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Total Number of Pages : 01

B.Tech  
PEEE5409

**7<sup>th</sup> Semester Back Examination 2019-20**  
**FLEXIBLE AC TRANSMISSION SYSTEM**  
**BRANCH : EEE, ELECTRICAL**  
**Time : 3 Hours**  
**Max Marks : 70**  
**Q.CODE : HB352**

**Answer Question No.1 which is compulsory and any FIVE from the rest.**

**The figures in the right hand margin indicate marks.**

- Q1 Answer the following questions : (2 x 10)**
- a) What are the advantages of interconnected transmission system?
  - b) Classify the various types of FACTS controllers.
  - c) What is TCBR and TCVR?
  - d) Write two objectives of shunt compensation.
  - e) State the similarities and dissimilarities between a SSSC and TCSC.
  - f) What is sub-synchronous resonance?
  - g) What is UPFC and why is it called so?
  - h) What is a quadrature booster transformer (QBT)?
  - i) State the importance of storage devices in FACTS controllers.
  - j) State the advantages of FACTS technology.
- Q2**
- a) Explain the performance and operating characteristics of TCR and TSR. (5)
  - b) What is a SVC? Draw and explain the various configurations of SVC. (5)
- Q3**
- a) Explain with the help of a suitable model how transmittable power can be increase with series compensation. (5)
  - b) Explain how GCSC and TCR are duals of each other. (5)
- Q4**
- a) How can the power flow control be carried out using phase angle regulators? (5)
  - b) Explain how voltage and phase angle regulators are used to reduce loop power flow. (5)
- Q5**
- a) Draw a schematic diagram of UPFC and explain its working. (5)
  - b) Explain the basic operating principles using a block diagram of an IPFC. (5)
- Q6** What is Midpoint Voltage regulation for line segmentation and how it fulfills the various objectives of shunt compensation? (10)
- Q7** Describe the principle of operation of a TCSC, clearly indicating the different modes of operation. (10)
- Q8 Write short answer on any TWO : (5 x 2)**
- a) Limits of loading capability of transmission lines.
  - b) Possible benefits of the FACTS technology.
  - c) STATCOM