

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VIII • EXAMINATION – SUMMER 2014**

**Subject Code: 182401****Date: 05-06-2014****Subject Name: Power Electronics Application in Power System****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)** Define the following terms: 1. FACTS 2. SVC 3.BESS 4 .SSG 5.TCBR 07  
6.TSR 7. UPFC
- (b)** List the constraint equation and control variable for 1. SVC 2.TCSC 07  
3.STATCOM 4.SSSC 5. SPST 6.UPFC 7.IPFC
- Q.2 (a)** 1. Enlist the classification of FACTS Controller. 02  
2. List the benefits with application of FACTS Controller. 03  
3. Explain applications of FACTS controller in distribution system. 02
- (b)** List comparative between HVDC and FACTS in perspective with : 07  
1. Submarine Cable 2. Long Distance Transmission Line
- OR**
- (b)** List comparative between HVDC and FACTS in perspective with : 07  
1. Underground Transmission 2. Connecting ac system of different or incompatible frequency.
- Q.3 (a)** Explain the basic operating principle, characteristics and applications of 07  
STATCOM.
- (b)** Explain the basic operating principle, characteristics and applications of SSSC. 07
- OR**
- Q.3 (a)** Explain the basic operating principle, characteristics and applications of UPFC. 07  
**(b)** Explain the basic operating principle, characteristics and applications of PAR. 07
- Q.4 (a)** Define THD. List and Explain need for improved utility interface. 07  
**(b)** List the different Solar Technologies. Draw and Explain block diagram of 07  
Photovoltaic array interconnection to power system.
- OR**
- Q.4 (a)** Define DPF. List and Explain the generation and effect of current harmonics in 07  
power system.
- Q.4 (b)** Define SMES. Explain the use of SMES for utility load leveling with necessary 07  
diagram.
- Q.5 (a)** Write technical note on: Static Relay 07  
**(b)** Write technical note on: Modern HVDC System 07
- OR**
- Q.5 (a)** Write technical note on: EMI-EMC 07  
**(b)** Write technical note on: Control of HVDC System. 07

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