

9. (a) Explain the basic operation of voltage regulation and phase angle regulation. 6
(b) Explain the operation of a continuously controllable thyristor tap changer on Inductive Load. 7

OR

10. (a) Explain switching converter, based voltage and phase angle regulator in brief. 7
(b) Discuss about Hybrid phase angle regulator. 6
11. (a) Explain the operating principle of UPFC. 7
(b) Explain NGH-SSR dumping scheme. 6

OR

12. (a) Write note on IPFC. 7
(b) Explain thyristor controlled braking resistor. 6

Faculty of Engineering & Technology
Seventh Semester B.E. (Electrical Engg.) (C.B.S.)
Examination
ELECTIVE-I : FLEXIBLE AC TRANSMISSION
SYSTEM

Time—Three Hours]

[Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve Question No. **1** **OR** Questions No. **2**.
- (3) Solve Question No. **3** **OR** Questions No. **4**.
- (4) Solve Question No. **5** **OR** Questions No. **6**.
- (5) Solve Question No. **7** **OR** Questions No. **8**.
- (6) Solve Question No. **9** **OR** Questions No. **10**.
- (7) Solve Question No. **11** **OR** Questions No. **12**.
- (8) Due credit will be given to neatness and adequate dimensions.
- (9) Assume suitable data wherever necessary.
- (10) Illustrate your answers wherever necessary with the help of neat sketches.
- (11) Use of non-programmable calculator is permitted.

1. (a) Explain the term “Stability limit” related to transmission of power. 6
- (b) List the basic types of FACTS controller with their symbols. Briefly explain the role of series and shunt FACTS Controller. 7

OR

2. (a) Why is there a need of interconnection in Electrical Power System ? 6
- (b) What is the need of FACTS Controller in AC Transmission line ? Explain in detail. 7
3. (a) Explain the working of single phase full wave bridge converter with neat waveform and circuit diagram. 6
- (b) Why is there a need of 3-level VSC ? Explain its working. 7

OR

4. (a) Compare VSI and CSI. 6
- (b) Explain the working of six pulse voltage source converter by using suitable diagram and waveform. 7

5. (a) Explain the operation of TCR with the help of circuit diagram, waveform and V-I characteristics. 7
- (b) Explain how the shunt compensation improves the transient stability of transmission line and dump power oscillation. 7

OR

6. (a) What is TSC ? Explain its transient free switching condition. 7
- (b) What is STATCOM ? Draw circuit diagram and explain basic operating principle. 7
7. (a) What are the objectives of series compensation ? Discuss each in brief. 7
- (b) Explain the operation of GCSC for controlling the power flow. 7

OR

8. (a) Explain the working principle of SSSC. 7
- (b) Draw and explain V-I and power losses verses line current characteristic of TCSC. 7