Code No: RT21356   **R13**   SET - 1

II B. Tech I Semester Supplementary Examinations, May/June - 2016
ELECTRICAL SYSTEMS
(Agricultural Engineering)

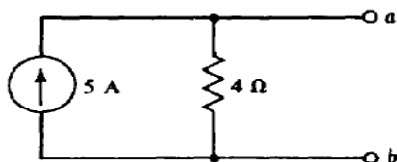Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

PART –A

1. a) State Reciprocity theorem. (3M)
    b) Define leakage reactance in transformers and explain its significance. (3M)
    c) What is demagnetizing ampere turns? Explain why and when it is required in Dc generator. (4M)
    d) List different types of DC generators. Also list their applications. (4M)
    e) Explain the principle of operation of a split phase induction motor. (4M)
    f) Explain the concept of power measurement in single phase circuit by using current transformer and potential transformer. (4M)

PART –B

2. a) State and explain Kirchhoff's laws. (8M)
    b) Transform the current source shown in below figure to a voltage source. (8M)

3. a) Explain the equivalent circuit parameters of a single phase transformer. (8M)
    b) Explain the causes of various losses that occur in a transformer. (8M)

4. a) Explain clearly armature reaction associated with DC generator. (8M)
    b) Derive the formulae for cross magnetizing and demagnetizing ampere turns in a DC generator. (8M)

5. a) Draw the circuit for DC shunt generator and explain its operation. (8M)
    b) Draw the characteristics of a DC series generator and explain its implication. (8M)

6. a) Explain the speed control of a DC shunt motor by field flux control method. (8M)
    b) What is power factor? Explain the disadvantages of low power factor and suggest some power factor improving techniques. (8M)

7. a) Explain the power measurement of three phase system by single watt meter method. (8M)
    b) Discuss any one method for the speed control of a three-phase induction motor. (8M)