Power Electronics

Assignment 2 (Unit 2 and 4)

Attempt any 5

Level-1

1. What will be the load current and voltage waveform when a single phase half wave uncontrolled rectifier supplies a purely Resistive load? Explain your answer with waveforms.

   Hint: Designed with Diode
2. What will be the load voltage and current waveform when a single phase half wave controlled rectifier supplies a purely Resistive load? Explain your answer with waveforms.

   Hint: Designed with thyristor
3. Explain Single-Phase half-Wave AC Voltage controller With Purely Resistive load

   Hint: Designed with thyristor and diode anti-parallel
4. Explain Single-Phase full-Wave AC Voltage controller With Purely Resistive load

   Hint: **Designed with two thyristor and anti-parallel**
5. single-phase full-wave ac voltage controller is connected with a load of R = 5 W with an input voltage of 230 V, 50 Hz. When the firing angle of thyristor is 60°, determine the rms output voltage, power output at load and input power factor.

Level-2

6. Is it possible to operate a single phase fully controlled half wave converter in the inverting mode? Explain.

   Hint: change firing angle
7. Explain qualitatively, what will happen if a free-wheeling diode is connected in parallel across the RL Load for Uncontrolled half wave rectifier.
8. A designer wants to design a circuit for application which requires Variable AC and he has constraint of not using diode and thyristor. Draw the circuit diagram with explanation

   Hint: Controller
9. A Large value Inductor is connected in series with Resistor in half wave uncontrolled rectifier circuit, how this circuit will behave when it is compared with purely resistive load.