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Code No: 123AP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, November/December - 2016

ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to CE, ME, AME, PTE, CEE, MSNT)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

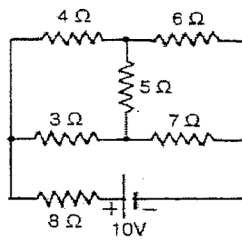
(25 Marks)

- Define Kirchhoff's Laws. [2]
- What is the purpose of controlling torque and damping torque? [3]
- Give the significance of back emf in a dc motor. [2]
- Derive the condition for Maximum Efficiency of a D.C generator. [3]
- "Transformer is a constant flux device". Justify the statement. [2]
- What are the different losses in a transformer? [3]
- What is the primary function of a rectifier filter? [2]
- State different applications of diode. [3]
- What is the difference between CRO and CRT? [2]
- List the applications of CRO. [3]

PART-B

(50 Marks)

- Explain any one type of MI instruments. [5+5]
- Calculate the current in 5Ω resistor shown in figure.



OR

- State necessary equations to convert a delta network into equivalent star network. Explain with an example.
 - Explain the principle of operation of PMMC instruments. [5+5]
- Write the torque equation of DC motor and explain.
 - Draw the neat diagram of three point starter and explain different parts. [5+5]

OR

5.a) Derive the induced e.m.f. equation of a D.C. Generator. [5+5]
b) An 8-pole D.C generator has 500 armature conductors, and a useful flux of 0.05 Wb per pole. What will be the emf generated if it is lap-connected and runs at 1200 rpm? What must be the speed at which it is to be driven to produce the same emf if it is wave wound? [5+5]

6.a) Explain the operation of single phase transformer with neat diagram. [5+5]
b) Discuss how regulation of an alternator can be determined by synchronous impedance method. [5+5]

OR

7.a) Draw the phasor diagram of transformer on load considering an inductive load and write the relevant expressions. [5+5]
b) List out the various starting methods of a three phase induction motor. [5+5]

8.a) What is a transistor? Distinguish different configurations of transistors. [5+5]
b) Describe the different modes of operation of a SCR with help of its V-I characteristics. [5+5]

OR

9.a) Explain the operation of a full wave bridge rectifier. [5+5]
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. [5+5]

10.a) Discuss about the electrostatic focusing of a Cathode Ray Oscilloscope (CRO). [5+5]
b) Explain with a block diagram the major parts of CRT. [5+5]

OR

11.a) Derive the expression for magnetic deflection sensitivity of a Cathode ray tube. [5+5]
b) Discuss how voltage, current and frequency are measured with CRO. [5+5]

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