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Roll No

MEPS-201

M.E./M.Tech., II Semester

Examination, November 2019

Reactive Power Control and FACTS

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.

- 1. a) What do you mean by "FACTS Controllers"? What are the advantages and disadvantages of FACTS controllers? Explain in brief.
- b) State and explain "VSI-based FACTS controllers".
- 2. a) Discuss the equivalent circuit diagram of SVC and its working principle.
- b) State and explain the following:
 - i) Series-connected FACTS controllers
 - ii) Shunt-connected FACTS controllers
- 3. a) Differentiate between STATCOM and SVC.
- b) State and explain the working principle of D-STATCOM with relevant expressions and circuit diagrams.
- 4. a) Explain the following:
 - i) IEEE - FACTS controllers
 - ii) SMES - FACTS controllers
 - iii) BESS - FACTS controllers
 - iv) HPFC - FACTS controllers

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- b) Discuss the constructional details and working principles of TC-PAR. What are the advantages of TC-PAR over TCSC?
 - 5. a) State and explain the equivalent circuit diagram and working principle of UPFC. What are the merits and demerits of UPFC?
 - b) Differentiate between UPFC and UPQC.
 - 6. a) How to enhanced the following system performances by FACTS controllers in multi-machines power systems?
 - i) Power System Oscillations
 - ii) Loadability of the system
 - b) Discuss the following:
 - i) Series-compensation by TCSC
 - ii) Shunt-compensation by SVC
 - iii) Phase angle compensation by TC-PAR.
 - 7. a) What do you mean by "TRANSIENT STABILITY"? How to it is minimized by FACTS controllers?
 - b) Define the following:
 - i) SSSC - FACTS controllers
 - ii) IPFC - FACTS controllers
 Also mention their limitations and significances.
 - 8. a) Write a short note on mitigation of SSR by using FACTS controllers.
 - b) Discuss the constructional features and working principle of GUPFC and GIPFC. Differentiate between GUPFC and GIPFC.
