

Roll No.

Total Pages : 3

325301

December, 2019

M.Tech. (PS) - IIIrd SEMESTER

FACTS and Custom Power Devices (MPS-702)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*
4. *Assume any missing Data.*

PART - A

1. (a) Enumerate the benefits of FACTS devices. (1.5)
- (b) What is the need of shunt compensation in EHV long lines? (1.5)
- (c) Explain Why STATCOM is better than SVC for voltage control during very low voltage conditions? (1.5)

- (d) What is need of slope in SVC operating characteristic? (1.5)
- (e) SSSC is SSR neutral. Explain Why? (1.5)
- (f) What is NGH-SSR damping scheme? (1.5)
- (g) What are ill-effects of harmonics? (1.5)
- (h) Define Voltage Sag and swell. (1.5)
- (i) What is the principle of shunt active filter? (1.5)
- (j) Which factors limit the transmission line loading? (1.5)

PART - B

- 2. (a) What are the advantages of series compensation in long transmission line? (5)
- (b) Explain the principle of operation and V-I characteristics of static var compensator. Give its applications in power system. (10)
- 3. (a) Explain vernier control mode of TCSC with its applications. (5)
- (b) Explain the principle of operation, modeling and applications of STATCOM. (10)

4. (a) How does SSSC damp power swings in transmission line. Explain. (7.5)
- (b) Explain the working of TCPAR. (7.5)
5. Explain the Dynamic modeling and working of unified power flow controller for compensation, Voltage control and Phase shifting with phasor diagrams. (15)
6. (a) Explain the various sources which create harmonics. (5)
- (b) Explain the working and applications of interline power flow controller. (5)
- (c) Explain various methods for mitigation of harmonics. (5)
7. Write short notes on :
- (i) IEEE standards on Power Quality.
- (ii) SSSR and its damping techniques. (15)
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