

B.Tech I Year (R13) Supplementary Examinations June 2016

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to CSE & IT)

Time: 3 hours

Max. Marks: 70

Answer all the questions

PART – A**UNIT – I**

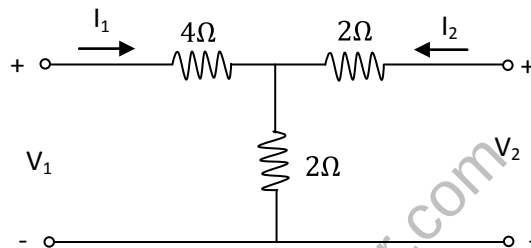
- 1 (a) Explain the star-delta transformation with the necessary equations.
- (b) A RLC circuit has a resistance of $25\ \Omega$ and an inductance of $64\ \text{mH}$ and a capacitance of $80\ \mu\text{F}$ connected in series across $110\ \text{V}$, $50\ \text{Hz}$ mains. Determine: (i) Impedance of the circuit. (ii) Current taken from the mains.

OR

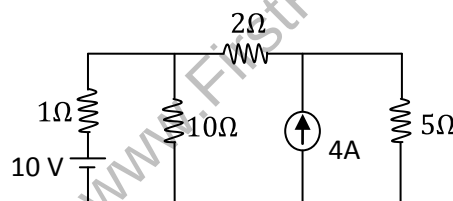
- 2 Define and explain average value, RMS value, form factor and peak factor. Also derive the expression for form factor of a sinusoidal wave.

UNIT – II

- 3 (a) State and explain the maximum power transfer theorem.
- (b) Determine the admittance parameters of the T network shown in figure below.

**OR**

- 4 (a) In the given circuit, find the current through the $10\ \Omega$ using superposition theorem.



- (b) Derive the expression for the Z parameters in terms of Y parameters.

UNIT – III

- 5 (a) Derive the EMF equation of a DC generator.
 - (b) Explain the principle of operation of 3-phase induction motor.
- OR**
- 6 (a) Explain the applications of DC motors.
 - (b) Derive the torque equation of a 3-phase induction motor.

Contd. in page 2

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R13**PART – B****UNIT – I**

- 7 (a) Compare N-type and P-type semiconductor.
(b) With neat circuit diagram, explain the operation of half wave rectifier circuits.

OR

- 8 (a) Define drift current.
(b) Write short notes on diode as switch and diode as rectifier.

UNIT – II

- 9 Explain the input and output characteristics of transistor in CE configuration.

OR

- 10 (a) Compare Bipolar junction transistor and junction field effect transistor.
(b) Explain the operation of junction field effect transistor with suitable diagram.

UNIT – III

- 11 (a) State the Barkhausen conditions for sinusoidal oscillation.
(b) Explain the operation of differentiator amplifier with a neat diagram.

OR

- 12 (a) List out the classification of oscillators circuits.
(b) Write short notes on inverting and non-inverting amplifiers.
