

Dr. Babasaheb Ambedkar Technological University, Lonere
Examination (S_c)

B.Tech. Course in Civil / Chemical / Mechanical / Petro-chemical Engineering
Subject-Basic Electrical Engineering

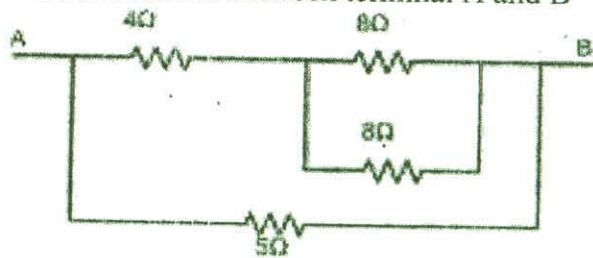
Date- 04 MAY 2017
Time- 2:00 - 5:00 PM EE106

Semester-I
Max. Marks-60

Instruction to Students:-

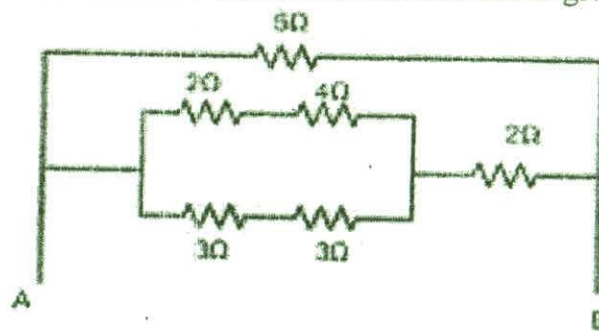
1. Attempt any FIVE questions from Question 1 to Question 6.
2. Illustrate your answers with neat sketches, diagrams etc wherever necessary.
3. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

- Q.1)a) State and Explain Ohm's law. 4M
b) Explain circuit for resistances connected in series with necessary voltage and current relations. 4M
c) Calculate equivalent resistances between terminal A and B 4M



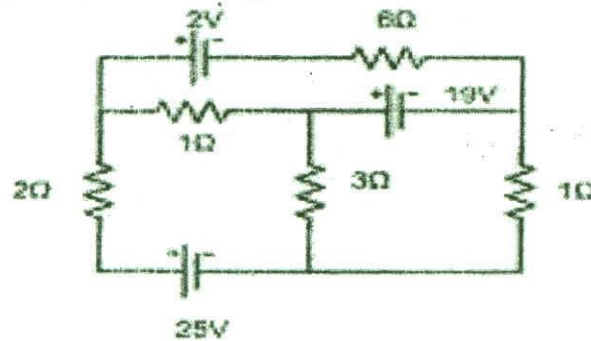
OR

- c) Calculate equivalent resistances between terminal A and B given below 4M



- Q.2)a) State and Explain the following:- 6M
i) Source Transformation technique ii) Thevenin's theorem

- b) Find current through $6\ \Omega$ resistor using Mesh analysis

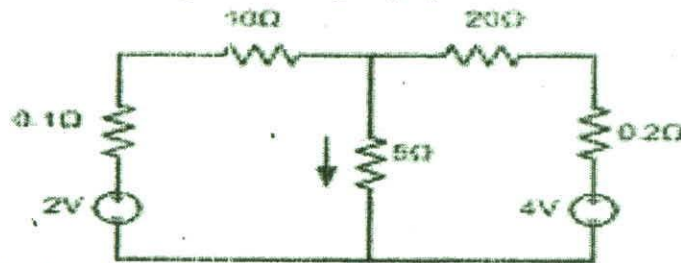


6M

OR

- b) Determine the current through $5\ \Omega$ using Superposition theorem

6M



- Q.3)a) Define the following terms:-

6M

- i) Cycle ii) Time period iii) Instantaneous value iv) Peak value
v) Average value vi) RMS value

- b) Explain AC circuit with pure resistance and derive equations for average and instantaneous power.

6M

- Q.4)a) State and explain Active power, Reactive power and Apparent power with help of Power triangle.

6M

OR

- Q.4)a) Explain series R-L circuit with neat labelled diagram and waveforms and draw impedance triangle for the same circuit.

6M

- b) A voltage of $150\ \text{V}$, $50\ \text{Hz}$, is applied to coil of negligible resistance and inductance of $0.2\ \text{H}$. Write the time equation of voltage and current.

6M

- Q.5)a) Explain magnetic effect of electric current. Also explain dot and cross convention.

6M

- b) Explain the terms i) Statically induced emf ii) Dynamically induced emf.

6M

- Q.6)a) Derive the emf equation of single phase transformer and explain voltage and current ratio of an ideal transformer.

6M

OR

- a) Explain the following types of transformer in detail:-

6M

- i) Core type transformer ii) Shell type transformer.

- b) A $10\ \text{KVA}$ transformer having 50 number of turns on primary and 10 number of turns of secondary is connected to $440\ \text{V}$, $50\ \text{Hz}$, AC supply. Calculate:-

a) Secondary voltage on No load.

b) Full load primary and secondary current.

c) Maximum value of the flux in core.