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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year I Semester Examinations, December-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 Kirchhoff's laws.
 b)   By applying Kirchhoff's law, find the current through all the elements in the circuit shown in figure 1.
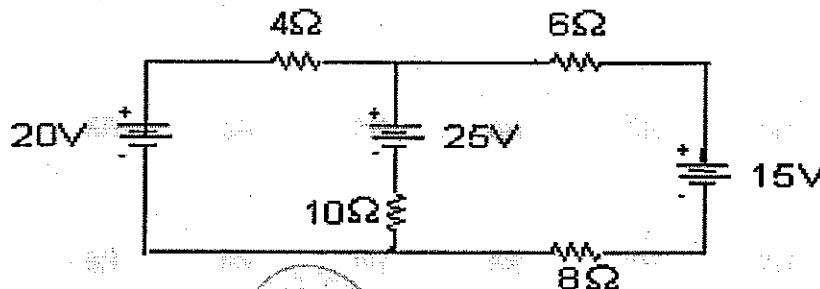

Figure: 1

2.a) Explain active and passive elements in detail.
 b)   Find the voltage across A and B terminals in the circuit shown in figure 2.
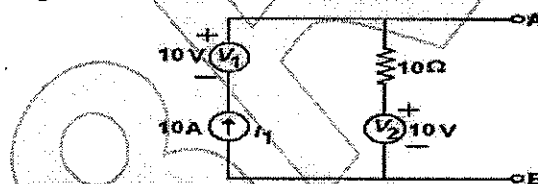

Figure: 2

3.   Obtain the expression for average value, form factor and peak factor for sinusoidal wave.

4.   Define efficiency and regulation of a transformer. Explain the predetermination of the efficiency and regulation with neat circuit diagrams.

5.a) Explain how DC generators are classified in detail.
 b)   A 4-pole wave connected DC generator having 60 slots on its armature with 6 conductors per slot, runs at 1000 rpm and generates an open circuit voltage of 230 V. Find the useful flux per pole.

6.a) Derive the torque equation of a DC motor.
 b)   A 4 pole, 210V wave connected shunt motor gives 10 KW when running at 750 rpm and drawing armature and field currents of 25 A and 2 A respectively. It has 320 conductors. Its resistance is 0.15. Assuming drop of 1V per brush, find:
      i) total torque
      ii) useful torque
      iii) useful flux per pole
      iv) efficiency.

7.a) Explain the working principle of three phase induction motor.
  b) A 6 pole induction motor is fed from 60 Hz supply. If the frequency of rotor EMF at full load is 2 Hz, find the full load speed and %slip.

8.a) Discuss the different types of torques required in indicating instruments.
  b) Explain the working principle of PMMC meter.

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