

SVKM's NMIMS
MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Programme: MBA Tech (ALL STREAMS)

Year: I

Semester: I

Academic Year: 2015 - 16

Batch: 2013-14

Subject : Basic Electrical Engineering

Date : 30/11/2015

Marks: 100
Time: 10.00 am - 1.00 pm
Duration: 3 (hrs)

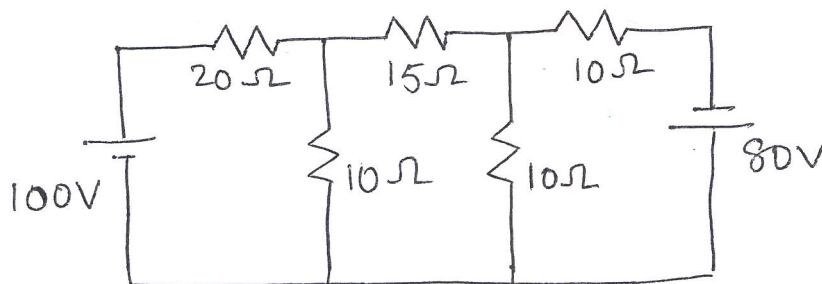
Re-Examination

Instruction: 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.

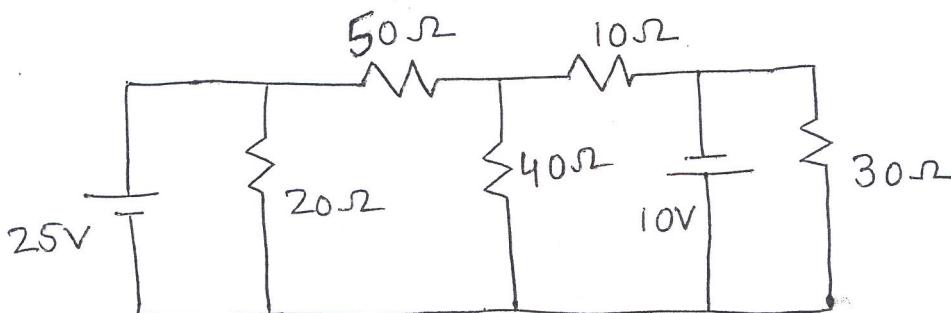
NB:

- 1) Question No. 01 is compulsory.
- 2) Out of remaining questions, attempt any 04 questions.
- 3) In all 05 questions to be attempted.
- 4) All questions carry equal marks.
- 5) Answer to each new question to be started on a fresh page.
- 6) Figures in brackets on the right hand side indicate full marks.
- 7) Assume suitable data if necessary

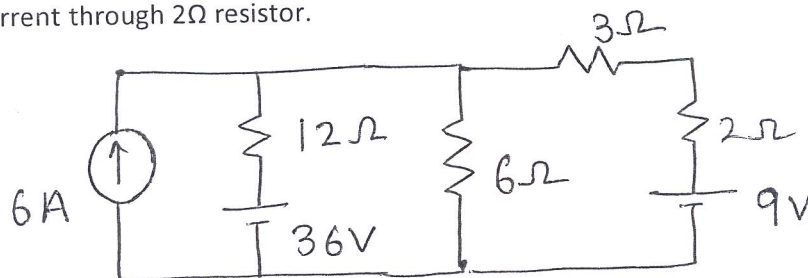
1.
 - a. Explain the significance of back emf in a dc motor. [05]
 - b. Explain the various types of losses in Transformer [05]
 - c. Compare star and delta three phase AC circuits. [05]
 - d. Draw and explain Hysteresis loop. [05]
2.
 - a. Find current through $15\ \Omega$ using nodal analysis. [10]



- b. Find the current through $40\ \Omega$ resistor using Thevenin's theorem. [10]



3. a. Explain the ac analysis of a series RL circuit and draw its phasor diagram, impedance triangle, voltage triangle, power triangle. [10]
- b. Three similar coils, each of resistance 8Ω and inductance 0.02 H , are connected in star across a three-phase 50 Hz , 230 V supply. Calculate the line current, total power absorbed, reactive volt amperes and total volt amperes. [10]
4. a. Explain the construction and working of a single phase transformer [10]
- b. A 80 kVA , $3200/400\text{ V}$, 50 Hz , single phase transformer has 111 turns on the secondary winding. Calculate (i) number of turns on primary winding (ii) secondary full load current and (iii) cross sectional area of the core, if the maximum flux density is 1.2 tesla . [10]
5. a. Define magnetic circuit and compare electric and magnetic circuit. [10]
- b. A ring has mean diameter of 15 cm , a cross section of 1.7 cm^2 and has a radial gap of 0.5 mm in it. It is uniformly wound with 1500 turns of insulated wire and a current of 1 A produces a flux of 0.1 mwb across the gap. Calculate the relative permeability of iron on the assumption that there is no magnetic leakage. [10]
6. a. Find current through 2Ω resistor. [10]



- b. A resistor of 25Ω is connected in series with a choke coil. The series combination when connected across a 250 V , 50 Hz supply, draws a current of 4 A which lags behind the voltage by 65° . Calculate (i) resistance and inductance of the coil (ii) total power (iii) power consumed by resistance and (iv) power consumed by choke coil. [10]
7. a. Write short note on Single phase induction motor [10]
- b. State maximum power transfer theorem and derive the same. [10]