

Code :9A02304

R9

II B.Tech I Semester(R09) Supplementary Examinations, May 2011
BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Biotechnology)

Time: 3 hours

Max Marks: 70

(Minimum of TWO questions from each part should be chosen for answering FIVE questions)

PART-A

1. (a) State and explain Kirchhoff's law.
(b) Explain resistance, inductance and capacitance elements in detail.
2. (a) Derive an expression for RMS value of an alternating current wave form.
(b) A capacitor of $100\ \mu F$ is connected across a 200V, 50 Hz single phase supply. Calculate:
 - i. the resistance of the capacitor.
 - ii. RMS value of current.
 - iii. the maximum current.
3. (a) Derive the relation between phase and line quantities of a 3 phase balanced delta connected system.
(b) Three inductive coils, each with a resistance of $15\ \Omega$ and an inductance of $0.03H$ are connected in star to 3- phase 400volts, 50 Hz supply. Calculate the phase current and line current and also calculate the total power absorbed.
4. Explain the principle of operation of 3- phase induction motor in detail.

PART-B

5. (a) Draw the V-I characteristics of p-n diode and explain.
(b) Draw the circuit diagram of a full wave rectifier having two diodes & explain its operations.
6. (a) Explain why CE configuration is commonly used in amplifier circuits.
(b) Draw the V-I characteristics of SCR and account for the shape of the characteristics.
7. (a) Give basic setup and explain the principle of inducting heating.
(b) Draw and explain piezo electric generator circuit using Hartley oscillator for generation of ultrasonic waves.
8. (a) Derive the expression for the electromagnetic deflection sensitivity in case of the CRT.
(b) Derive the expression for acceleration, velocity & displacement of a charged particle placed in an electric field E .
