

B.Tech II Year I Semester (R15) Supplementary Examinations June 2017

**BASIC ELECTRICAL & ELECTRONICS ENGINEERING**

(Common to CSE &amp; IT)

Time: 3 hours

Max. Marks: 70

Answer all the questions  
(Use single answer booklet only)

\*\*\*\*\*

**PART – A****UNIT – I**

- 1 (a) Define form factor and peak factor.  
(b) An alternating current is given by  $i = 707 \sin(377t)$ . Calculate average value, r.m.s value, peak factor and form factor.

**OR**

- 2 (a) State Norton's theorem and explain with an example.  
(b) Three resistors of 30 ohms, 15 ohms and 45 ohms are connected in delta. Find the value of resistors in an equivalent star connection.

**UNIT – II**

- 3 Explain the construction and principle of operation of DC generator with neat diagram.  
**OR**  
4 Describe the various methods of speed control of DC shunt motor and discuss their relative merits and demerits.

**UNIT – III**

- 5 (a) Derive the EMF equation of a transformer.  
(b) A transformer supplies a load of 32 A at 415 Volts. If the primary voltage is 3320 volts, find the primary current, primary volt-ampere and secondary volt-ampere.  
**OR**  
6 (a) Explain the principle of working of three phase induction motor  
(b) A 2-pole, three phase induction motor runs at 2910 r.p.m on a 50 Hz supply. Find slip and the frequency of rotor emf.

**PART – B****UNIT – I**

- 7 Explain the working of a PN Junction diode and Zener diode and explain their V-I characteristics.  
**OR**  
8 Draw the circuit diagram and explain the operation of full wave rectifier. Obtain the expression for peak inverse voltage.

**UNIT – II**

- 9 Explain the input and output characteristics of a CE transistor configuration. List out the comparisons of CE, CB and CC configurations.  
**OR**  
10 Explain the operation of N-channel enhancement type MOSFET with the help of its characteristics.

**UNIT – III**

- 11 With a neat diagram, explain the construction and working of RC phase shift oscillator.  
**OR**  
12 With simple schematic of differential amplifier, explain the function of operational amplifier.