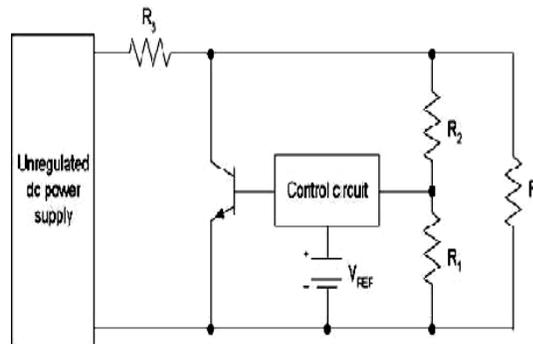


**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI • EXAMINATION – SUMMER 2013****Subject Code: 162405****Date: 30-05-2013****Subject Name: Power Processing circuit -I****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Notations/ symbols used have usual meanings.

- Q.1** (a) Give detailed classification of rectifiers. Explain the concept of phase-angle control. **06**
- (b) Differentiate: - (i) Un-controlled rectifier and controlled rectifier. **08**  
(ii) 1-phase and 3-phase rectifiers.

- Q.2** (a) Explain single - phase, phase controlled rectifier with inductive load using necessary waveforms for  $\alpha = 45^\circ$ . **07**
- (b) **07**



Describe the operation of voltage regulator shown in the above fig.

**OR**

- (b) Describe modeling of a controlled rectifier. **07**
- Q.3** (a) Draw and explain a linear regulated power supply, **07**
- (b) Write short note on: - Multi quadrant chopper. **07**

**OR**

- Q.3** (a) Discuss Class A type chopper. **07**
- (b) Write short note on :- Multi - phase chopper. **07**

- Q.4** (a) Describe operation of a full  $\delta$  bridge converter. State its advantages. **07**
- (b) With line side and load side voltage and current waveforms, describe 3-Phase controlled rectifiers with purely resistive load. **07**

**OR**

- Q.4** (a) Discuss working of Fly back converter with neat sketches. **07**
- (b) Discuss Cuk converter operation with equivalent circuit for both switch -on and switch-off conditions. **07**

- Q.5** (a) Explain voltage commutated chopper with neat circuit diagram and waveforms. **10**
- (b) In brief explain, resonant switch converter. **04**

**OR**

- Q.5** (a) Describe operating principle of a Sepic converter. **10**
- (b)  $\delta$ ZVS can be used as clamped voltage DC-DC converter. Justify the statement. **04**

\*\*\*\*\*