

Printed Pages: 02

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B TECH
(SEM VII) THEORY EXAMINATION 2017-18
FLEXIBLE AC TRANSMISSION SYSTEMS

Time: 3Hours

Max. Marks: 100

Note: Attempt all Sections. Assume missing data, if any.

SECTION-A**1. Attempt all questions in brief:****10 x 2 = 20**

- (a) V-I characteristics of STATCOM.
- (b) Draw the power angle curve of SMIB system with midpoint SVC.
- (c) Various recent developments in the UPFC design.
- (d) Describe sub-synchronous resonance.
- (e) Modelling procedure of IPFC for Power Flow studies.
- (f) Advantage and limitation of Thyristor Controlled Voltage Regulator
- (g) Advantage and limitation of Thyristor Controlled Phase Angle Regulators.
- (h) Write the Importance of FACTS controllers in the power system network.
- (i) Distinguish between reactive power absorbers and reactive power suppliers.
- (j) State the use of frequency response curve in the interaction analysis.

SECTION – B**2. Attempt any three of the following:****10 x 3 = 30**

- (a) Discuss the problems relating to AC power transmission. Explain how they can be overcome using FACTS techniques.
- (b) Explain about the performance of SVC in controlling voltage in a power system.
- (c) Explain the basic operating principle and characteristics and application of UPFC.
- (d) Describe the procedure to locate the FACTS devices in an electrical network.
- (e) Describe Sub-synchronous resonance in Power System.

SECTION – C**3. Attempt any one part of the following:****10 x 1 = 10**

- (a) What is the basic idea for FACTS Devices in Transmission system and explain the various applications of FACTS devices.
- (b) Explain the objectives of FACTS controllers in the power system network.

4. Attempt any one part of the following:**10 x 1 = 10**

- (a) What is electric power quality? What are the various causes of power quality problems?
- (b) Explain with the help of a suitable model how transmittable power can be increased with series compensation.

5. Attempt any one part of the following: 10 x 1 = 10

- (a) Enumerate the modeling of SSSC to enhance the system stability.
- (b) Explain about the performance of SVC in controlling voltage in a power system.

6. Attempt any one part of the following: 10 x 1 = 10

- (a) Describe the principle of operation of a TCSC, clearly indicating the different modes of operation.
- (b) Explain the modeling procedure of UPFC for power flow studies.

7. Attempt any one part of the following: 10 x 1 = 10

- (a) Explain how shunt compensation can be achieved with ideal midpoint reactive compensators. What is the effect of multi point segmentation on line performance?
- (b) Discuss on the measures taken to reduce the harmonic distortion in the STATCOM outputs.