Code: EC3T5

**II B.Tech - I Semester – Regular/Supplementary Examinations
November - 2018**

**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) Declare the advantages of swinburn's test on DC machines.
   b) Which part of DC machine convert AC to DC or vice versa and how?
   c) What is meant by variable losses in transformer?
   d) Put a note on HV and LV coils of transformer.
   e) Define the slip of three phase induction motor.
   f) Name the different types of rotors in three phase induction motor.
   g) Outline the importance of single phase shaded pole motor.
   h) Write about slot angle in a armature winding of alternator.
   i) Present brief note on different types of alternators.
   j) What are different measuring instruments?
   k) Brief about working of wattemeter.

PART – B

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

$$3 \text{ x } 16 = 48 \text{ M}$$

2. a) Name the different types of DC generators. Also deduce an expression for EMF generated.   10 M

   b) The armature of a 8-pole dc generator has 960 conductors and runs at 400rpm.The flux per pole is 40mWb. Calculate the emf, if the armature is lap-wound.   6 M

3. a) By the help of neat phasor diagram, explain the working principle of Transformer.   8 M

   b) A 3000 / 200V, 50Hz,1-ph, transformer is built on a core having an effective cross-sectional area of 150cm^2 and has 80 turns in low-voltage winding. Calculate:
    i) The value of maximum flux density in the core
    ii) The number turns on in HV voltage winding   8 M

4. a) Illustrate the concept of Rotating Magnetic Field in 3-phase induction motor operation.   8 M

   b) Discuss about the single phase capacitor motor operation.
     8 M

5. a) Explain the working principle and operation of alternator.

8 M

b) A certain alternator has 6 slots per pole and coils are short pitched by 1 slot. The coil span is 5 slot pitches. Calculate the pitch factor.

8 M

6. a) By the neat circuit diagrams, give the Extension of ammeters range.

8 M

b) A moving coil instruments gives a full-scale reading of 10mA when potential difference across its terminals is 100mV. Calculate

i) The shunt resistance required for full-scale deflection of 100A.

ii) The series resistance for full scale reading with 1000V.

8 M