

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – SUMMER • 2014****Subject Code: 170906****Date: 31-05-2014****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) Why Multi-level inverter is required? Discuss its advantages over two level inverter? **07**
- (b) Distinguish multi pulse inverter with multi level inverter. **07**
- Q.2** (a) Compare zero voltage resonant inverter with zero current resonant inverter. Also discuss two quadrant ZVS converter. **07**
- (b) Explain working of five level diode clamped inverter with necessity circuit diagram and wave forms. **07**
- OR**
- (b) Explain working of five level flying capacitor inverter with necessity circuit diagram and wave forms. **07**
- Q.3** (a) Discuss L type ZCS resonant inverter with neat circuit diagram and waveform. **07**
- (b) Discuss applications of multi pulse and multi level converters. **07**
- OR**
- Q.3** (a) Explain 12 pulse and 18 pulse converter? Discuss their performance in view point of harmonics. **07**
- (b) Classify dc power supplies. Discuss resonant dc power supply. **07**
- Q.4** (a) Explain significance of position sensing in BLDC motor drive. Discuss block diagram of BLDC motor drive. **07**
- (b) Explain bidirectional ac power supplies. **07**
- OR**
- Q.4** (a) What do you mean by trapezoidal permanent magnet synchronous motor (PMSM)? Compare it with induction motor and mention their applications. **07**
- (b) Discriminate ON line and OFF line UPS. Explain various components of UPS. **07**
- Q.5** (a) Classify stepper motors. Explain hybrid stepper motor drive. **07**
- (b) Explain electromechanical energy conversion in SRM. **07**
- OR**
- Q.5** (a) The stator and rotor poles of a switched reluctance motor are not same, justify. Also discuss the merits and demerits of SRM. **07**
- (b) Explain micro stepping control of stepper motor drive. **07**
