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Code No: 09A30303

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year I Semester Examinations, May/June-2013
Electrical and Electronics Engineering
(Common to CE, ME, AME, PE)

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

Answer any five questions
All questions carry equal marks

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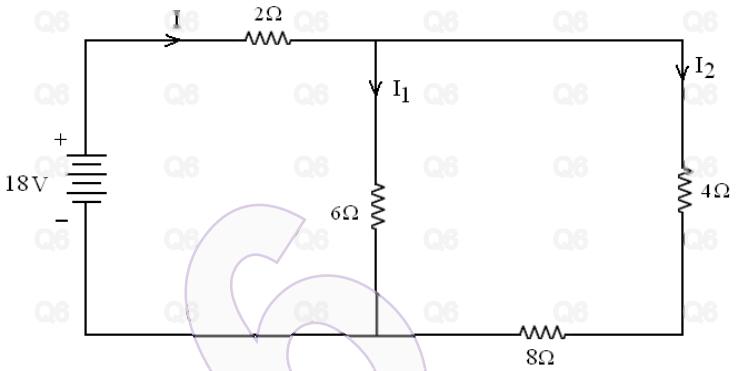
1.a) State and explain Kirchoff's laws.
b) For the circuit shown in Figure, calculate the current in the various branches and power delivered. [15]



2.a) What are the types of DC generators? Explain with relevant connection diagrams.
b) A 6-pole DC motor has a wave connected armature with 87 slots, each slot containing 6 conductors. The flux per pole in 20 m Wb and the armature has a resistance of 0.13ohms when the motor is connected to 240V supply and the armature draws a current of 80A driving a load of 15kW. Calculate speed and armature torque. [15]

3.a) Explain the operation of single phase transformer with neat diagram.
b) A single phase transformer has 500 turns in the primary and 1200 turns in the secondary. The cross sectional area of the core is 80sq.cm. If the primary winding is connected to a 50Hz supply at 500V, calculate peak flux density and voltage induced in the secondary. [15]

4.a) A 100 KVA, 3000V, 50 Hz, 3-phase star-connected alternator has an effective resistance of 0.2 ohm. The field current of 40A produces short-circuit current of 200A and an open circuit emf 1040V (line value). Calculate the full-load voltage regulation at 0.8 pf lagging.
b) Sketch and explain the torque-slip characteristics of a three phase induction motor. [15]

5.a) Discuss the different types of torques required in an indicating instruments.
b) Explain the constructional details and operation of PMMC instruments. [15]

6.a) Explain the operation of a full wave bridge rectifier.
b) A single phase 230V, 1 kW heater is connected across single-phase 230V, 50Hz supply through a diode. Calculate the power delivered to the heater element. [15]

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7.a) What is a transistor? Distinguish different configurations of transistors.
b) Describe the different modes of operation of a SCR with help of its V-I characteristics. [15]

8.a) Explain the working of CRT with a block diagram.
b) Discuss voltage, current and frequency measurement using CRO. [15]

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