

Code :9A02301

R9

II B.Tech I Semester(R09) Supplementary Examinations, May 2011
ELECTRICAL ENGINEERING & ELECTRONICS ENGINEERING
 (Common to Mechanical Engineering, Aeronautical Engineering)

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 Ohm's law
 (b) Write short note on star-delta transformation. If R_{ab} , R_{bc} and R_{ca} are connected in delta, derive the expression for equivalent star connection.
2. (a) Explain the working of 3-point starter with neat diagram.
 (b) A 4-pole wave connected DC generator having 60 slots on its armature with 6 conductors per slot, run at 750 rpm and generate an open circuit voltage of 230V. Find the useful flux per pole.
3. (a) Explain the principle of operation of single phase transformer.
 (b) A single phase transformer has 500 primary and 1000 secondary turns. The net cross-sectional area of the core is 50cm^2 . If the primary winding is connected to a 50 Hz supply at 400V. Calculate the peak value of the flux density in the core and voltage induced in the secondary winding.
4. Define the regulation of an alternator. Explain how will you determine the regulation of an alternator by using synchronous impedance method with neat circuit diagram.

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 inductive 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.
