Chapter 1: DC Circuits

1. What is Resistance, Inductance and capacitance?
2. State ohms law. Where it is not applicable?
3. Define voltage , current
4. What are dependent and independent sources
5. What is source transformation
6. State kirchoffs laws.
7. Identify series and parallel circuits
8. What is star and delta connection? state formulas for transformations
9. Identify Star and delta networks and do conversion
10. Statements of Superposition, thevenins, nortons, max power theorem
11. What are internal resistances of ideal voltage source and current source?
12. What is the condition for max power transfer from source to load in any circuit?

Chapter 2: AC Circuits

13. What is DC and AC supply? Difference between them
14. Generation of DC and AC voltages with emf equations
15. What is period, frequency, average , rms , peak amplitude, phase difference, leading , lagging waveform
16. Define amplitude factor and form factor
17. What is rms and average value of pure sinusoidal waveform
18. What is power factor? Should be high or low. Explain
19. Add and subtract following signals and find resultant:
    $V_1 = 10 \sin (wt+30)$, $V_2 = 20 \cos (wt+70)$
20. If AC supply is given to Resistor, draw phasor diagram. What will be power factor
21. If pf is unity, circuit contains which component?
22. If total impedance angle is negative, pf is lagging or leading?
23. If AC supply is given to pure Inductor, draw phasor diagram. What will be power factor
24. If AC supply is given to pure Capacitor, draw phasor diagram. What will be power factor
25. If AC supply is given to choke coil, draw phasor diagram. What will be power factor
26. If AC supply is given to Resistor- capacitor circuit, draw phasor diagram. What will be power factor
27. Draw impedance, power and voltage triangle for RL and RC circuit
28. How many powers are involved in AC circuits. Which are they? Explain each one
29. What are concepts of susceptance, conductance, admittance for parallel circuits
30. What is Resonance? Difference between series and parallel resonance.
31. What is dynamic impedance?
32. What is concept of 3 dB bandwidth in resonance graph
33. What is Quality factor? Justify it should be high or low

Chapter 3: Three phase Circuits

34. What is difference between single phase and polyphase system
35. What is phase sequence for three phase system. What is phase difference between each phase? And why?
36. Explain three phase supply generation
37. Draw phasor diagram and waveform for three phase supply
38. What are advantages and applications of three phase system
39. What is concept of phase voltage, phase current, line voltage, line current
40. Explain Balanced load and balanced supply system
41. What is relation between phase voltage and line voltage for star and delta connection
42. What is relation between phase current and line current for star and delta connection
43. What is impedance and power relation between star and delta connections
44. Phasor diagram for star and delta connection
45. What are methods of power measurement in three phase system? Which method is more preferable and why?
46. Explain advantages of three phase system

Chapter 4: Single phase transformers

47. Explain working of transformer with emf equation
48. What is transformation ratio
49. Explain constructional details and types of transformer
50. What is kva rating of transformer? What is full load current? No load current?
51. What are losses in transformer
52. What is practical transformer? Draw and explain
53. Draw phasor diagram for ideal transformer with no load
54. Draw phasor diagram for practical transformer with no load
55. What are two components of no load current
56. Draw equivalent circuit of transformer
57. Define voltage regulation with formula
58. Define efficiency with formula
59. What is oc test and sc test and where it is used
60. In a transformer primary and secondary voltages are _____^{0} out of phase

Chapter 5: Electrical Machines

61. Explain principle of operation of Three-phase induction motor.
62. What are the different parts used in three phase induction machine.