

M.E. Second Semester (Electrical Engineering (Electrical Power System))  
**13574 : Power System Dynamics and Control : EP 2201**

P. Pages : 2

Time : Three Hours



**AW - 3594**

Max. Marks : 80

- Notes :
1. Due credit will be given to neatness and adequate Dimensions.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answer necessary with the help of neat sketches.
  4. Use of pen Blue/Black ink/refill only for writing the answer book.

**SECTION - A**

1. a) Explain the term power system security. 7  
b) Explain the state of operation of power system. 6

**OR**

2. a) Discuss various factors affecting transient stability. Explain how the transient stability can be improved. 7  
b) Derive swing equation & clearly mention the meaning of each term. 6
3. a) State various types of FACTS controllers & explain any one. 7  
b) Explain mathematical modeling of long transmission line for nominal Pi network. 6

**OR**

4. a) Explain the representation of synchronous machine used for stability study along with equivalent cks & phasor diagrams. 7  
b) Explain variable impedance type SVC. 6
5. a) State & explain the assumptions made in multimachine stability study. 7  
b) Explain synchronizing torque analysis & damping torque Analysis Application: System without AVR. 7

**OR**

6. a) Explain simplified system model of multimachine system. 7  
b) Explain synchronizing torque Analysis & damping torque Analysis Applications: Fast excitation system. 7

**SECTION - B**

7. a) Explain supplementary modulation control of FACTS device (any one FACTs device) 7  
b) Explain modeling of excitation system. 7

**OR**

- |    |  |    |
|----|--|----|
| 8. | Explain system representation by state equations.                    | 14 |
| 9. | Explain transient instability analysis using energy function method. | 13 |

**OR**

- |        |  |    |
|--------|--|----|
| 10.    | Explain transient instability analysis using digital simulation. | 13 |
| 11. a) | Explain transient stability controllers.                         | 7  |
| b)     | Compare voltage & angle stability.                               | 6  |

**OR**

- |        |  |   |
|--------|--|---|
| 12. a) | Explain Long term voltage instability.                                       | 7 |
| b)     | Define voltage stability? Explain the factors affecting voltage instability. | 6 |

\*\*\*\*\*