M.E. Second Semester (Electrical Engineering (Electrical Power System))

13578 : Applications of Power Electronics to Power System : EP 2205

P. Pages : 2 | AW - 3598

Time : Three Hours | Max. Marks : 80

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Notes :
1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of slide rule logarithmic tables, Steam tables, Mollier's Chart, Drawing instrument, Thermodynamic table for moist air, Psychrometric Charts and Refrigeration charts is permitted.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Explain the difference between series & shunt compensation of AC line. 7

   b) Draw construction & working of STATCOM. 7

OR

2. a) Explain compensation by a. series capacitor connected at the mid-point of the line with pure series compensation at the mid-point of the line. 9

   b) Explain compensation by SSSC. 5

3. a) Explain dynamic problems in alternating current system. 7

   b) Explain the benefits of FACT controller. 6

OR

4. Describe: 13
   a) SVC
   b) TCSC
   c) SPS

5. a) Explain the working of UPFC. 7

   b) Explain operation of SSSC. 6

OR

6. Give the analysis of three phase six pulse STATCOM. 13

SECTION – B

7. a) State the effect of Voltage Imbalance & Waveform distortion on power quality under steady state. 7

b) Explain current harmonics generated by thyristor controlled reactors. 7

OR

8. a) Generate Mathematical Model for investigation of harmonic stability. 7

b) Describe equivalent circuit of FACT's controller. 7

9. a) Explain the working of VSC based series connected active filter. 7

b) Differentiate between series & parallel resonance. 6

OR

10. a) What is the effect of harmonics in power system on electrical equipment. 6

b) Explain: 7
i) Voltage sag & swells.
ii) Voltage flicker.

11. a) What are the measures taken for protection of UPFC. 6

b) Give applications of UPFC. 7

OR

12. a) Explain as how electromagnetic transient simulator helps in the mitigation of power quality problems. 8

b) Give IEEE power quality standards. 5

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