

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – SUMMER • 2014****Subject Code: 162405****Date: 26-05-2014****Subject Name: Power Processing circuit -I****Time: 10:30 am - 01:00 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)** Discuss 3-phase controlled rectifier with resistive load with necessary waveforms. Assume $\alpha = 45^\circ$. **08**
- (b)** Compare: **06**
- (i) 1-phase and 3-phase rectifier
- (ii) ZVS and ZCS
- Q.2 (a)** Describe modeling of an uncontrolled rectifier. **07**
- (b)** Discuss current mode control of power supply in detail. **07**
- OR**
- (b)** Explain working of input and output filter for a linear regulated power supply. **07**
- Q.3 (a)** Analyze the operation of Jone's Chopper with necessary wave forms. **07**
- (b)** Draw a type –A chopper circuit. It is operating at 2kHz from a 100 V dc source has a load time constant of 6ms and load resistance of 10Ω . Assume mean load voltage is 50 V. Determine (i) Chopping period (ii) duty cycle . **07**
- OR**
- Q.3 (a)** Describe various control strategies for chopper circuit. **07**
- (b)** Derive an expression for (i) average load voltage and (ii) rms load voltage for a single-phase one-pulse diode rectifier feeding RL load. **07**
- Q.4 (a)** Write short note on: Sepic converter. **07**
- (b)** Discuss with the help of power circuit operation of a half bridge converter. What are its limitations? **07**
- OR**
- Q.4 (a)** Write short note on: Forward converter. **07**
- (b)** Classify non-isolated DC-DC converter and explain any one. **07**
- Q.5 (a)** Discuss output rectifier and filter circuits for an isolated converter. **07**
- (b)** Write short note on: Load resonant converter **07**
- OR**
- Q.5 (a)** Discuss any one FOUR terminal IC based voltage regulator. **07**
- (b)** Write short note on: ZVS clamped voltage DC-DC converter **07**
