

R13

Code No: 113AP

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)**

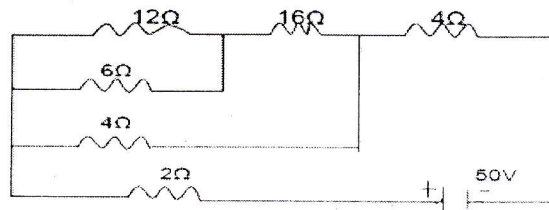
- 1.a) Define Kirchoff's laws. [2]
- b) Compare spring control instruments with gravity controlled instruments. [3]
- c) Mention few applications of DC series motor. [2]
- d) What is the use of a starter for d.c motor? [3]
- e) What is meant by synchronous impedance? Write its expression. [2]
- f) Define 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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