

ANURAG Engineering College

(An Autonomous Institution)

IV B.Tech II Semester Advanced Supplementary Examinations, August - 2024

FLEXIBLE AC TRANSMISSION SYSTEMS

(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours

Max. Marks: 75

Section – A (Short Answer type questions)**(25 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. What do you understand by the term “Interconnection”? Give the limitations of AC interconnection?	CO1	L2	2M
2. Define FACTS controller and give its basic types.	CO1	L1	3M
3. How power flow can be reversed in Voltage-sourced converters?	CO2	L2	2M
4. What is the effect of increasing pulse number beyond 12 on harmonics?	CO2	L2	3M
5. What are the functional requirements of reactive shunt compensator to meet its objectives?	CO3	L1	2M
6. Why shunt compensation is always attempted at midpoint of a transmission line.	CO3	L1	3M
7. What are the Objectives of shunt compensation?	CO4	L1	2M
8. What are the advantages of slope in SVC dynamic characteristics	CO4	L1	3M
9. Distinguish between TCSC and TCR	CO5	L2	2M
10. How do prevent the occurrence of resonance in TCSC operation?	CO5	L2	3M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) What are the benefits of FACTS controllers? List different types of FACTS controllers?	CO1	L2	10M
OR			
B) Explain the major issues in AC power transmission? How they addressed using FACTS devices.	CO1	L2	10M
12. A) Explain the operation of a three-phase full wave bridge converter. Draw the necessary waveforms	CO2	L2	10M
OR			
B) With a circuit diagram, explain the 12-pulse operation of the converter. Also explain the transformer connections for 12-pulse operation.	CO2	L3	10M
13. A) Explain the following with respect to shunt compensation a) Mid-point voltage regulation. b) Transient stability.	CO3	L2	10M
OR			
B) Explain the thyristor controlled and thyristor switched reactor type VAR generator with circuit and waveforms.	CO3	L2	10M

14. A) Explain the operation of a Fixed Capacitor, Thyristor Controlled Reactor (FCTCR) type var generator. CO4 L2 10M
- OR**
- B) Explain the operation of STATCOM. And Discuss the transient stability enhancement with STATCOM. CO4 L2 10M
15. A) Explain the transient stability enhancement and power oscillation damping with series compensation with necessary diagrams. CO5 L2 10M
- OR**
- B) Explain in detail the principle of operation of GCSC. CO5 L2 10M