AMIRAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

Question Bank

Introduction & Power system matrices

1. What is the need for base values?

2. What is bus admittance matrix?

3. What is single line diagram? Give it advantages.

4. Draw the single line diagram showing the essential parts in the power system network.

5. What are the applications of Y-bus matrix?

6. Describe the advantages of interconnections of power system in details.

7. Explain the function of load dispatch center in details.

8. Write a short note on how blackout occurs in a large size power system.

9. Write a short note on islanding of part of power system.

10. Explain cascade tripping and network islanding in brief.

11. List the advantages and disadvantages of inter connected power system.

12. What is the important of inter connected power system

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Load flow studies

1. What is P-Q bus in power flow analysis?
2. What is the need for power flow or load flow study?
3. Mention any three advantages of N-R method over G-S method.
4. What is the need for slack/swing bus in power system?
5. What are the advantages of FDLF method?
6. Find the bus admittance matrix for the given network. Determine the reduced admittance matrix by eliminating node 4. The values are marked in p.u.
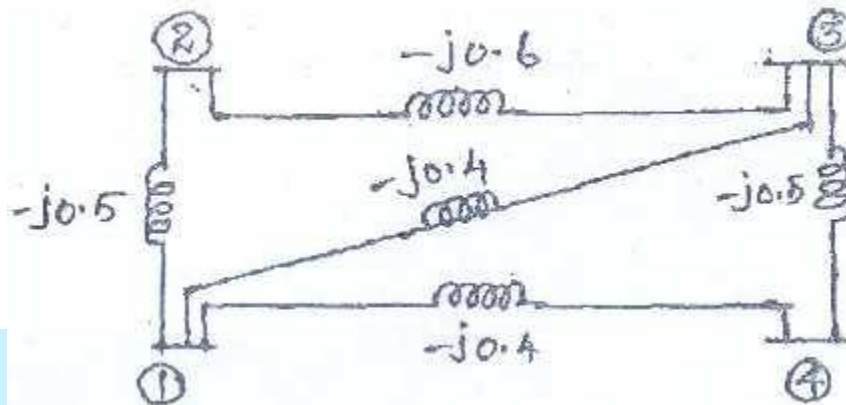
7. (i) Derive the power flow equation in polar form.
   (ii) Write the advantages and disadvantages of Gauss-Seidel method and Newton-Raphson method.

8. (i) Compare Gauss-Seidel method and Newton-Raphson method of load flow
   (ii) Fig.12 shows a three bus power system.
   Bus 1 : Slack bus, V= 1.05/00 p.u.
   Bus 2 : PV bus, V = 1.0 p.u. Pg = 3 p.u.
   Bus 3 : PQ bus, Pl = 4 p.u., Ql = 2 p.u.
   Carry out one iteration of load flow solution by Gauss Seidel method.
   Neglect limits on reactive power generation.
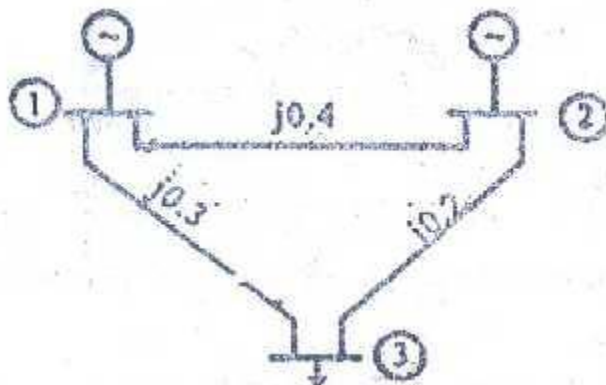
Economic Operation Of Power System & Frequency and voltage control methods

1. Show that when number of generating unit are operating in parallel and supplying power in to a transmission network, the most economical scheduling of load is obtained when their incremental cost of received power re equal. Derive an equation coordinating the incremental cost of production, the incremental transmission losses and the incremental cost of received power.

2. Derive the expression for B-coefficients in case of two generating plants connected to an arbitrary number of loads through a transmission network.

3. Describe unit commitment in detail.

4. What is penalty factor? Discuss the criteria for economic dispatch when losses of the system are considered.

5. A two bus system is show in figure 3. If 100MW is transmitted from plant 1 to the load, a transmission loss of 10MW is incurred. Find the required generation for each plant and the power received by the load when the system λ is rs25/MWh.=0.02MWh,=0.04+20.00rs/MWh.

6. Describe speed governing system for controlling real power flow in the system.

7. Explain method used for voltage control in power system.

8. Describe flat frequency control and selective frequency control used for controlling frequency in power system.

9. With the help of a neat diagram, explain turbine speed governing system. Its mathematical model.

10. Explain AGC with neat a block diagram

Power system stability

1. Explain the advantages of the p.u form of representation?

2. Define the per unit value of a quantity. How will you change the base impedance from

3. one set of base values to another set?

4. Explain the steady state and transient state with the help of a RL circuit.

5. Why is Per phase analysis done in a symmetrical three-phase system.

6. What are the advantages of using per unit system?

7. Explain the per phase generator model with required diagrams.

8. With neat diagrams, explain the transformer model used for per phase analysis.

9. Discuss in detail about the modeling of transmission lines.

10. Clearly explain the basic components of a power system.

11. How can the transient stability of system be improved? Discuss the traditional as well as new approaches to the problem.

12. Discuss various methods to improve steady state stability.

13. Discuss the procedure for solving the swing equation using point-by point method.

14. Discuss the dynamics of synchronous machine and hence derive the swing equation.

15. Explain equal area criteria of stability.