Enrol	lment	No.	

GUJARAT TECHNOLOGICAL UNIVERSITY ME – SEMESTER II– EXAMINATION – WINTER - 2016

Subject Code: 2720716

Subject Name: FACTS

Time: 2:30 pm to 5:00 pm

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks
- Q.1 State different conventional voltage control mechanism. Describe one of the 07 **(a)** mechanisms in detail. Explain Mid-Point shunt compensation. Derive equation of active power and 07 **(b)** reactive power with the help of phasor diagram. Explain the working of TCR with neat diagram. Also explain its V-I Q.2 07 **(a)** characteristics & draw the current & voltage waveform for different firing angles. Explain the working of FC-TCR along with its V-I characteristics. **(b)** 07 OR Draw the functional control scheme of a TSC-TCR and thus explain how it 07 **(b)** operates. Mention the advantages of having slope in the dynamic characteristics of an 07 0.3 **(a)** SVC. Explain the parallel operation of two SVC's for load sharing for both the 07 **(b)** conditions i.e. with and without current droop. OR Explain how power transfer capacity is improved using SVC. 07 Q.3 **(a)** Discuss in brief, about the functioning of SVC as a voltage regulator. 07 **(b) Q.4** (a) How is the third harmonic distortion possible using SVC voltage control? 07 Discuss how the transient stability is Enhanced using SVC. **(b)** 07 OR
- Q.4 (a) Discuss in brief, about the various applications of SVCs.
 (b) Discuss how Sub synchronous Resonance (SSR) is mitigated using TCSC.
 Q.5 (a) Explain the working of SSSC. Discuss its basic control scheme and also show
 07
 - different modes of operation.(b) Explain the working of STATCOM with its V-I characteristics.07

OR

Q.5 (a) A UPFC is the most versatile FACT'S controller. Justify this statement.
(b) Explain in detail how the IPFC addresses the problem of compensating a number of transmission lines in a given substation.
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Date: 19/11/2016