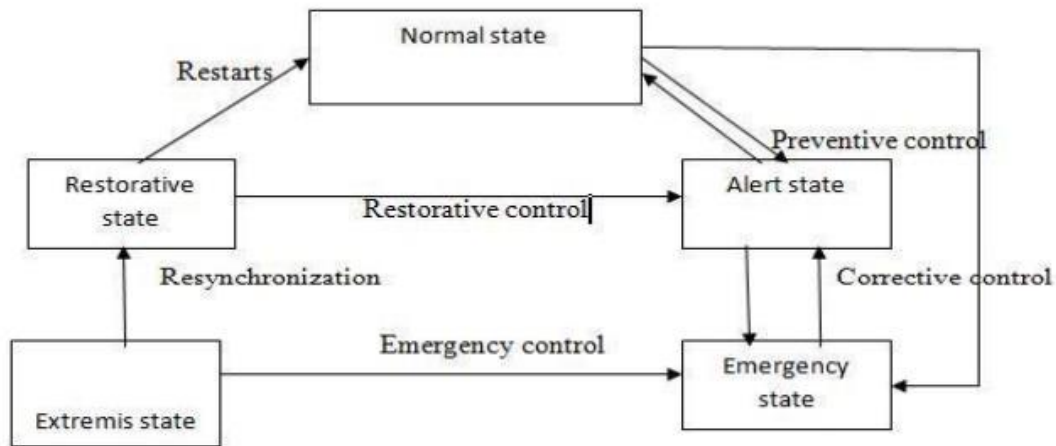# VARIOUS OPERATING STATES:

Operating states

1. Normal state

2. Alert state

3. Emergency state

4. Extremis state

5. Restorative state

Normal state:

A system is said to be in normal if both load and operating constraints are satisfied .It is one in which the total demand on the system is met by satisfying all the operating constraints.

Alert state:

➢ A normal state of the system said to be in alert state if one or more of the postulated contingency states, consists of the constraint limits violated.
➢ When the system security level falls below a certain level or the probability of disturbance increases, the system may be in alert state .

- ➢ All equalities and inequalities are satisfied, but on the event of a disturbance, the system may not have all the inequality constraints satisfied.
- ➢ If severe disturbance occurs, the system will push into emergency state. To bring back the system to secure state, preventive control action is carried out.

Emergency state:

- ➢ The system is said to be in emergency state if one or more operating constraints are violated, but the load constraint is satisfied .
- ➢ In this state, the equality constraints are unchanged.
- ➢ The system will return to the normal or alert state by means of corrective actions, disconnection of faulted section or load sharing.

Extremis state:

- ➢ When the system is in emergency, if no proper corrective action is taken in time, then it goes to either emergency state or extremis state.
- ➢ In this regard neither the load or nor the operating constraint is satisfied, this result is islanding.
- ➢ Also the generating units are strained beyond their capacity .
- ➢ So emergency control action is done to bring back the system state either to the   emergency state or normal state.

Restorative state:

- ➢ From this state, the system may be brought back either to alert state or secure state .The latter is a slow process.
- ➢ Hence, in certain cases, first the system is brought back to alert state and then to the secure state .
- ➢ This is done using restorative control action.