

Code: CS1T5, IT1T5, IT2T3RS

**I B.Tech - I Semester – Regular / Supplementary Examinations
November 2017**

**BASIC ELECTRICAL ENGINEERING
(Common for CSE & IT)**

Duration: 3 hours

Max. Marks: 70

PART – A

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

11 x 2 = 22 M

1.

- a) Explain kirchoff's laws.
- b) A resistance of 10 ohms is connected to a voltage of 25V DC supply. Calculate the power loss.
- c) Explain Faraday's laws of electromagnetic Induction.
- d) Explain self inductance and mutual inductance of an magnetic circuit.
- e) Explain the terms R.M.S value form factor and peak factor.
- f) Draw and explain phasor diagrams for ideal and practical capacitance and inductive circuits by taking voltage as reference.
- g) State the working principle of DC motor.
- h) Briefly describe the necessity of starters in DC motors.
- i) Explain the concept of rotating magnetic field in three phase induction motor.

- j) Draw and explain the phasor diagram for transformer under no-load condition.
- k) Explain the operating principle of PMMC instruments.

PART – B

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

3 x 16 = 48 M

- 2.a) State and explain voltage division technique and current division technique. 8 M
- b) Explain mesh analysis and nodal analysis with relevant examples. 8 M
- 3.a) Derive an expression for force on a current carrying conductor placed in magnetic field. 8 M
- b) Explain the analogy between electric and magnetic circuits. 8 M
- 4.a) Derive an expression for the attending current waveforms of
- i. Average value
 - ii. RMS value
 - iii. Form factor
 - iv. Peak factor 8 M
- b) Explain the analysis of a single phase series R.L circuit. Draw the phasor diagram. 8 M

5.a) Derive an expression for torque developed in the armature of DC motor. 8 M

b) A 6 pole, 3- induction motor runs at 1140rpm on full load when supplied power from a 60Hz supply. Determine the slip at full load. 8 M

6.a) Derive the relation between the torque and inductance of a moving iron instrument. 8 M

b) Explain the different losses in a transformer and variation of losses with load current. 8 M