SVKM's NMIMS

Mukesh Patel School of Technology Management & Engineering

Programme: B.Tech (ALL STREAMS) Year: I Trimester: I

Academic Year : 2012-2013

Batch: 2012-2013

Subject: **Basic Electrical Engineering** Marks: 100

Time: 10.00 am To 1.00 pm

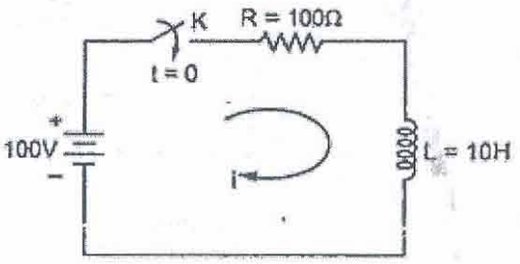
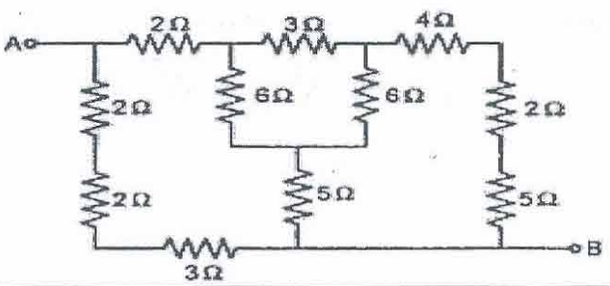
Date: 12/6/2013 Duration: 3 hrs.

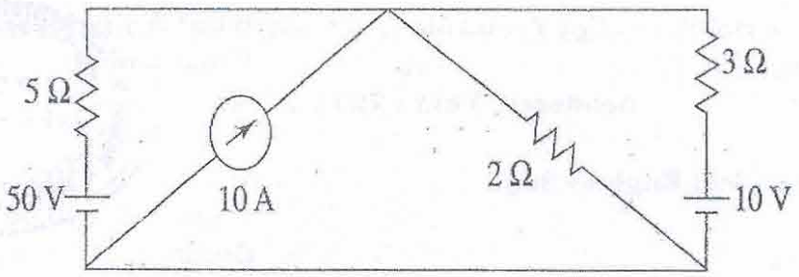
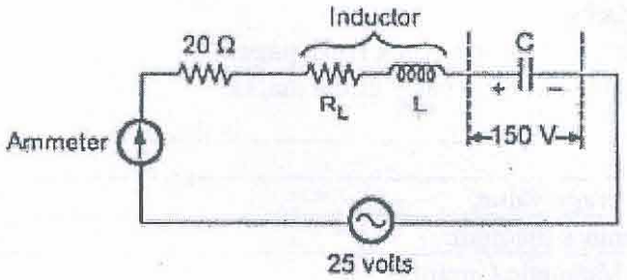
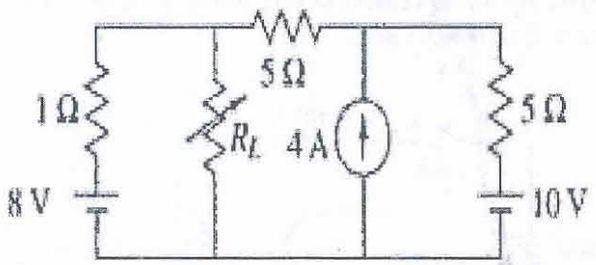
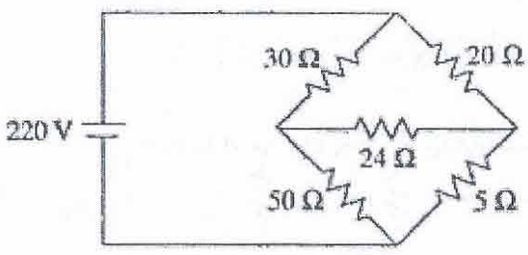
Re - Examination

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer book, which is provided for their use.

NB:

1. Question no. 1 is compulsory.
2. Out of remaining questions, attempt any 4 questions.
3. In all 5 questions to be attempted.
4. All questions carry equal marks.
5. Answer to each new question to be started on a fresh page.
6. Figure in brackets on the right hand side carry equal marks.

Q1. Attempt any four questions:-			
	A	Describe RMS and Average value.	5
	B	State & explain Thevenin's theorem.	5
	C	Compare Electric and Magnetic Circuits	5
	D	What is the effect of temperature on resistor? Define temp. coefficient of resistance	5
	E	State & explain Fleming's Left hand rule.	5
	F	Explain with neat diagram SC test on single phase transformer.	5
Q2	A	For the circuit given below, switch is closed at t=0, Assuming no initial current through inductor, find current at t = 0.3 sec. 	10
	B	Calculate the effective resistance between points A & B. 	10

Q3	A	Find power delivered by 50 volts supply. 	10
	B	Define form factor & crest factor? Draw the vector diagrams & impedance triangle for R-L, R-C & RLC series circuits.	10
Q4	A	A 20 Ohm resistor is connected in series with an inductor, a capacitor and an ammeter across 25 volts variable frequency supply. When frequency is 400 Hz, the current is at its maximum value of 0.5 A and potential difference across capacitor is 150 volts. Find capacitance of capacitor and resistance, inductance of Inductor. 	10
	B	For the given circuit find the value of load resistance for maximum power transfer and calculate maximum power. 	10
Q5	A	Find current through 24 Ohm using Thevenin's Theorem. 	10

	B	State relations between line & phase voltage, current & three phase power in star connected system? Three inductive coils each with the resistance of 15 ohm & an inductance of 0.03 H are connected in star & then in Delta to a three phase, 400 V, 50 Hz Supply. Calculate for each of the above case (i) phase current & line current (ii) phase voltage & line voltage (iii) Total power absorbed.	10
Q6	A	Define magnetic field strength , leakage flux & Explain hysteresis loop with practical circuit diagram.	10
	B	A steel ring of 25 cm mean diameter & of circular section 3 cm in diameter has an air gap of 1.5mm length. It is wound uniformly with 700 turns of wire carrying a current of 2 amp. Calculate (i) mmf (ii) air gap flux density (iii) magnetic flux (neglect magnetic leakage & assume that iron path takes about 35% of total magnetomotive force.)	10
Q7	A	Derive expression for EMF equation of single phase transformer? Compare core type & shell type transformer?	10
	B	Calculate the efficiency of transformer at full load & half load at i) unity pf (ii) 0.71 pf lagging for 80 kVA, 1100/250 V, 50 Hz, single phase transformer whose losses are as follows: iron losses = 800 W & Total copper losses with 160 A in low voltage winding is 200 W.	10