S6 EEE

PSA Important Topics

Module 1,2

May 2019 1) Explain different types of current limiting reactors ? Significance ? Where are they located?

APR 2018 2) Find the expression for three phase power in terms of symmetrical components

3) APRIL 2018 QP

4) Prove that symmetrical components transformation is power invariant

5) What are the effects of faults in power system

6) Explain symmetrical fault and why its calculation is necessary.

7) How will you draw a reactance diagram when the single line diagram of a power system is given.

May 2019 8) Draw the zero sequence networks of star-delta and delta-delta transformers.

May 2019 9) Define the term per unit quantity. Merits, demerits ?

10) May 2019 QP

11) Define per unit representation of electrical quantities? List out its advantages.

12) Explain short circuit MVA and its significance in analysing faults in power system.

13) Explain the significance of symmetrical components in power system.

14) Derive the expression for fault current and draw the interconnection of sequence networks for line to line fault on the terminals of an unloaded generator.

15) Symmetrical and unsymmetrical faults.

Module 3,4

APR 2018 1) Classify the various types of buses in a power system for load flow studies.

May 2019 2) Derive the block diagram representation of a generator-load model

May 2019 3) Compare between Gauss-seidal method and Newton-Raphson method in load flow studies.

May 2019 4) With neat diagram explain the working of a turbine speed governing system.

May 2019 5) What is automatic voltage regulator (AVR)

APR 2018 6) What are the main functions of load frequency controller in power system

APR 2018 7) Explain the computational procedure for load flow solution using fast decoupled load flow method.

8) Starting from the first principles, obtain the equations of real power and reactive power used in load flow problem.

9) Explain the algorithm for load flow analysis using Newton-Raphson

10) Direct solution of load flow problem is not possible. Why?

May 2019 11) How slack bus differs from other buses in a power system? What is the significance of slack bus in load flow analysis?

12) APRIL 2018 QP, MAY 2019 QP

13) Explain the basic generator control loops.

14) Derive the static load flow equations for a power system.

15) Automatic Generation Control? It's objectives?

16) Develop and explain the block diagram of automatic load frequency control of an isolated power system.

17) Write down the steps involved in solving load flow equation using Gauss siedel method when voltage controlled buses are absent.

18) Principle of DC load flow

Module 5,6

APR 2018 1) What are the factors affecting transient Stability in Power system?

APR 2018 * 2) What is Swing equation?

APR 2018 * 3) Derive the expression for Swing equation for a synchronous machine connected to an infinite bus.

APR 2018 4) What do you mean by penalty factor as referred to economic operation of Power System?

* 5) Distinguish between economic dispatch and unit Commitment

* 6) Explain the different stabilities of a Power System.

* 7) Explain unit Commitment? List out the Constraints on unit Commitment.

May 2019 8) Derive condition for economic load dispatch neglecting losses.

May 2019 9) Define Penalty factors and loss coefficients in economic operation of Power System

May 2019 10) Write all methods to improve steady state Stability limit of Power System.

11) How loads are distributed b/w units within a plant

12) What is the significance of thermal unit constraint in unit commitment problem.

13) Draw and explain Power angle curve of a Synchronous machine?

14) Explain critical clearing angle and its significance with respect to the stability of a power system.

15) APR 2018 QP, May 2019 QP

APR 2018 ≠ 16) Explain equal area criterion and state the assumptions made.

APR 2018 17) Derive the expression for transmission losses as a function of Power generation.

18) Explain the method of solving swing equation by Point by Point method.

May 2019 19) What is the significance of spinning reserve constraint in unit commitment problem?

20) Derive the eqn for penalty factor for optimal system operation

21) List the methods for improving transient stability of Power system.

22) Explain the steady state limit of a power system with the help of power angle diagram.

≠ 23) Applications of equal area criterion.