

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2170906**Date:18/11/2016****Subject Name:Advanced Power Electronics(Departmental Elective - II)****Time:10.30 AM to 1.00 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) Discuss operation of Push pull converter type switched mode dc power supply along with necessary waveforms. **07**
- (b) List the separate DC sources used for cascaded multilevel inverter. Explain operation of five level cascaded multilevel inverter. **07**
- Q.2** (a) Explain operation of ZCS converter with diagram and wave forms. **07**
- (b) Define FACTS. Give detail classification of FACTS controllers. **07**
- OR**
- (b) Draw circuit diagram and output voltage phasor diagram of 12-pulse converter. Explain 5th and 7th harmonics elimination in 12-pulse converter **07**
- Q.3** (a) State the advantages HVDC transmission over EHVAC transmission for bulk power transmission. **07**
- (b) Explain the working of FC-TCR. Draw neat diagrams. **07**
- OR**
- Q.3** (a) Discuss operation of Buck converter in continuous and discontinuous conduction mode. **07**
- (b) Explain parallel resonant inverter with necessary diagram and wave-form. **07**
- Q.4** (a) Explain basic principle of shunt compensation used for transmission line. Explain working of STATCOM. **07**
- (b) With neat circuit diagram and waveform discuss class E resonant inverter. **07**
- OR**
- Q.4** (a) Discuss importance of reactive power compensation. Discuss phase-shifting transformer with necessary diagram in brief. **07**
- (b) Classify carrier based PWM technique for multilevel inverter. Discuss any one in detail. **07**
- Q.5** (a) What is the difference between isolated and non-isolated dc power supply. Explain fly back converter topology with diagram and wave forms. **07**
- (b) Discuss operation of three level diode clamped multilevel inverter. **07**
- OR**
- Q.5** (a) Discuss operation of Cuk converter. Derive the relation between duty ratio and input voltage. **07**
- (b) Draw the transformer connections for 18 pulse converter. Explain Y-Z2 transformer connection used for multipulse converter. **07**
