



APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code: PE0822242A

(Pages: 2)

Name:

Reg. No:

SECOND SEMESTER M.TECH. DEGREE EXAMINATION JULY 2022

**Branch: ELECTRICAL AND
ELECTRONICS ENGINEERING**

Specialization: POWER ELECTRONICS

08EE6242(A) FACTS AND CUSTOM POWER DEVICES

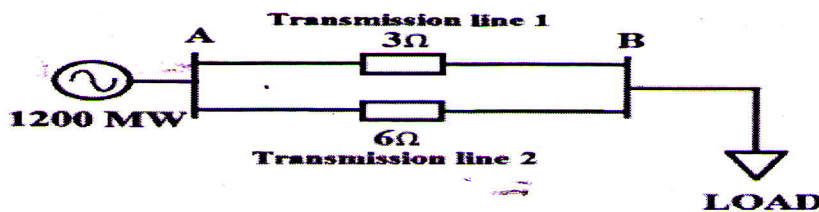
Time: 3 hr

Max. Marks: 60

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q. No.	Module 1	Marks
1. a	Explain the concept of FACTS.	3
	Answer b or c	
b	Briefly Explain about SPWM.	6
c	A generator provides power to the load through two parallel connected transmission lines as shown in figure. The impedance of transmission line 1 and transmission line 2 are 3 ohms and 6 ohms respectively. The continuous rating of transmission line 1 and transmission line 2 are 700 MW and 600 MW respectively. If the generator supplies 1200 MW,	6



- (i) Find the power flow through each transmission line
- (ii) If any of the transmission line is overloaded, how is it possible to maintain the power flow using FACT controller.

Q. No.	Module 2	Marks
2. a	What are the advantages of using Multilevel inverter over conventional two level inverter.	3

Answer b or c

- b** With neat circuit diagrams explain the working of five level diode clamped multilevel inverters. **6**
- c** Explain the working of cascaded multilevel inverter. **6**

Q. No.	Module 3	Marks
3. a	Why Continues control of impedance is not possible in Thyristor switched capacitor (TSC).	3

Answer b or c

- b** Explain the working of STATCOM. **6**
- c** Explain about Static VAR Compensator. **6**

Q. No.	Module 4	Marks
4. a	Explain the Concept of Series Compensation.	3

Answer b or c

- b** Explain the operation and control of SSSC. **6**
- c** Explain the concept of voltage and phase angle regulation. **6**

Q. No.	Module 5	Marks
5. a	What are the features of Unified Power Flow Controller.	4

Answer b or c

- b** Illustrate the transmission control capabilities of UPFC. Draw the phasor diagrams for the transmission control capabilities of UPFC. **8**
- c** Explain the operation and control of IPFC. **8**

Q. No.	Module-6	Marks
6. a	What are custom power devices.	4

Answer b or c

- b** Explain the operation and control of UPQC? **8**
- c** Explain the working and compensation of Dynamic voltage Restorer? **8**