

Code: EC3T5

**II B.Tech - I Semester – Regular/Supplementary Examinations
November - 2019**

**ELECTRICAL TECHNOLOGY
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) Why the emf is not zero when the field current is reduced to zero in dc generator?
- b) Describe the classification of dc machines.
- c) What is the relation between torque and flux of a series motor?
- d) What are the main parts of a transformer?
- e) What is the equivalent reactance of a transformer if it is refer to secondary side?
- f) What is the effect of no. of poles on speed of induction motor?
- g) What are the major types of rotor windings placed in 3 phase induction motor?
- h) What is the basic principle of Alternators?
- i) What are the advantages of providing damper winding?
- j) Name the types of instruments used for making voltmeter and ammeter.
- k) State the advantages of dynamometer type instruments.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) How can you conduct Swinburne's test? Write the advantages and disadvantages of the test. 9 M
- b) A 250 V D.C shunt motor has armature resistance of 0.25 ohms on load, it takes an armature current of 50A and runs at 750R.P.M. If the flux of motor is reduced by 10 percent without changing the load torque, find the new speed of the motor. 7 M
3. a) Draw and discuss no-load phasor diagram of an ideal single phase transformer. 8 M
- b) A 40 KVA single phase transformer has 400 turns on the primary and 100 turns on the secondary. The primary is connected to 2000 V, 50 Hz supply. Determine 8 M
- (i) The secondary voltage on open circuit
 - (ii) The current flowing through the two windings on full load
 - (iii) The maximum value of flux
4. a) Describe the principle of operation of three phase induction motor and draw torque-slip characteristics. 8 M

- b) Discuss about shaded pole motor and list out its applications. 8 M
5. a) Describe about predetermination of regulation by synchronous impedance method. 8 M
- b) A 3-Phase, star connected alternator on open circuit is required to generate a line voltage of 3600V at 50Hz when driven at 500r.p.m. The stator has 3 slots per pole per phase and 10 conductors per slot. Calculate 8 M
(i) the number of poles and (ii) useful flux per pole.
Assume all the coils to be full-pitched with $K_d=0.96$
6. a) With a neat sketch describe the principle and operation of moving coil instrument. 8 M
- b) Derive the expression for deflecting torque of moving iron instrument. 8 M