R15

Code No: 123AP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, November/December - 2016
ELECTRICAL AND ELECTRONICS ENGIGEERING
(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)

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

PART-B

(50 Marks)

2.a) Explain any one type of MI instruments.
 b) Calculate the current in 5Ω resistor shown in figure.   [5+5]
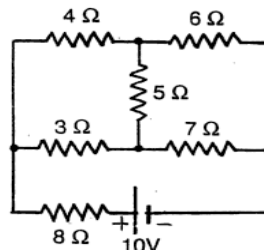
OR

3.a) State necessary equations to convert a delta network into equivalent star network. Explain with an example.

 b) Explain the principle of operation of PMMC instruments.   [5+5]

4.a) Write the torque equation of DC motor and explain.
 b) Draw the neat diagram of three point starter and explain different parts.   [5+5]

5.a)   Derive the induced e.m.f equation of a D.C. Generator.
  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.
  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.
  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.
  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.
  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).
   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.
   b)   Discuss how voltage, current and frequency are measured with CRO.   [5+5]

---oo0oo---