Code :9A02306

R9

II B.Tech I Semester(R09) Supplementary Examinations, May 2011
BASIC ELECTRICAL ENGINEERING
(Computer Science and Engineering, Information Technology, Computer Science & Systems Engineering)

Time: 3 hours   **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks
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1. (a) State and explain ohm's law
   (b) Three resistances 2Ω , 4Ω and 6Ω are connected in series across a voltage supply voltage across 2 Ω resistor is 4V. Find the voltage across remaining resistances and total voltage.

2. (a) State and explain superposition theorem
   (b) Find the current supplied by 10V battery by using star-Delta transformation.
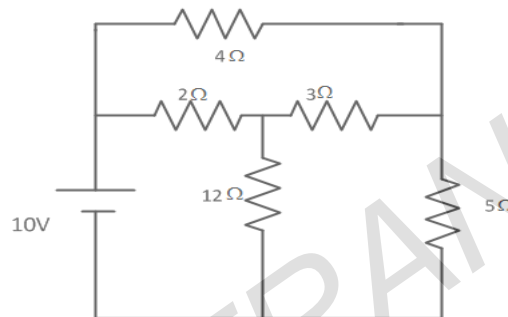
3. (a) Derive an expression for average value of an AC current wave form I = Em sin θ
   (b) An alternating current is expressed as I = 14.14 sin 314t. Determine.
      i. Maximum current
      ii. rms current
      iii. Frequency
      iv. Instantaneous current when t = 0.02msec.

4. Define efficiency and Regulation. Explain how will you pre-determine the efficiency and regulation with neat circuit diagrams.

5. (a) Explain the principle of operation of DC generator
   (b) A lap wound DC generator having 80 slots with 10 conductors per slot generator at no load emf of 400v, when running at 1000 rpm. At what speed should it be rotated to generate a voltage of 220v on open circuit.

6. (a) Derive the torque equation of a DC motor
   (b) A 100v series motor taken 45A when running at 750 rpm. Its armature resistance is 0.22 ohm while the series field resistance is 0.13 ohms Iron and frictional losses amounts to 750w. Find the shaft power.

7. (a) Explain with the help of diagram how a rotating magnetic field is produced in a 3- phase Induction Motor.
   (b) A 3-phase , 6 pole, 50HZ induction motor develops 4 KW including friction and windage losses at 950 rpm. If the stator loss is 250w. find the rotor frequency.

8. Explain the construction and operation of permanent magnet moving coil instruments with a neat diagram.

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