

Roll No.

1987

B. E. 1st Semester

Examination – December, 2011

ELECT. TECH

Paper : EE-101-E

Time : Three hours]

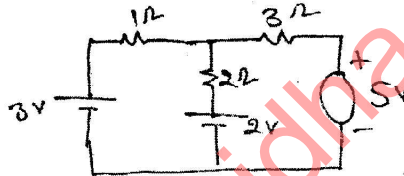
[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions. Use of non programmable calculator is allowed.

1. (a) Explain the Kirchoff's voltage law and Kirchoff's current law with some suitable example. 10
- (b) Define and explain the terms given below : 10
 - (i) Linear Network
 - (ii) Bilateral Network
 - (iii) Active Network
 - (iv) Mesh

2. (a) Define power factor in AC system. Explain the significance and methods of improving the power factor. 10
- (b) Define and explain the terms given below : 10
- (i) RMS values and
- (ii) Average values of an AC sinusoidal signal.
3. (a) Find the value of current flowing through 3 ohm resistance in the given circuit by using Thevenin's theorem : 10



- (b) State and explain maximum power transfer theorem. 10
4. A coil of resistance $25\ \Omega$ and inductance 0.159 H is in parallel with a circuit having $60\ \Omega$ resistor and $125\ \mu\text{F}$ capacitor. This parallel circuit is connected to a 230 V , 50 Hz supply. Calculate (i) supply current (ii) the equivalent circuit impedance, resistance and reactance. 20
5. (a) Explain two wattmeter method of power measurement in 3-phase AC system at balanced load. 10
- (b) Derive the relation between Line voltage and phase voltage, line current and phase current for delta connection in 3-phase system. 10

6. Derive the equation for voltage regulation of 1-phase transformer at capacitive load by drawing the phasor diagram. 20
7. Explain, how the revolving flux is produced in stator of 3-phase induction motor. 20
8. Explain the construction and working of : 20
- (i) Watt Meter,
 - (ii) Energy Meter.