Reg No.:_____ Name:_____

0001EE6512052001

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech S8 (Hons) Exam May 2020

01EE6512: APPLICATIONS OF POWER ELECTRONICS IN POWER SYSTEMS

Answer any *two full* questions from *each* part
Limit answer to the required points

Max. Marks: 60 **Duration: 3 hours**

PART A

1. a. Illustrate with neat diagram, the principle of series compensation. (4)

   b. Explain how series compensation is achieved by a static synchronous series compensator. (5)

2. a. List the conditions for transient free switching in a thyristor switched capacitor. (2)

   b. Describe principle of operation of FC+TCR and explain the V-I Characteristics (5)

   c. Sketch the steady state and control characteristics of static VAR compensator. (2)

3. a. Describe the working of TCSC with relevant waveforms. (5)

   b. Analyze the four quadrant operation of STATCOM. (4)

PART B

4. a. Briefly explain the power quality issues in distribution Systems. (3)

   b. Identify the main sources of harmonics in distribution systems. (2)

   c. Illustrate with neat diagram the concept and working of Shunt Active Power Filters. (4)

5. a. Explain the working of Total Harmonic Distortion Analyser with functional block diagram. (4)

   b. Enumerate any five merits and applications of HVDC Transmission system. (5)

6. a. Discuss the effect of EMI in power distribution system. (3)

   b. Explain the different types of HVDC links used in converter stations with relevant schematic diagrams. (6)

PART C

7. a. Explain in detail the mathematical modeling of grid interactive inverters. Sketch the control block diagram of grid connected inverter. (10)

b. Explain the anti-islanding protective measures employed in grid interactive inverters. (2)

8. a. Give a brief outline of IEEE 929-2000 standard for power transfer from inverter to grid. (8)

b. Discuss any two issues associated with interface of distributed generation to utility system. (4)

9. a. Explain in detail any five local islanding detection techniques. (10)

b. Differentiate active and passive islanding techniques. (2)