

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (OLD) EXAMINATION – SUMMER 2019****Subject Code: 180907****Date: 17/05/2019****Subject Name: Advanced Power Electronics -II****Time: 10:30 AM TO 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) Discuss following methods in brief: **07**
(i) Automatic Generation Control (AGC), (ii) phase shifting transformers, (iii) excitation control and (iv) transformer tap changer control
- (b) Explain load compensation and system compensation with circuit and phasor diagram. **07**
- Q.2** (a) State the types of HVDC systems and explain each in brief. **07**
(b) Compare technical performance of different SVCs. **07**
- OR**
- (b) Determine per unit voltage at midpoint of a symmetrical line as a function of the power flow P on it. **07**
- Q.3** (a) Explain the working of TSC-TCR compensator with circuit & operating characteristic. **07**
(b) Explain single phase TCR. Derive the expression of the fundamental component of current flowing through TCR. **07**
- OR**
- Q.3** (a) Explain the characteristics of FC-TCR with and without coupling transformer. **07**
(b) Write a short note on effect on Power transfer capacity using shunt compensation and also derive expression for incremental VAR rating of a series capacitor. **07**
- Q.4** (a) Discuss inverter extinction angle control (EAG) in brief. **07**
(b) Explain constant β control and constant γ control strategy. **07**
- OR**
- Q.4** (a) Discuss power reversal Characteristic of DC link and also Discuss Correction to inverter characteristics. **07**
(b) Compare EHV AC with HVDC transmission with reference to Economics of Transmission, Technical performance. **07**
- Q.5** (a) Derive expressions for output DC voltage, PIV and PPR (peak to peak ripple) for a 12-pulse converter. **07**
(b) Explain 6-pulse inverter operation with overlap. Explain it with waveform only. **07**
- OR**
- Q.5** (a) Explain the components of VSC converter. **07**
(b) Write a short note on 12-pulse bridge converters. **07**
