Code: 9A02304

R09

II B.Tech I Semester (R09) Supplementary May 2012 Examinations
BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Biotechnology)

Time: 3 hours   Max. Marks: 70

A minimum of two questions from each part should be chosen for answering five questions.
All questions carry equal marks

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Part – A (Electrical Engineering)

1. (a)   Explain the circuit elements in detail.
    (b)   State and explain Kirchhoff's laws in detail.

2. (a)   Derive an expression for average value of an alternating current wave form.
    (b)   Find the current that will flow through a coil of negligible resistance and inductance of 60 mH, when connected to 230 V, 50 Hz supply .

3. (a)   Derive the relation between phase and line values of 3 phase balanced star connected system.
    (b)   Three inductive coils, each with a resistance of 15 Ω and an inductance of 0.03 H are connected in Delta to 3 phase 400 V, 50 Hz supply. Calculate phase current, line current and total power absorbed.

4.   Explain the principle of operation of DC generator and also explain the characteristics of DC generators.

Part – B (Electronics Engineering)

5. (a)   Draw the equivalent circuit of
            (i)   Ideal diode.
            (ii)   Practical diode.
            (iii)   Piece wise linear model of diode.
         Draw their characteristics.
    (b)   Explain how p-n junction diode acts as a rectifier.
    (c)   Give merits & demerits of bridge rectifier.

6. (a)   Draw block diagrams and briefly explain the four types of feedbacks in amplifiers.
    (b)   State Barkhaugen criteria for oscillations.
    (c)   Name different methods of turning-on of SCR.

7. (a)   Explain the principle of dielectric heating.
    (b)   List different applications of ultrasonic waves & explain the principle & working of pulsed-echo ultrasonic flow detector.

8. (a)   Draw the schematic diagram of a CRT and explain about the various sections & materials used.
    (b)   In a CRT, the electrons emitted are accelerated by a potential of 500 V. The length of the deflecting plates is 1.3 cm. Distance between the deflecting plates is 0.5 cm. the distance between the centre of the deflecting plates & screen is 20 cm. Determine the value of electrostatic deflection sensitivity.

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