

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – WINTER • 2014****Subject Code: 162405****Date: 03-12-2014****Subject Name: Power Processing circuit -I****Time: 02:30 pm - 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain working of three phase half wave controlled rectifier with appropriate waveforms. **07**
(b) Discuss class B chopper circuit with voltage and current waveforms. **07**
- Q.2** (a) Discuss single phase fully controlled rectifier supplying energy to the resistive load with necessary waveforms. Assume firing angle $\alpha = 60^\circ$. **07**
(b) In a type –A chopper circuit, the switch is operated at 5kHz. The input supply voltage is 200 V dc source, and load has parameters: load inductance 50 mH and load resistance of 10 ohm. For average load voltage is 50 V. Determine (i) Duty cycle (ii) Chopper on time t_{on} and off time t_{off} . **07**
- OR**
- (b) A single phase semi-controlled rectifier operated through 230 V, 50 Hz ac source, supplying energy to the load of resistance $R=20$ ohms. For firing angle of 60° , calculate (i) Average output voltage (ii) Average output Power. **07**
- Q.3** (a) Explain working of linear regulated power supply with neat diagram. **07**
(b) Discuss the effect of rectifier on neutral current. **07**
- OR**
- Q.3** (a) Explain the effect of line inductance on current commutation in controlled rectifier circuit. **07**
(b) Write a short note on modeling of uncontrolled rectifier. **07**
- Q.4** (a) Explain working of Jone's chopper circuit with appropriate waveforms. **07**
(b) Discuss isolated type full bridge DC-DC converter with merits and demerits. **07**
- OR**
- Q.4** (a) Write short note on DC-DC SEPIC converter. **07**
(b) Discuss the concepts of ZVS and ZCS in brief. **07**
- Q.5** (a) Write comparison of single phase rectifier and three phase rectifier. **07**
(b) Explain working of multi quadrant chopper circuit. **07**
- OR**
- Q.5** (a) Discuss working of Fly back converter with neat sketches. **07**
(b) Write a brief note on Resonant converter. **07**
