

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2170906

Date: 29/04/2017

Subject Name: Advanced Power Electronics

Time: 02.30 PM to 05.00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
Figures to the right indicate full marks.

- Q.1** (a) Explain the working principle of cuk converter and derive the expression for V_o/V_d **07**
(b) Derive the expression for duty ratio in discontinuous mode of operation with constant V_o for Buck converter with circuit diagram and waveform. **07**
- Q.2** (a) Discuss flyback converter with circuit diagram and waveform. **07**
(b) Draw circuit diagram and waveform, explain the working of Zero voltage Switching Converter. **07**
- OR**
- (b) Explain the principle of L-Type ZCS resonant inverter with circuit diagram and waveform. **07**
- Q.3** (a) Draw the circuit diagram and waveform of five levels cascaded H – Bridge Multilevel Inverter and explain its working. **07**
(b) Compare the topologies of multilevel inverter. **07**
- OR**
- Q.3** (a) Give comparison of ZCS & ZVS resonant converter. **07**
(b) Explain the working of one leg five levels diode clamped multilevel inverter with circuit diagram and waveform. Also mention its salient features. **07**
- Q.4** (a) Compare HVDC and HVAC transmission systems. **07**
(b) Draw the circuit diagram and waveform of 12 pulse converter and explain its working principle. **07**
- OR**
- Q.4** (a) Draw the circuit diagram and waveform of three phase six pulse converter and explain its working principle. **07**
(b) Discuss the equipments required for HVDC systems. **07**
- Q.5** (a) Explain the advantages and limitations of Static Synchronous Series compensator (SSSC). **07**
(b) Discuss Static Synchronous Compensator (STATCOM). **07**
- OR**
- Q.5** (a) Explain the working principle of FC-TCR. **07**
(b) Explain the working principle of TSC-TCR. **07**
