(Following Paper ID and Roll No. to be filled in your Answer Books)

PAPER ID : MC20

Roll No. | | | | | | | | | | |

M. TECH. (Sem.II)

THEORY EXAMINATION 2015-16

FLEXIBLE AC TRANSMISSION SYSTEMS

Time : **3** Hours Total Marks : **100**

Note : Attempt questions from each section as per instructions.

SECTION-A

1. Attempt ALL questions. Each question carries 2 marks : 10×2=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 two questions. Each question carries 8 marks : (8×2=16)

(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.

(c) Describe Sub-synchronous resonance in Power System.

3. Attempt any two questions. Each question carries 8 marks : (8×2=16)

(a) What is electric power quality? What are the various causes of power quality problems?

(b) Discuss the various modes of oscillations in Power System, specifying their frequency and responsible components.

(c) Describe the procedure to locate the FACTS devices in an electrical network.

4. Attempt any two questions. Each question carries 8 marks : (8×2=16)

(a) Enumerate the modelling of SSSC to enhance the system stability.

(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.

5. Attempt any two questions. Each question carries 8 marks : (8×2=16)

(a) Describe the principle of operation of a TCSC, clearly indicating the different modes of operation.

(b) Explain the modelling procedure of UPFC for power flow studies.

(c) Explain about the performance of SVC in controlling voltage in a power system.

6. Attempt any two questions. Each question carries 8 marks : (8×2=16)

(a) Describe Reference current generation techniques of DSTATCOM.

(b) Discuss on the measures taken to reduce the harmonic distortion in the STATCOM outputs.

(c) Explain DVR reference voltage generation.

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