



TECHNO INDIA BATANAGAR



DEPARTMENT OF ELECTRICAL ENGINEERING

Question Bank 1

Power System I & II

EE 502 & EE 602

1. Explain the requirements of planning the operation of a power system.
2. Define steady state operating condition.
3. What is a disturbance and what are the two types of disturbances?
4. When is a power system said to be steady-state stable & transiently stable?
5. Give the formula to calculate base current, I_b and base impedance of a three phase system.
6. Give the equation for load impedance and load admittance per phase of a balanced star & delta connected load.
7. What is the advantage of per unit method over percent method?
8. Define base impedance and base kilovoltamperes.
9. Define per unit value of any electrical quantity.
10. What are the quantities whose base values are required to represent the power system by reactance diagram?
11. What is the need for base values?
12. Find List the advantages of per unit computations.
13. What are the factors that affect the transient stability?
14. List the methods of improving the transient stability limit of a power system
15. What is a reactor?
16. Give the equation for transforming base kV on LV side to HV side of a transformer and vice versa.
17. Why the line value of voltage directly used for per unit calculation in three phase systems?
18. What is the need for system analysis in planning and operation of power system? Explain.
19. Explain the steady state and transient state with the help of a RL circuit.
20. Why is Per phase analysis done in a symmetrical three-phase system.
21. Explain the per phase generator model with required diagrams.
22. What is meant by sag template?
23. Define proximity effect.

Faculty: Mr. Kalyan Kar, Assistant Professor,EE

24. Mention the methods to control the reactive power in the system.
25. What are the properties of XLPE cable?
26. Draw the characteristics of a mho and impedance relay on an R-X diagram.
27. Draw the schematic arrangement of a static directional impedance relay.
28. What is the significance of overlapping of zone in protection schemes?
29. What is the need for short circuit current calculation in a Power system?
30. Define breaking capacity and short time rating of a circuit breaker.
31. What are the merits and demerits of oil circuit breakers?
32. With neat diagrams, explain the transformer model used for per phase analysis.
33. Discuss in detail about the modeling of transmission lines.
34. Clearly explain the basic components of a power system.
35. Give the expansion of GMR and GMD.
36. . What is the difference between single and double circuit?
37. What is sag in overhead lines? Discuss the disadvantages of providing the too small or too large sag on a line.
38. Why Ferranti effect is not considered in short transmission line?
39. A d.c three wire system is to be converted into a three phase, four wire system by adding a fourth wire equal in X section to each outer of the d.c system. If the percentage power loss and voltage of consumer's terminals are to be the same in two cases, find the extra power at unity power factor that can be supplied by the a.c system. Assume load to be balanced.
40. Gives a comparison in between ac and dc transmission? What are the limitations of high transmission voltage?
41. Write a short note on 'overhead line conductors' bringing out reasons for using ACSR conductors?
42. Explain the effect of surge impedance on loading line?
43. List all methods for reducing corona and radio interference and explain?
44. Explain the vibration of power conductors and also the methods to dampout these vibrations?
45. Differentiate in between belted and screened cables on the basis of construction?
46. Explain the requirements of a good distribution system .
47. Prove that voltage drop diagram for a uniformly loaded distributor fed at one end point is parabola.
48. What is meant by grading of cables? Describe intersheath grading and explain how this method is useful for good performance of the cable with suitable equations.
49. Write down briefly about GIS.
50. Draw and explain structure of modern power system.
51. Explain the following: Reactance grounding, Resistance grounding, Earthing transformer.
52. Explain with diagram the Operating principle of an induction type over-current relay and hence derive its torque equation.
53. Explain the different methods of connecting current limiting reactors in the power system.
54. Obtain an expression for rate of rise of re-striking voltage and thus explain the need for resistance switching.
55. Explain with relevant theories the arc interruption in a circuit breaker?

56. What is meant by an infinite bus?
57. List the assumptions made in multimachine stability studies.
58. Define swing curve. What is the use of swing curve?
59. Mention the various types of buses in power system with specified quantities in each bus.
60. What are the assumption to be made in short circuit studies?
61. Why is one of the buses taken as slack bus in load flow studies?
62. What is Y bus? Explain the development of power flow equation
63. Explain the network formulation of bus admittance matrix of a power system & its uses
64. Derive an expression for maximum power transfer between two nodes. Show that this power is maximum when $X=\sqrt{3}R$, where X is the reactance & R is the resistance of System.
65. Explain Feeder and distributor in a power system network.
66. What are the factors considered for the selection of site of an outdoor 11/0.4 kV substation.
67. Describe advantages and disadvantages of outdoor substation over indoor type.
68. Compare between the different types of faults in a power system.
69. Why it is not necessary to insert current limiting reactor between the generator & the generator bus?
70. Short Notes: Bus bar reactors & their locations.
71. What are the different steps for the calculation of short circuit kVA and short circuit fault current.
72. Define and explain the term: Feeder, Distributor and service mains.
73. Discuss the relative merits and demerits of underground and overhead distribution system.
74. What are the advantages of doubly fed distributor over singly fed distributor?
75. Derive an expression for the voltage drop for a uniformly loaded distributor fed at one end.
76. What is the purpose of interconnector in a ring main distributor?