pi \times 10$$
$$= 2\pi \times 10$$
$$P = V_{\text{eff}} \cdot I_{\text{eff}}$$
$$P = 10 \cdot 9(4)$$
$$P = 90$$

3

2

Q3. Calculate I , I_1 , I_2 in the circuit of Fig. 3. Also determine the power factor, real and reactive power supplied by the source. Consider $f = 50 \text{ Hz}$.

CO-1
C(3)

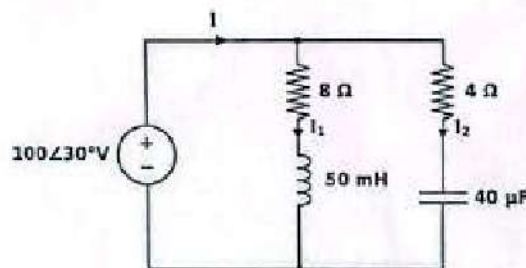


Fig. 3

Q4. Determine the value of v_o , and i_o in the circuit of Fig. 4.

CO-2
C(3)

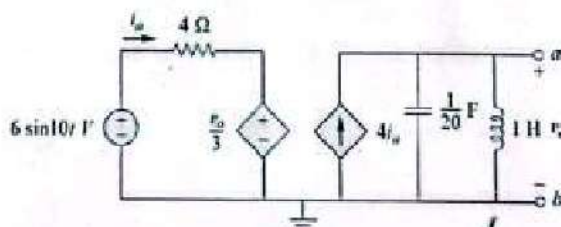


Fig. 4

$$\int_0^{2\pi} \sin(x) dx$$
$$= -\cos(x) \Big|_0^{2\pi}$$
$$= -\cos(2\pi) + \cos(0)$$
$$= -1 + 1 = 0$$

Q5. (a) For the following circuit, find V_o , if $I_o = 0$.

CO-2 2
C(3)

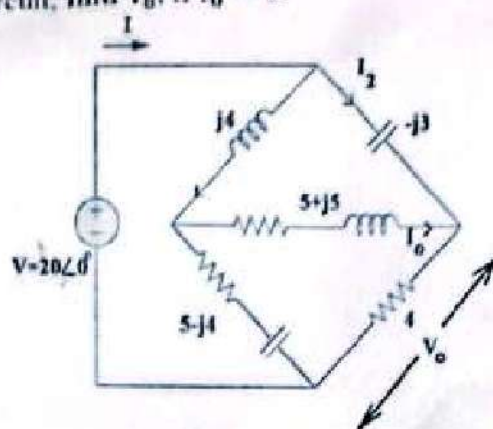


Fig. 5(a)

(b) For the following circuit:

1-2

- (i) Calculate V_1 using voltage divider rule, and
- (ii) Calculate I_o using current divider rule.

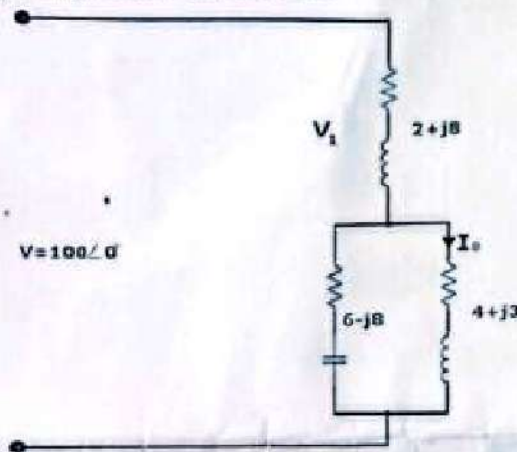


Fig. 5(b)

Q6. Find the Thevenin equivalent of the circuit in Fig. 6 as seen from terminals a-b.

CO-2 5
C(3)

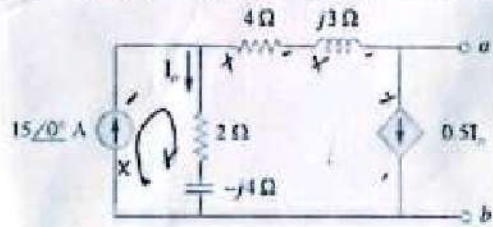


Fig. 6

Q7. Determine i_o in the circuit of Fig. 7 using appropriate method of analysis.

CO-2 5
C(3)

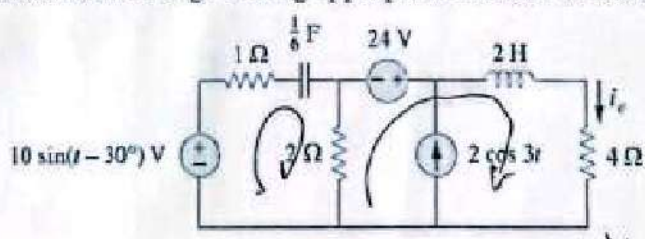


Fig. 7

Handwritten notes and calculations:

- $R_{th} = 2\Omega$
- $V_{th} = 10\angle 0^\circ$
- $V = IR$
- $I = \frac{V}{R}$
- $I = \frac{10}{2} = 5$
- $I = 5$