

Department of Electrical and Electronics Engineering

Subject: Power System II

Subject Code: EE-312-F

1. What is surge absorber? How do they differ from surge diverter?
2. What is meant by insulation co-ordination?
3. Define the terms a) pick up value b) Reset value
3. What is time setting and plug setting multiplier ?
4. What are the causes of over voltages?
5. Define the term arcing ground
6. How the transmission lines are protected against direct lightning strokes?
7. What is a Peterson Coil?
8. List the merits and demerits of solid grounding
9. Defined the term switch gear
10. What type relay is best suited for long distance very high voltage transmission lines?
11. Define selectivity of protective relaying
12. Mention the different sources of over voltages in power system
13. List the basic requirements of lightning arrester
14. What are the demerits of a resistance grounded system?
15. Defined Breaker time
16. What are the causes over voltages on power system?
17. What is meant by voltage surge?
18. What is ground wire?
19. What is a protector tube?
20. Define basic impulse level.
21. List the common protective scheme which are used for modern power system protection
22. What is the need for calculation short circuit current
23. What is the need for power system earthing
24. What is the need for protection

25. What are the protective zone of the power system
26. List at least two merits of resistance grounded system
27. How is arcing around avoided
28. Describe the essential qualities of a protective relaying
29. Briefly explain the various methods of overvoltage protection of Overhead transmission line
30. With a neat block diagram, explain the operating principle of Peterson coil
31. Discuss the symmetrical components methods to analyze an unbalanced system
32. Write short note on surge absorber
33. Discuss the basic ideas of insulation coordination in the practical power System
34. Discuss and compare the various methods of neutral earthing
35. What do you understand by a zone of protection? Discuss various types of Zones of protection.
36. Describe types of lightning arrester
37. What are the requirements of a ground wire for protecting power conductors against direct lightning stroke? Explain how they are achieved in practice
38. List the basic requirements of protective relay
39. What are the merits of mho relay?
40. Write the applications of attracted armature type electromagnetic relay
41. What are the different types of electromagnetic relays?
42. What is an under frequency relay?
43. What are the uses of Buchholz's relay?
44. What is meant by drop off / pick up ratio?
45. What is the need of relay coordination?
46. What are the different inverse time characteristics of over current relays? Mention how characteristics can be achieved in practice for an electromagnetic relay.
47. What are the advantages of static relays?
48. Write the applications of distance relay.
49. What type relay is best suited for long distance very high voltage transmission lines?
50. What is meant by relay operating time?
51. Write the function of earth fault relay
52. List out the applications of static relays

53. Compare Static and Electromagnetic relay
54. What are the advantages of over current relays over electromagnetic types?
55. Define the term pilot with reference to power line protection.
56. What are the features of directional relay?
57. State the advantages, disadvantage and applications of electromagnetic relays
58. Give the block diagram for a basic static distance relay scheme
59. Draw the characteristics of a directional impedance relay and mho relay on an R-X diagram
60. What are the function of protective relay
61. What is relay
62. What is meant by biasing of relay
63. What is meant by time setting multier in protective relay
64. A relay is connected to 400/5 ratio current transformer with current setting of 150%. Calculate the Plug Setting Multiplier when circuit carries a fault current of 4000A.
65. A relay is connected to 400/5 ratio current transformer with current setting of 150%. Calculate the Plug Setting Multiplier when circuit carries a fault current of 4000 A
- 66.. Describe the construction and operation of an electromagnetic inductive relay with neat diagrams
67. Explain the principle of distance relays stating clearly the difference between impedance relay, reactance and mho relay. Indicate the difference on R-X diagrams and show where each type is suitable.
68. Describe the construction and operation of an electromagnetic relay with neat diagram
69. Describe the construction and principle of operation of an induction type directional over current relay Also explain its operational characteristics
70. Explain with the help of neat diagrams the construction and working of induction type directional
71. power relay & non-directional over current relay
72. What is a static relay? What are the merits and demerits of static relays over electromagnetic relays also mention its applications. (8)
73. Explain with the help of neat sketch the working principle and operation of attracted armature type electromagnetic relay (8)
74. Describe the operating principle, constructional features and area of applications of directional relay. How do you implement directional feature in the over current relay?
75. Explain MHO relay characteristic on the R-X diagram. Discuss the range setting of various distances relays placed on a particular location
76. Write short notes on the following
 - a. Under frequency relays (8)
 - b. Negative sequence relays (8)

78. A 3-Phase 11KV, 25000KVA alternator with $X_{go}=0.05$ p.u , $X_1=0.15$ p.u & $X_2=0.15$ p.u is grounded through a reactance of 0.3 ohms .calculate the Line current for a single line to ground fault

79. Write about the classifications of relays.

80. Define the term pilot with reference to power line protection

82. Give the limitations of Merz Price protection?

83. List out the applications of Buchholz's relay.

84. What are the causes of over speed and how alternators are protected from it?

85. What are the problems arising in differential protection in power transformer and how are they overcome?

86. Define the term burden on CT.

87. What is meant by time graded protection?

88. Explain the secondary of the current transformer should not be open.

89. What is R-X diagram?

90. Write the function of earth fault relay.

91. What is over fluxing protection of a transformer?

92. What is current grading of relays?

93. What is the most severe fault in the transmission line?

94. Write the effects of loss of excitation.

95. Classify the various bus bar faults

96. Why the secondary of C.T should not be open

97. Classify the various bus bar faults

98. List the common faults that occur in a generator

99. What are the faults which will occur in an alternator

100. Which type of relay is used to protect transmission line

101. What are the common methods used for line protection

102. Mention the different between CT used for protection and measurement

103. What are the problems associated with bus zone differential protection

104. What are the main safety device available with transformer

105. List the factors affecting the transient recovery voltage.
106. Define the term "rate of rise of recovery voltage".
107. Give the difference between isolator and circuit breaker.
108. Mention the methods of arc interruption.
109. Differentiate a.c. and d.c. circuit circuit breaking
110. Discuss the arc phenomenon in a circuit breaker.
111. What are the basic requirements of a circuit breaker?
112. What are the disadvantages of an Air blast circuit breaker?
113. What is meant by recovery voltage?
114. What is resistance switching?
115. What do you meant by current chopping?
116. What is the importance of arc resistance? On which factor does it depend?
117. State the different methods of arc extinction
118. Define restriking voltage
119. What are the problems encountered in the interruption of capacitive currents
120. What are the methods used in quenching the arc circuit breaker
121. List the factors on which the arc resistance depends
122. Distinguish between recovery voltage and restriking voltage
123. What is the principle involved in High resistance interruption
124. Explain the phenomenon of current chopping in a circuit breaker. What is the effect of current Chopping on the circuit breaker as well as on the system?
125. Derive an expression for Restriking voltage and rate of rise of restriking voltage in terms of system Voltage, inductance up to the fault location and bushings to earth capacitance of the circuit breaker.
126. (i) Calculate the RRRV of 132 kV circuit breaker with neutral earthed circuit breaker data as :
broken current is symmetrical, restriking voltage has frequency of 20 kHz, power factor is 0.15.
Assume fault is also earthed. (8)
- (ii) Discuss the selection of circuit breakers for different ranges of system voltages (8)

127. What are the ratings of a circuit breaker?
128. What are the quenching factors in an Oil circuit breaker?
129. What is meant by making capacity of a circuit breaker?
130. How do you classify the circuit breakers.
131. Give the advantage of SF6 circuit breaker over Air blast circuit breaker.
132. A three-phase oil circuit breaker is rated at 1500 A, 1000MVA and 33kV Find (a) rated symmetrical breaking current, (b) making capacity.
133. What are the disadvantages of an Air blast circuit breaker?
134. What are the basic requirements of a circuit breaker?
135. Write the operational difference between fuse and circuit breakers?
136. Enumerate the breaking capacity of circuit breaker.