

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 170906****Date: 29-11-2014****Subject Name: Advanced Power Electronics-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) What is difference between full bridge inverter and half bridge inverter? Explain it with circuit diagram. **07**
- (b) What is the difference between multi-pulse converter and multilevel converters? What are merit and demerits of each? **07**
- Q.2** (a) Explain parallel resonant inverter with necessary diagram and wave-form. **07**
- (b) Explain 12 pulse multi-pulse inverter with wave-form and diagram. **07**
- OR**
- (b) Explain nine level cascaded H-bridge inverter. How can we calculate total no. of switches and power supply needed for it? **07**
- Q.3** (a) What do mean by switch mode power supply? How is it differs from conventional power supply? **07**
- (b) What are merits and demerits of H-bridge multilevel inverter? How can we overcome them? **07**
- OR**
- Q.3** (a) Explain space vector modulation technique is used for multilevel inverter. **07**
- (b) Explain one of application of multi-level inverter in drives or in power system. **07**
- Q.4** (a) Explain working of fly-back type switch mode power supply. **07**
- (b) Explain three level diode clamped type multilevel inverter. **07**
- OR**
- Q.4** (a) Explain working of switch reluctance motor. **07**
- (b) Explain construction and working of stepper motor drives. **07**
- Q.5** (a) Explain sinusoidal and trapezoidal type method for brushless DC drives. **07**
- (b) Which are different methods for speed control of stepper motor drives? Explain one of them. **07**
- OR**
- Q.5** (a) Explain five level flying capacitor type multi-level inverter. What are demerits of this topology? **07**
- (b) Give the comparison between ZCS & ZVS inverter. **07**

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