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

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

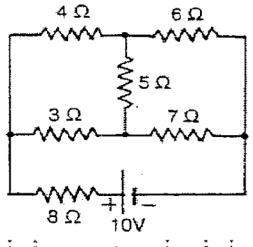
Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

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]

OR

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]

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