Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

EE-702(B)-CBGS

B.Tech., VII Semester

Examination, December 2020

Choice Based Grading System (CBGS)

Power Electronics Applications to Power System

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) What do you understand by Harmonics? What are different types of harmonics? Explain the different detrimental effects of harmonics with suitable examples.

   b) What are series and shunt compensator? Compare their role for power quality improvement.

2. a) What would be the impact of "poor power quality" on system efficiency, reliability and operation? Why power quality is important?

   b) Discuss the working principle of DSTATCOM. How load compensation can be done using DSTATCOM.

3. a) What are FACTS Devices? How are they important in power system? Discuss the basic types of FACTS Devices.

   b) Differentiate between Static Synchronous series compensator (SSSC) and Thyristor Controlled Series Compensators (TCSC).

4. a) What are the causes of power quality problems and what are its effects?

   b) State the difference between Static Var Compensator (SVC) and STATCOM?

5. a) Distinguish between voltage sag and under voltage? Briefly discuss the techniques used for sag or dip mitigation.

   b) Discuss the basic operating principle and characteristics of Unified Power Flow Controller (UPFC) along with its application.

6. a) What are filters? What is the difference between active and passive filters? Why it is required in electrical network?

   b) What is the operating principle and role of Dynamic Voltage Restorer (DVR) discuss in detail?

7. a) Classify the mitigation techniques for power quality problems.

   b) Explain the factors to be considered for designing passive filters. Also explain their limitations.

8. a) Write a short note on following terms-

      i) Compressed air energy storage system

      ii) Super conducting magnet energy storage

   b) How energy storage systems help in improving power quality? What are the challenges faced during integration of energy storage system to the grid?

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