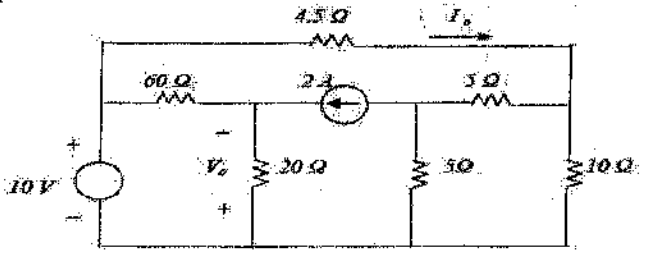
Kafr Elshiekh University
Faculty of Engineering
Department: Mechanical Engineering
Year : 1st year(2007) 2018-2019
Subject: Electrical & electronic Engineering

Date: 13-1-2019
Time Allowed: 3:00 hr.
Full Mark: 45 Marks
Final Exam: 2 pages
Academic Code: EPM 1132

1- All the questions according to ILOs: a1, a3, a4, a8 ,a14, a17, b.15, c19.
2- Number of pages :2 No. of questions : 4
3- The weight of each problem is indicated.
4- This a closed book exam.
5- Clear, systematic answers and solutions are required in general, marks will not be assigned for answers and solutions that require unreasonable ( in the opinion of the instructor) effort to decipher.
6- Ask for clarification if any question statement is not clear to you.
7- Attempts in all questions.
8- The exam will be marked out of 45.

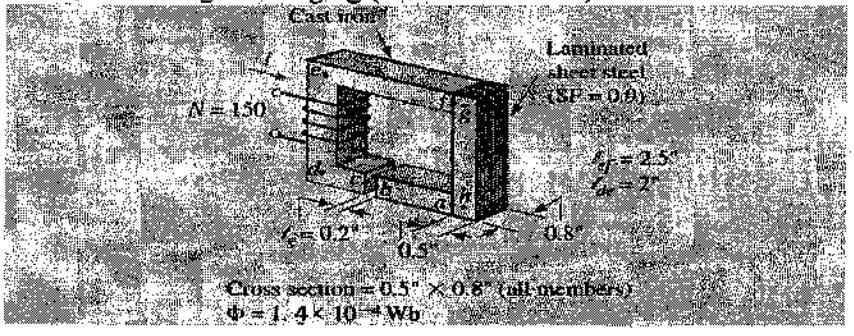
**Q1** **10**

Using the principle of superposition to find $I_o$ and $V_o$



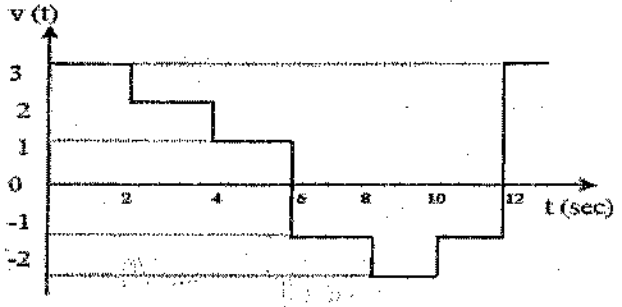

**Q2** **10**

The laminated sheet steel section in the figure has a stacking factor 0.9. Compute the current required to establish a flux $\phi = 1.4 \times 10^{-4}$ Wb. Neglect fringing.(Take 1"=2.54 cm)



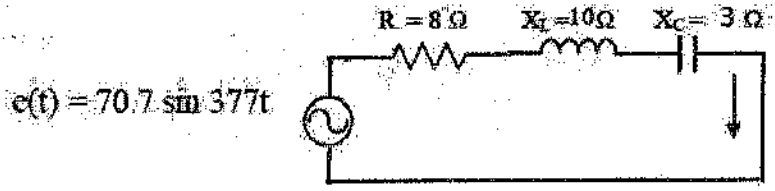

**Q3** **10**

Find the effective value of the waveform shown in the following figure.



**Q4** **15**

For the circuit shown below:




a- Find the total impedance Z in polar form.

b- Draw the impedance diagram.

c- Find the value of C in μF and the value of L in henery.

d- Find the current I and the voltages $V_R$ ,$V_L$ and $V_C$ in polar form.

e- Draw the phasor diagram of voltages $V_R$ ,$V_L$ and $V_C$ and the current I.

f- Verify Kirchhoff's voltage law around the closed loop.

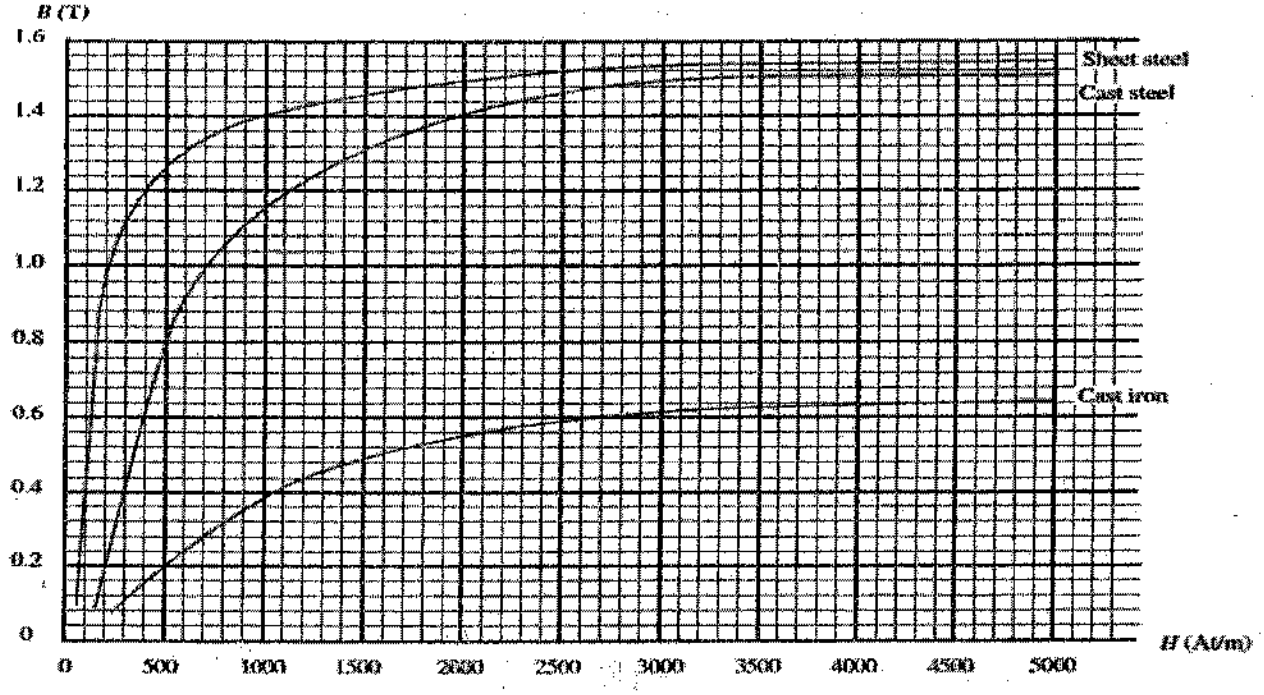
g- Find the average power delivered to the circuit.

h- Find the power factor of the circuit and indicate whether it is leading or lagging.

i- Find the sinusoidal expressions for the voltages and current.

j- Plot the waveforms for the voltages and current on the same set of axes.

k- find the capacitance needed to correct power factor to 0.98 and where its position.




End of Exam Questions (Electric Part)

Good Luck

Dr. Fathalla selim and committee