Code No: 113AP

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, March - 2017
ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CE, ME, AME, PTM)

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 Kirchoff's laws. [2]
b) Compare spring control instruments with gravity controlled instruments. [3]
c) Mention few applications of DC series motor. [2]
d) What is the use of a starter for d.c motor? [3]
e) What is meant by synchronous impedance? Write its expression. [2]
f) Define regulation and efficiency of a transformer. Write the expressions. [3]
g) State the differences between half wave and full wave rectifiers. [2]
h) List out applications of SCR. [3]
i) Define sensitivity. What are its units? [2]
j) What is the purpose of trigger circuit in CRO? [3]

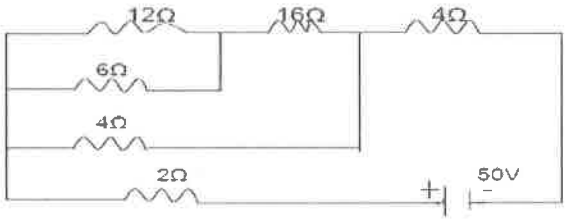
PART-B

(50 Marks)

2.a) Three resistances R_{ab}, R_{bc} and R_{ca} are connected in delta connection, derive the expressions for equivalent star connection.
b) Explain the working principle and constructional details of M.I instrument. [4+6]

OR

3.a) For the circuits shown in figure, calculate total resistance, total current and also total power dissipated.



b) Explain the operation principle of permanent magnet moving coil instrument. [5+5]

4. Discuss in detail the working of three point starter with neat circuit diagram. [10]

OR

5.a) Explain the principle of operation of DC generator.
b) Explain about the different types of DC motors. [6+4]

6.a) Discuss the principle of operation of a Single phase transformer.
b) Sketch the torque- slip characteristics of induction motor and explain. [6+4]

OR

7.a) Show that the maximum efficiency in a transformer occurs when its variable loss is equal to constant loss.
b) Discuss about the principle of operation of 3-phase Induction motor. [4+6]

8. Justify how a transistor performs amplification. Draw the characteristics of PNP transistor and explain them in detail. [10]

OR

9. Draw the circuit diagram and explain the operation of full wave rectifier using center tap transformer and bridge rectifier respectively. Obtain the expression for peak inverse voltage in each case. [10]

10.a) Derive the expression for magnetic field deflection sensitivity of CRT.
b) Discuss about the various applications of CRO. [6+4]

OR

11. Explain in detail the principle of working of CRT with the help of a neat diagram. [10]

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