Code: EE7T4

IV B.Tech - I Semester – Regular Examinations – October - 2017

FLEXIBLE AC TRANSMISSION SYSTEMS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer *all* the questions.   All questions carry equal marks

$$11 \times 2 = 22$$

1.
   a) What are FACTS controllers? What are their benefits?
   b) How would you explain the objective of reactive shunt compensation in transmission lines?
   c) How would you compare VSC and CSC?
   d) How would you explain the Power Oscillations can be damped out by both series and shunt compensation?
   e) How would you describe IPFC?
   f) How would you explain the necessity of shunt compensation form the view point of mid point voltage regulation?
   g) What is SVC? What are its applications?
   h) How do you compare the STATCOM and SVC in terms of their operation?
   i) What are the problems with interconnected power systems?

j) How would you discuss the types of converters basically used in FACTS devices & what are the differences between them?

k) Why transient free switching of TSC is needed?

PART – B

Answer any **THREE** questions. All questions carry equal marks.

$$3 \text{ x } 16 = 48 \text{ M}$$

2. a) How would you explain the power flow and dynamic stability considerations in the Interconnected power systems. And also list out relative importance of Controllable parameters.   8 M

   b) Why transmission interconnections are necessary and what are the major constraints of todays power system?   8 M

3. a) How would you explain the Three level Voltage Source Converter with neat diagrams?   8 M

   b) How would you explain the types of harmonics are present in the output of 3 phase bridge converter?   8 M

4. a) How would you describe the transient stability can be improved by shunt compensation?   8 M

b) How would you explain the operation of TSC with neat diagrams? 8 M

5. a) How would you describe the performance of VSC based STATCOM? 8 M

b) How would you explain about the role of SVC in improving the stability limit and enhancing the power system damping? 8 M

6. a) How would you explain the concept of series capacitive compensation? 8 M

b) How would you describe series compensation can be used for power oscillation damping? 8 M