R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year I Semester Examinations, November/December-2013
Electrical and Electronics Engineering
(Common to CE, ME, AME, PTE, CEE, MSNT)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Three resistances of R ohms each are connected in a delta. Transform it to an equivalent star with resistances R1, R2 and R3 in terms of R.

b) By applying Kirchhoff's law, find the current through all the elements in the circuit shown in the Figure1. [15]
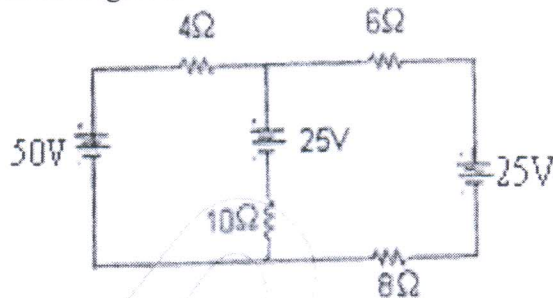

Figure 1

2.a) Derive the emf equation of a DC generator.

b) Explain the operation of a DC motor. Mention the different types of DC motors. [15]

3.a) Explain the working principle of a single phase transformer with a phasor diagram.

b) A 50KVA single phase transformer has a full load primary current of 250A and total resistance referred to primary is 0.006Ω. If the iron losses are 200 W. Find the efficiency on full load and half load at UPF. [15]

4.a) Discuss how regulation of an alternator can be determined by synchronous impedance method.

b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz system. Calculate
(i) the synchronous speed, (ii) the speed of the motor when slip is 4% and (iii) the rotor current frequency when the motor runs at 600 r.p.m. [15]

5.a) With the help of neat diagram, explain the working of Moving Iron instruments.

b) Write the advantages and disadvantages of PMMC instruments. [15]

6.a) With a neat circuit diagram, explain the operation of bridge type full wave rectifier.

b) The applied input a.c. power to a half-wave rectifier is 100 watts. The d.c. output power obtained is 40 watts. i) What is the rectifier efficiency? ii) What happens to remaining 60 watts? [15]

7.a) Prove that the transistor acts as an amplifier with suitable circuit diagram.
  b) Explain the function of SCR with its V-I characteristics.   [15]

8.a) Derive the expression for magnetic deflection sensitivity of a Cathode ray tube.
  b) Discuss how voltage, current and frequency are measured with CRO.   [15]

---oo0oo---