Code: CS1T5, IT1T5/ IT2T3RS

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

BASIC ELECTRICAL ENGINEERING
(Common to 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) Write statements of Kirchhoff's laws?

   b) Distinguish between ideal and practical voltage source?

   c) Write any two analogies between electric and magnetic circuits?

   d) Explain the dot convention used in magnetically coupled circuits?

   e) Define peak factor?

   f) Define RMS value of sinusoidal waveform with expression?

   g) What is the function of holding coil in a 3-point starter?

   h) Define the slip of an induction motor.

   i) Why rating of the transformer is given in KVA? Explain.

   j) Define controlling and damping torque.

   k) A 100Ω resistance is directly switched on across a 10 V battery. What is the current through resistor? How much is the power loss?

PART – B

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

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

2. a) Two batteries E1 and E2 having e.m.fs of 6V and 2V respectively and internal resistances of 2 and 3 ohms are connected in parallel across a 5 ohm resistor. Calculate i) the current through each battery (ii) terminal voltage

8 M

   b) When three resistors are connected in parallel show the relation between the currents and obtain the equation for currents.   8 M

3. a) Derive the relation between self inductance, mutual inductance and coefficient of coupling.   8 M
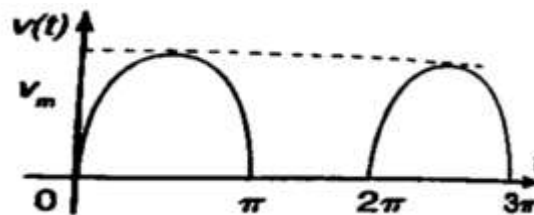
   b) What is a magnetic circuit? Compare magnetic circuit with an electric circuit.   8 M

4. a) Calculate the average and rms value for a half -wave rectified sinusoidal quantity as shown in figure.   8 M

b) A coil has a resistance of 4 Ω and an inductance of 9.55 mH. Calculate (i) the reactance, (ii) the impedance, and (iii) the current taken from a 240V, 50 Hz supply. Determine also the phase angle between the supply voltage and current.   8 M

5. a) Explain the working of D.C. motor with neat diagram.   8 M

   b) Explain the concept of rotating magnetic field?   8 M

6. a) Explain construction and working of a Single phase transformer?   8 M

   b) Describe the working of a moving iron instrument with a neat sketch.   8 M