Programme: MBA Tech (ALL STREAMS) Year: I Semester: I

Academic Year: 2014-15

Batch: 2013-14

Subject : Basic Electrical Engineering

Date : 10/06/2015

Marks: 100
Time : 10.00 am to 1.00 pm
Durations: 3 (hrs)

Re-Examination
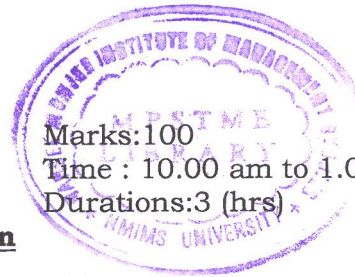
Instruction: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

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

Q1)   Attempt any four

a)   State and explain Kirchhoff's voltage and current law.   05 marks
b)   List advantages of 3-phase system over 1-phase system   05 marks
c)   Define magnetic flux, magnetic flux density, permeability and susceptibility.   05 marks
d)   Compare ideal and practical transformer.   05 marks
e)   With neat figures classify different types of DC motors and give their applications.   05 marks

Q2)

a)   Find the current through 10Ω resistance using source transformation.   10 marks
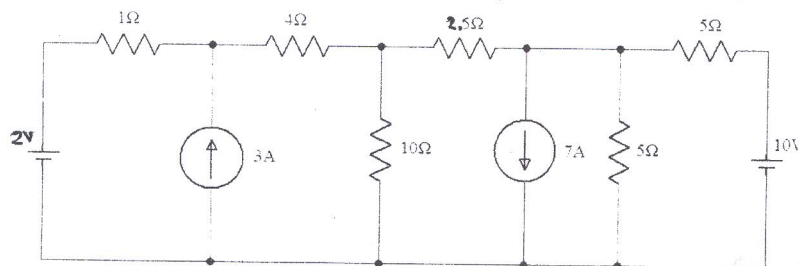
b)   RLC series circuit with resistance of 10 Ω, inductance of 0.2H and capacitance of 40µF is supplied with the 100V supply at variable frequency. Find resonant frequency, current at resonance, power, power factor, voltage across resistor, inductor and capacitor, quality factor and bandwidth.   05 marks

c)   Compare series and parallel resonance circuit.   05 marks

Q3)

a) Explain the construction and working principle of a transformer and derive the emf equation of the same.   **10 marks**

b) Explain the construction and working principle of a DC motor and derive the emf equation of the same.   **10 marks**

Q4)

a) Determine the current in 5ohm resistor using nortons theorem.   **10 marks**
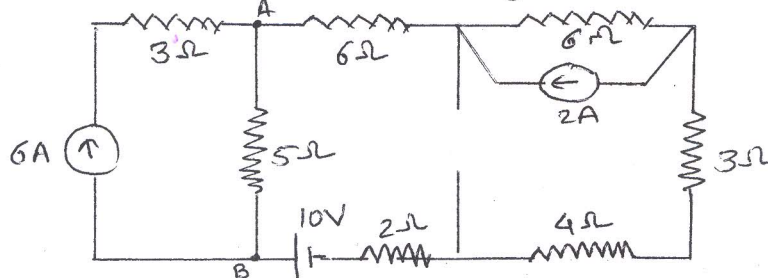
b) Give the differences between a core type and shell type transformers. How the iron losses are minimized.   **05 marks**

c) An 80kVA, 3200/400 V, single phase, 50 Hz, transformer has 111 turns on the secondary winding. Calculate   **05marks**

    i) Number of turns on primary winding

    ii) Secondary full-load current

    iii) Cross-sectional area of the core, if the maximum flux density is 1.2 tesla.
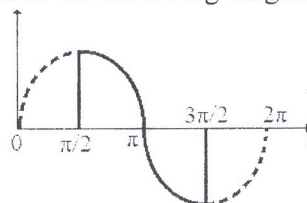
Q5)

a) Determine Thevenin's equivalent across the terminals AB for the circuit shown in figure below.   **10 marks**
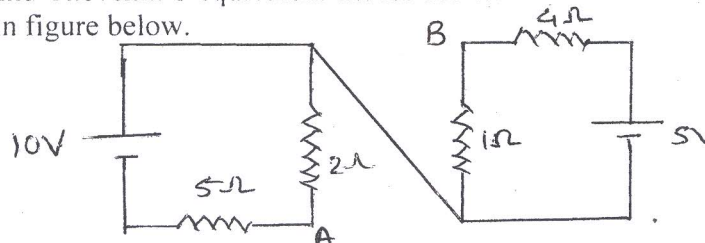
b) Draw the phasor diagram of a single phase transformer with load having a leading power factor and explain.   **10 marks**

Q6)

a) Evaluate Vavg and Vrms of the following diagram.   **05 marks**

b) Draw the phasor diagram for star connected 3 phase supply with capacitive load.   **05 marks**

c) Explain the construction and working of a 3 phase induction motor and explain how rotating magnetic field is set up.   **10 marks**

Q7)

a) State faraday's law of electromagnetic induction and explain in brief self and mutual inductance. **07 marks**

b) State and derive the condition for maximum power transfer. **07 marks**

c) AC voltage of (50+j20) V is applied to the RL Circuit the current is (2-j3) A. Evaluate impedance, power consumed, and phase of the circuit and power factor. **06 marks**

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