Kafr Elshiekh University		Date: 24 -1-2016
Faculty of Engineering		Time Allowed: 1:30 hr.
Department: Mechanical Engineering		Full Mark: 45 Marks.
Year : 1st year(2007) 2015-2016		Final Exam: --
Subject:Electrical & electronic Engineering		Academic Code: EPM 1132
(Electrical engineering)		Exam: two pages

Answer the Following Questions:

Q1   10

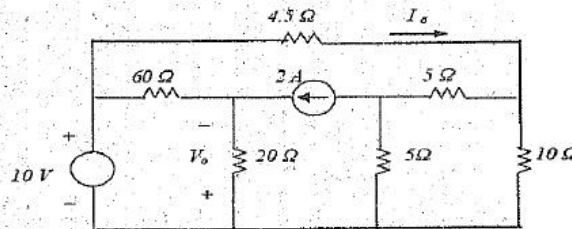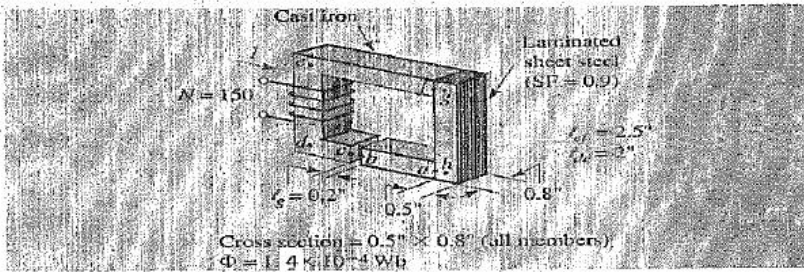Using the principle of superposition to find I_o and V_o.

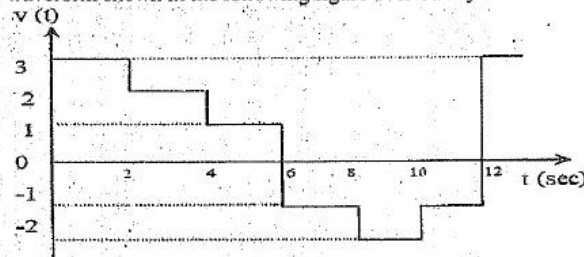**Q2**   10

The laminated sheet steel section in the figure has a stacking factor 0.9. Compute the current required to establish a flux ϕ

$=1.4 \times 10^{-4}$Wb. Neglect fringing.(Take 1"=2.54 cm)

Q3   10
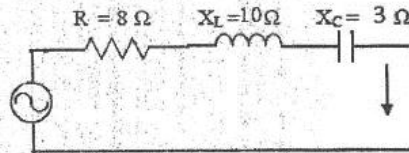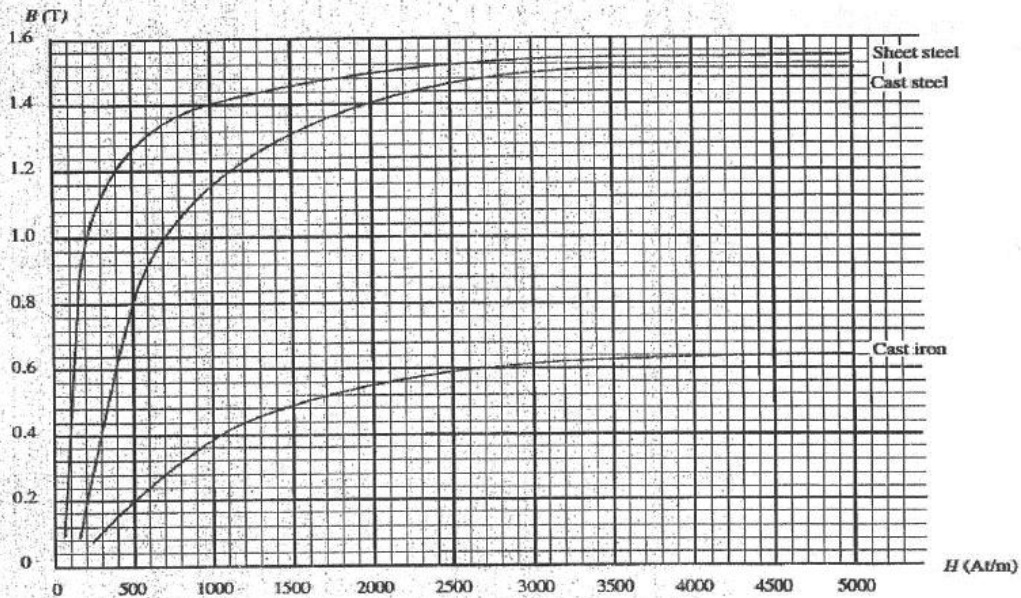
Find the effective value of the waveform shown in the following figure over one cycle.

Q4

For the circuit shown below:

$$R = 8\,\Omega \qquad X_L = 10\,\Omega \qquad X_C = 3\,\Omega$$

$$e(t) = 70.7 \sin 377t$$

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, Good Luck

Dr. fathallaselim