Code No: RT21356   (R13)   (SET - 1)

II B. Tech I Semester Supplementary Examinations, May - 2019
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) Define and classify dependent sources.   (4M)
   b) Write four differences between shell and core type transformer.   (3M)
   c) Define armature reaction?   (4M)
   d) Briefly discuss about the differences between shunt and series motors.   (4M)
   e) Define slip of an induction motor.   (3M)
   f) Write sort notes on direct on line starter.   (4M)

PART -B

2 a) Explain about maximum power theorem with a suitable example.   (8M)
   b) A series RLC circuit consists of R=20Ω, L=0.01H and C=0.04μF, calculate the   (8M)
       frequency at resonance. If a 10V of frequency equal to the frequency of
       resonance is applied to the circuit, calculate the values of V_C and V_L across C
       and L respectively. Find the frequencies at which these voltages V_C and V_L are
       maximum.

3 a) Derive and discuss EMF equation of a transformer.   (8M)
   b) State and explain in detail about Faraday's laws of electromagnetic induction.   (8M)

4 a) Describe the working principal and construction of DC generator.   (8M)
   b) Discuss in detail about the procedure to obtain the regulation by Zero-Power   (8M)
       Factor method.

5 a) Explain in detail about separately excited and self-excited generators.   (8M)
   b) A compound generator is to supply a load of 200 lamps, each rated at 150W,   (8M)
       350V. The armature, series, and shunt winding have resistances of 0.04Ω,
       0.08Ω and 60Ω respectively. Determine the generated e.m.f when the machine
       is connected in (i) long shunt (ii) short shunt. Take drop per brush as 1V.

6 a) Discuss in detail about flux control method and armature control method.   (8M)
   b) Sketch and explain the torque slip characteristics of an induction motor. (8M)

7 a) Explain in detail about measurement of power in single phase system using   (8M)
       current transformer.
   b) Discuss in detail about constructional features of 3- phase induction motor.   (8M)