

Code No: RT21045

R13**SET - 1**

II B. Tech I Semester Supplementary Examinations, May/June - 2016
ELECTRICAL TECHNOLOGY
(Com. to ECE, EIE)

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) What is meant by co-energy
b) What is a commutator? What is its function in DC generator?
c) What is the difference between flux and Armature voltage control methods?
d) Write the principle of operation of transformer.
e) Draw the slip-torque characteristics of an induction motor.
f) Why starting torque of a single phase induction motor is zero.
g) Draw the load characteristics of series and shunt generators.

PART-B

2. a) Describe singly excited magnetic field systems with suitable diagrams.
b) All Energy conversion devices use magnetic field as a coupling medium rather than electrical field. Explain Why?
3. a) Explain principle of operation and constructional details of DC machines with neat sketches.
b) A 6 pole generator armature with 300 conductors is running at a speed of 1500 r.p.m find the e.m.f generated when flux per pole is 0.06 Wb? In both lap and wave wound?
4. a) Explain the construction and principle of operation of DC motor.
b) Explain Swinburne's test.
5. a) Derive the e.m.f equation of a transformer. Discuss the factors affecting the induced e.m.f.
b) A 1-phase transformer has 180 turns respectively in its secondary and primary windings. The respective resistances are 0.233 ohms and 0.067 ohms. Calculate the equivalent resistance of (i) the primary in terms of the secondary winding (ii) the secondary in terms of the primary winding and (iii) the total resistance of the transformer in terms of the primary.
6. a) Explain the constructional features of a 3-phase slip ring and squirrel cage Induction Motors. Bring out the merits and demerits of each.
b) A 3.3 kV, 24-pole, 50 Hz, 3-phase star connected Induction Motor has a slip-ring rotor resistance of 0.016 ohms and stand still reactance of 0.265 ohms per phase. Calculate (i) the speed at maximum torque (ii) ratio of full-load torque to maximum torque, if full-load torque is obtained at 247 rpm.
7. Explain with neat diagrams the following types of single phase induction motors
a) Split phase induction motor b) Capacitor start induction motor

