PVP 19

Code: 19ES1101

I B.Tech - I Semester – Regular Examinations - December - 2019

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common for IT, ECE, EEE)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place.

PART – A

1. a) State Kirchhoff's laws.
   b) List the different types of losses occurred in a DC Machine.
   c) Draw the Torque-sip characteristics of a Three phase induction motor.
   d) Sketch V-I characteristics of practical diode in forward biased condition.
   e) Define the following:
      i) Input offset voltage ii) Slew rate.

PART – B

UNIT – I

2.	a)	Derive the expression for the equivalent resistance of 'n' number of resistances are connected in parallel.	6 M
	b)	List the basic network elements. Write their volt-ampere relationship.	6 M

OR

3.	a)	State and Explain Superposition Theorem.	6 M
	b)	Solve the equivalent resistance of resistances 4Ω, 5Ω, 5Ω are connected in parallel.	6 M

UNIT – II

4.	a)	Explain the constructional details of a DC machine with a neat diagram.	6 M
	b)	Describe different methods of excitations in dc motors with relevant diagrams.	6 M

OR

5.	a)	Derive the torque equation of the DC motor.	6 M
	b)	Draw the diagram of a 2 – point starter and explain the function of each component.	6 M

UNIT-III

6.	a)	Explain the necessity for conducting OC and SC tests on a single phase transformer and give its outcome.	6 M
	b)	Explain the working principle of a Transformer with the help of neat sketch.	6 M

OR

7. a) Explain the working principle of Three-phase Induction motor. 6 M
   b) Derive the expression for torque developed by an Induction motor. 6 M

UNIT – IV

8. a) Explain with a neat diagram the operation of a Full wave rectifier and also draw its output wave forms. 6 M
   b) Draw and Explain the V-I characteristics of a Zener diode. 6 M

OR

9. a) Explain the formulation of depletion region in a PN junction. 6 M
   b) Compare NMOS with PMOS. 6 M

UNIT – V

10. a) Describe the inverting op-amp with circuit diagram and derive the necessary expressions. 6 M
    b) Explain the function of all the basic building blocks of an op-amp. 6 M

OR

11. a) Explain the characteristics of op-amp. 6 M
    b) Explain the closed loop and open loop operation of an op-amp. 6 M