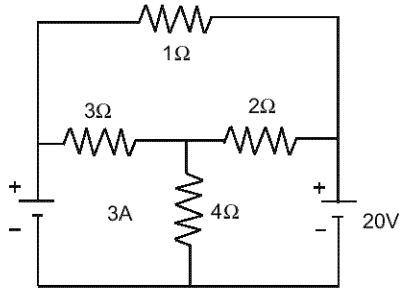
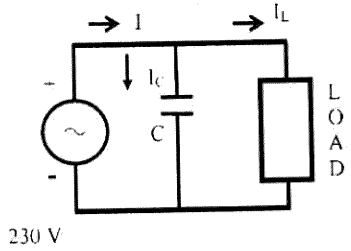
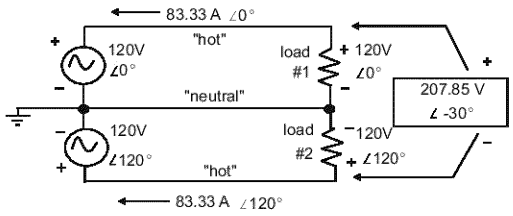


Q.5 The power consumed in the inductive load is 2.5 kW at 0.71 lagging power factor (pf). The input voltage is 230 V, 50 Hz. Find the value of the capacitor C, such that the resultant power factor of the input current is 0.866 lagging.



Q.6 A resistor (R) of 50 Ω in parallel with a capacitor (C) of 40μF, in connected in series with a pure inductor (L) of 30 mH to a 100 V, 50 Hz supply. Calculate the total current and also the current in the capacitor. Draw the phase diagram.

Q.7 Explain the figure below with proper calculations.



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4th Sem. / AME

Subject : Elements of Electrical & Electronic Engineering-II

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q.1 a) Define EMF?

b) What is the dependence of resistance?

c) Differentiate conductor and a semi conductor?

d) What is the effect of physical parameters on conductance?

e) Show the working of a variable resistor.

f) What do yo mean by temperature coefficient of resistance?

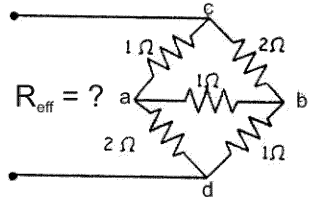
g) What is the operating principle of a solar cell?

h) What material is used in capacitor making?

i) Which law is applicable for conductors in a magnetic field?

j) What is magnetic field intensity?

k) What is the effective resistance in the following circuit?



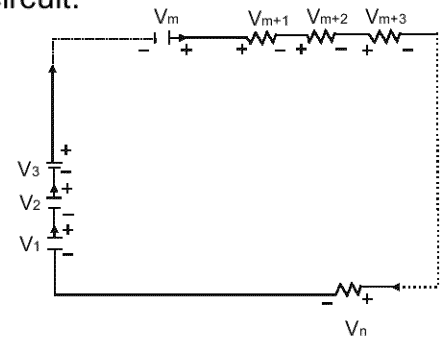
l) Describe hysteresis.

m) What is magnetic induction?
n) Explain rise and decay of current in inductors.
o) What is the importance of RMS value?
p) What principle The AC and DC motor work?
q) What are the materials having magnetic properties?
r) Explain advantage of multi-phase circuits.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 i) What is the effect of temperature on resistance of conductors and semi conductors?
ii) How the voltage and current are related in case of resistance and capacitance.
iii) What is the relationship in mechanical and thermal energy?
iv) What is eddy current? What is its effect on circuit?
v) Show the similarity between electrical and thermal circuits with an example.
vi) How long the power lines should be kept and why?
vii) Explain the Kirchoff' law for voltage.
viii) What do you mean by resonance in electrical circuits?
ix) What is the importance of resonance in electrical circuits?
x) What is resonance frequency in LC circuits?
xi) What is the value of line voltage and phase voltage in star and delta connections?
xii) Find the value of V1+V2+V3 in the following circuit.



xiii) What do you mean by induction? What is its application?
xiv) Explain star-delta conversion.
xv) What are the materials used for making semiconductor devices.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 Explain the necessity of variable capacitance in a circuit? Describe the detailed working of any physical or electronic variable capacitor. Explain the use of variable resistance with example.

Q.4 Given the circuit below with 3 A of current running through the 4Ω resistor as indicated in the diagram to the right. Determine

A. The current through each of the other resistors.
B. The voltage of the battery on the left.
C. Power delivered to the circuit by the battery on the right.