R09

Code No: 09A30504

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year I Semester Examinations, June/July-2014
BASIC ELECTRICAL ENGINEERING
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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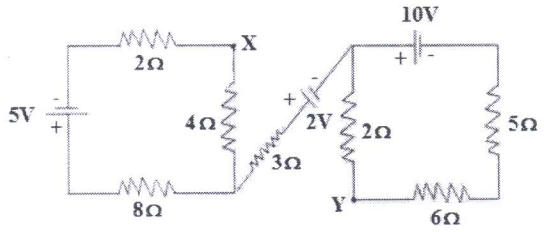
1.a) State and explain Ohms law. Give its limitations.
b) Find voltage drop across x-y terminals shown in figure.



2.a) State and explain Maximum power transfer theorem.
b) Explain different sources of Electrical energy.

3.a) Define:
i) Maximum value
ii) R.M.S value
iii) Average value and
iv) Form factor of an alternating quantity.
b) A series circuit with R = 10 ohm, L = 50 mH and C = 100 micro Farad is supplied with 200V/50Hz. Find:
i) The impedance
ii) Current
iii) The Power
iv) Power factor.

4.a) Derive the emf equation of a DC generator.
b) A 6-pole DC shunt generator with lap connected armature supplies a load of 100A at 200 V. The armature resistance 0.1 ohms and the shunt field resistance is 80 ohms find the:
i) Total armature current
ii) Current per armature path
iii) Emf generated.

5.a) Explain the various losses that occur in a DC machine.
b) A 200V DC shunt motor takes a total current of 100 A and runs at 750 rpm. The resistance of the armature winding and shunt field winding is 0.1 ohms and 40 ohms respectively. Find the total copper losses.

6.a) Explain the principle of operation of a $1-\phi$ Transformer.
b) In 20KVA, 2000/200V, single phase Transformer, the iron and full-load copper losses are 80 W and 600 W respectively. Calculate the efficiency at unity power factor of:
i) Full load and
ii) Half full-load.

7.a) Explain how the rotating magnetic field is developed in a 3-phase induction Motor?

b) Three phase induction motor is wound for 6-poles and is supplied from a 50 Hz supply. Calculate:
i) The synchronous speed
ii) The speed of the motor when the slip is 3 %
iii)The rotor frequency when the speed of the rotor is 900 rpm.

8. Explain the construction and operation of Moving Iron instruments with a neat diagram discuss advantages and disadvantages.

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