

COLLEGE OF ENGINEERING & TECHNOLOGY



Department: Electrical & Control Engineering

Lecturer : Prof. Hussein El Desouki

Course : Electrical Engineering I

Course Code: EE 236

Marks : 40

Date : 31 / 5 / 2015

Time: 2 hours

Answer the following questions:

Question 1:

Find the voltage V_o across the terminals of the 20Ω resistance and the power dissipated in the 30Ω resistance shown in Figure 1, using mesh current method.

8 Marks

(A1, A5, B13)

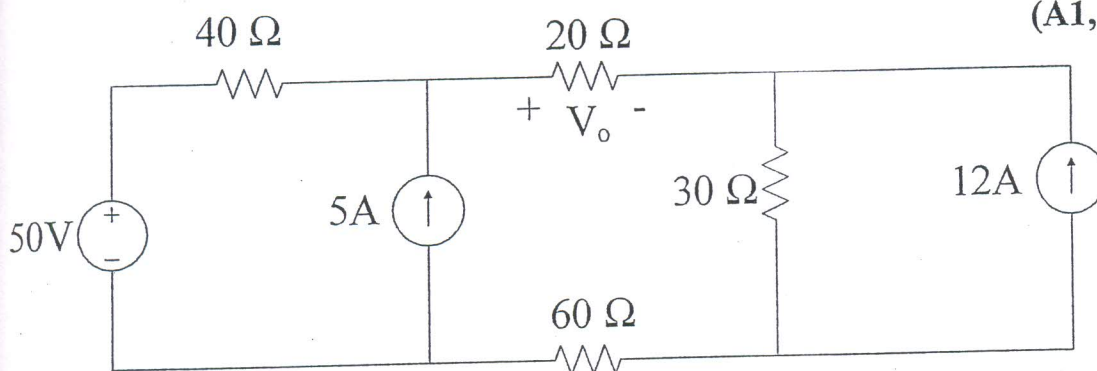


Figure 1

Question 2:

I. Define the following terms:

- Magnetic flux (Φ).
- Magnetic flux density (B).
- Magnetic permeability (μ).

II. Find the Current I for the magnetic circuit shown in Figure 2:

$$l_{ab} = l_{cd} = 0.02 \text{ m.}$$

$$l_{ad} = l_{bc} = 0.03 \text{ m.}$$

$$\Phi = 4 \times 10^{-4} \text{ wb}$$

$$\mu_0 = 4\pi \times 10^{-7}$$

$$\text{Area (throughout)} = 10 \times 10^{-4} \text{ m}^2.$$

8 Marks

(A1, A5, B7)

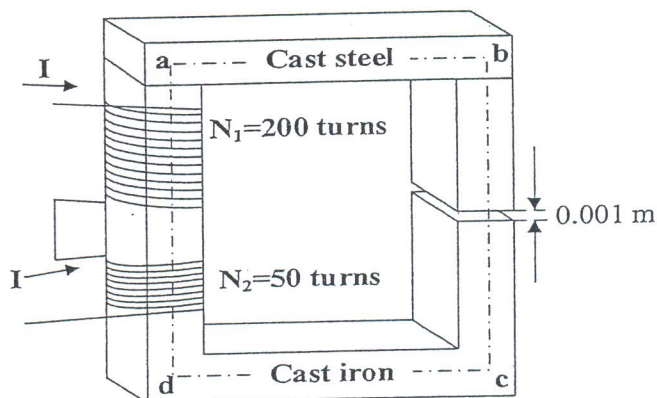
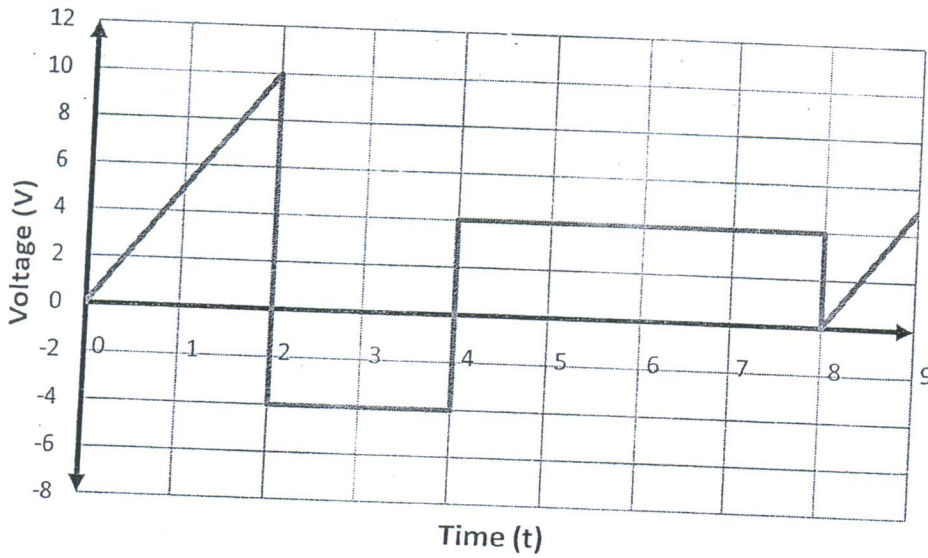


Figure 2

Members of course Examination Committee:	Signature:	Date:
Lecturer: <i>Samah El Safly</i>	<i>Samah El Safly</i>	10-5-2015
Course Coordinator: <i>Prof. Hanady Ashour</i>	<i>Hanady</i>	10/5/2015
Head of Department:		10/5/2015

Question 3:

Find the average and the RMS for the waveform shown in figure 3



8 Marks
(A1, A5, C1, C6)

Figure 3

Question 4:

For the circuit shown in Figure 4 find:

8 Marks
(A1, A5, B12, B13)

- The total impedance Z_T in polar form.
- Draw the impedance diagram.
- Find the Current I and the voltages V_R , V_L and V_C in phasor form.
- Find the average power delivered to the circuit.
- Find the power factor of the circuit.
- Find the sinusoidal expressions for the voltages and current.

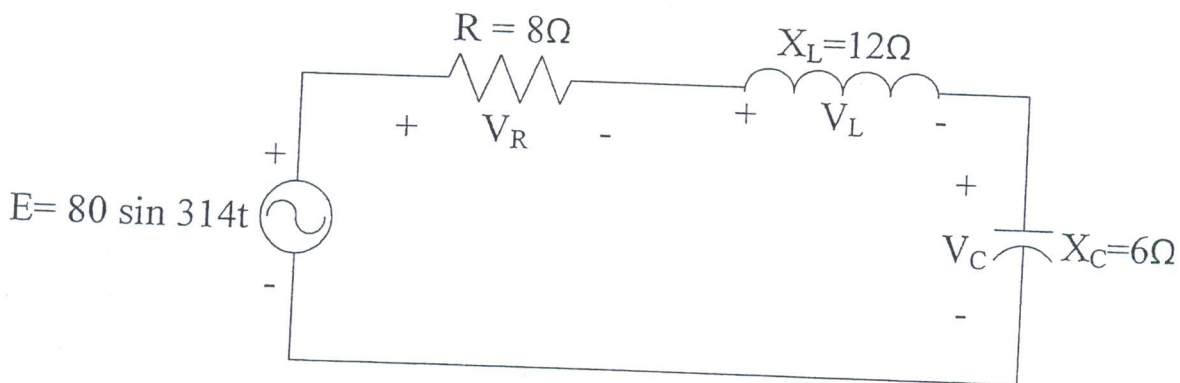


Figure 4

Members of course Examination Committee:		
Lecturer:	Signature:	Date:
Course Coordinator: Samah El Softy	<i>Softy</i>	10-5-15
Head of Department: Prof. Hamdy Ashour	<i>Hamdy</i>	10/5/2015

