

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIIth SEMESTER-EXAMINATION – MAY/JUNE- 2012****Subject code: 170906****Date: 29/05/2012****Subject Name: Advanced Power Electronics-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 diode clamped 3-level inverter configuration. Draw gate signals and inverter terminal voltage of one phase. **07**

(b) Discuss L type ZCS resonant inverter with neat circuit diagram and waveform. **07**

Q.2 (a) Draw circuit diagram and output voltage phasor diagram of 12-pulse converter. Explain 5th and 7th harmonics elimination in 12-pulse converter. **07**

(b) Draw circuit diagram of single phase multilevel cascaded H bridge inverter. Explain its working principle and mention its features, advantages and limitations. **07**

OR

(b) Explain flying capacitors multilevel inverter topology. Compare it with other multilevel inverter topologies. **07**

Q.3 (a) Explain concept, advantages and limitations of multi-pulse converter. How reduction in harmonics in output voltage can be achieved? **07**

(b) With neat circuit diagram and waveform discuss class E resonant inverter. **07**

OR

Q.3 (a) Discuss various transformer connections for multi-pulse converter. **07**

(b) Discuss series resonant inverter with neat circuit diagram and waveform. **07**

Q.4 (a) Discuss push pull converter and its application in dc power supply. **07**

(b) With neat circuit diagram explain resonant dc power supply. **07**

OR

Q.4 (a) Draw block diagram of UPS and discuss each block in detailed. **07**

(b) With neat circuit diagram explain resonant ac power supply. **07**

Q.5 (a) Discuss stepper motor control strategy with appropriate diagram. **07**

(b) Discuss control of brushless dc drive. Give its applications. **07**

OR

Q.5 (a) Discuss energy conversion process in SRM. Give its applications. **07**

(b) What do you mean by electronically commutated motors? Discuss switching circuit of BLDC motor drive. **07**
