Seat No.:	Enrolment No.

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. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. **Q.1** Why Multi-level inverter is required? Discuss its advantages over two level 07 (a) inverter? **(b)** Distinguish multi pulse inverter with multi level inverter. 07 Compare zero voltage resonant inverter with zero current resonant inverter. **07 Q.2** (a) Also discuss two quadrant ZVS converter. **(b)** Explain working of five level diode clamped inverter with necessity circuit 07 diagram and wave forms. OR Explain working of five level flying capacitor inverter with necessity circuit **07 (b)** diagram and wave forms. 0.3 Discuss L type ZCS resonant inverter with neat circuit diagram and waveform. 07 (a) Discuss applications of multi pulse and multi level converters. **(b) 07 Q.3** (a) Explain 12 pulse and 18 pulse converter? Discuss their performance in view **07** point of harmonics. **(b)** Classify dc power supplies. Discuss resonant dc power supply. **07** 0.4 Explain significance of position sensing in BLDC motor drive. Discuss block **07** (a) diagram of BLDC motor drive. Explain bidirectional ac power supplies. **(b)** OR What do you mean by trapezoidal permanent magnet synchronous motor 0.4 **07** (a) (PMSM)? Compare it with induction motor and mention their applications. Discriminate ON line and OFF line UPS. Explain various components of UPS. **(b) 07 Q.5 07** Classify stepper motors. Explain hybrid stepper motor drive. (a) Explain electromechanical energy conversion in SRM. **07 (b)** OR Q.5 The stator and rotor poles of a switched reluctance motor are not same, justify. **07** (a) Also discuss the merits and demerits of SRM. Explain micro stepping control of stepper motor drive. **07 (b)**
