

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

P. Pages : 2

Time : Three Hours



**AW - 3865**

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Illustrate your answer necessary with the help of neat sketches.

**SECTION – A**

1. a) Give in detail the classification of steady state stability, transient State stability and dynamic state stability on the basis of disturbance. **7**  
b) What are design methods for improving transient stability? Explain any one. **6**

**OR**

2. a) Describe various transitions in power system operating state due to disturbances alongwith respective control actions. **7**  
b) What is the function of Automatic Voltage Regulator (AVR)? What is its effect on steady state stability of system? **6**
3. a) What are the assumptions made for representing the generator by classical model? And hence enlist its disadvantages for stability analysis. **6**  
b) Deduce park's transformation relating the three phase currents of a synchronous machine to its corresponding d-q-o variables. **7**

**OR**

4. Explain variable impedance type Static VAR Compensators (SVC). **13**
5. a) Explain simplified system model multimachine system. **6**  
b) Explain the method of analysis of small signal angle instability. (Low frequency oscillations) **7**

**OR**

6. a) Explain synchronizing and damping torque analysis. Application : Fast excitation system. **7**  
b) What the assumptions made in multimachine stability study? **6**

**SECTION – B**

7. a) Explain supplementary modulation control of shunt FACTS device. **7**  
b) Explain and draw the standard block diagram of excitation system. **6**

**OR**

- |           |  |           |
|-----------|--|-----------|
| <b>8.</b> | Explain eigen value analysis using power system stabilizers.         | <b>13</b> |
| <b>9.</b> | Explain transient instability analysis using Energy function method. | <b>13</b> |

**OR**

- |            |   |           |
|------------|---|-----------|
| <b>10.</b> | What are sub-synchronous frequency oscillations? Explain any one method to analyse SSR alongwith its countermeasures. | <b>13</b> |
| <b>11.</b> | a) What is voltage stability? Explain the different methods for analysis of voltage instability.                      | <b>10</b> |
|            | b) Voltage stability is sometimes also called load stability, explain.  | <b>4</b>  |

**OR**

- |            |   |          |
|------------|---|----------|
| <b>12.</b> | a) Explain various methods to improve voltage stability of the system.  | <b>8</b> |
|            | b) Explain Transient voltage stability and Long term voltage stability. | <b>6</b> |

\*\*\*\*\*