Dr. Babasaheb Ambedkar Technological University,
Lonere – Raigad, 402103
Summer Semester Examination, May 2018
B. Tech.
Subject: Basic Electrical Engineering (EE204)

Date: 21 / 05 / 2018   Semester: II

Time: 3 Hrs.   Max. Marks: 60


Instructions to Students:
1. Attempt any FIVE questions from Question 1 to Question 6.
2. Illustrate your answers with neat sketches, diagrams etc. wherever necessary.
3. If some part or parameter is found to be missing, you may appropriately assume it and should mention it clearly.

Q.1)

a) Explain the Effect of Temperature on Resistance of Pure metals, Alloys & Insulators.   (6M)

b) Calculate the equivalent resistance between the terminal A & B.   (6M)
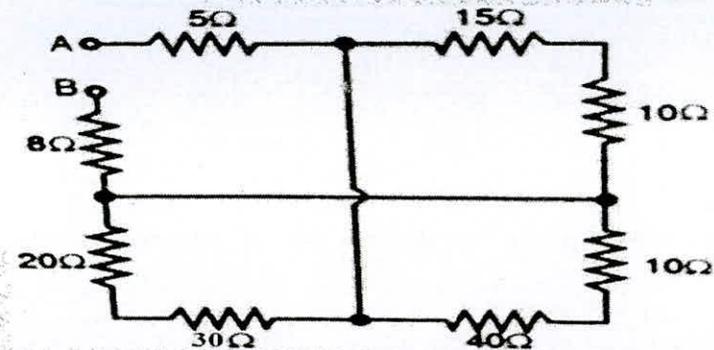

OR

b) An Electrical pump lifts 68 tons of water a minute through 7 m height at an overall efficiency of 68%. Calculate the input power in kW to motor. If pump is operated for 4 hours a day, calculate the cost of energy at 8 paise per kW-hr for 30 days.   (6M)

Q.2)

a) Find the current flowing through 3 Ω resistor connected between C & D in the circuit shown below by Thevenin's theorem.   (6M)

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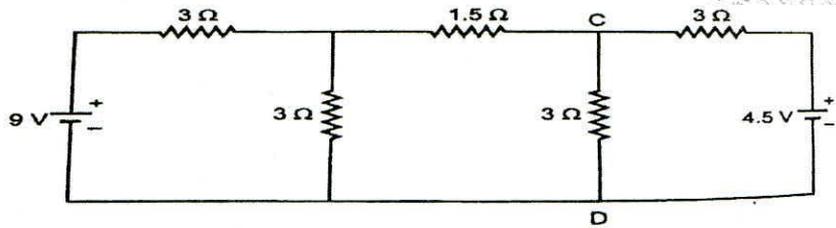
b) Using Nodal Analysis, find the current through 2Ω resistance for the circuit shown below. **(6M)**
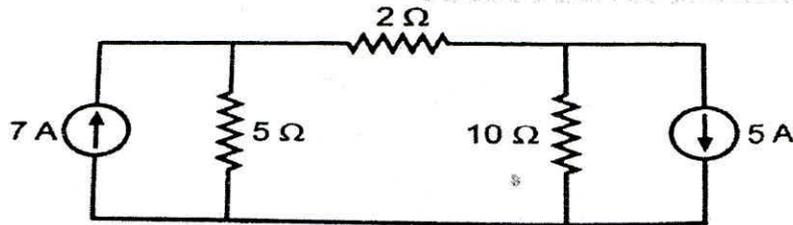
Q.3)

a) Define the following terms: **(6M)**

  i) Time Period   ii) Average Value   iii) Form Factor

  iv) Crest Factor   v) Angular Velocity   vi) Cycle

b) Explain AC circuit with Pure Capacitance and derive the equations for Average & Instantaneous Power. **(6M)**

Q.4)

a) Explain series R-L-C circuit with neat diagram and draw its phasor diagrams. **(6M)**

b) A coil having a resistance of 10 Ω and an inductance of 0.2 H, is connected to a 100 V, 50 Hz supply. Calculate: **(6M)**
i) The impedance of coil.
ii) The reactance of coil.
iii) The phase difference between the current and applied voltage.

OR

b) A metal filament lamp rated at 750 W, 100 V is to be connected in series with the capacitance across a 230 V, 50 Hz supply. Calculate the value of capacitance required. **(6M)**

Q.5)

a) Explain the Energy Stored in a Magnetic field and give its expression. **(6M)**

b) Explain the Faraday's laws of Electromagnetic Induction and also explain the methods for deciding the direction of Induced EMF. **(6M)**

Q.6)

a) Explain the Construction of Transformer with a neat diagram. **(6M)**

b) Efficiency of 400 kVA single phase transformer is 98.77 % when delivering full load of 0.8 power factor and it is 99.13 % at half load unity power factor. Calculate: **(6M)**
i) Iron Losses   ii) Full Load Copper Losses.

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