

Exam questions AE1B15EN2 (Power Engineering 2)

1. Overhead and cable lines parameters – longitudinal
2. Overhead and cable lines parameters – cross
3. Symmetrical components, importance and utilization, symmetrical segments in components
4. Inductors and capacitors in ES (types, utilization, parameters)
5. Two-winding and three-winding transformers parameters (positive sequence)
6. Zero sequence transformer impedances
7. Voltage drops calculation for DC and 3ph AC power lines (addition and superposition method)
8. Node voltage method, admittance matrix
9. Homogenous power lines, surge impedance, propagation constant, Blondel's constants
10. Substitution networks for HV lines
11. Short-circuit current time behaviour
12. Single-phase-to-ground short-circuit (symmetrical components diagram, equations, phase quantities calculation)
13. Phase-to-phase short-circuit (symmetrical components diagram, equations, phase quantities calculation)
14. Three-phase short-circuit (symmetrical components diagram, equations, phase quantities calculation)
15. Double-phase-to-ground short-circuit (symmetrical components diagram, equations, phase quantities calculation)
16. Short-circuit calculations by means of short-circuit impedance matrix
17. Short-circuit currents impacts
18. Ground fault in 3ph systems (voltage and current conditions)
19. Ground fault compensation

20. Ground fault in symmetrical components
21. Steady-state stability, possibilities of its increasing
22. Transient stability, swing equation
23. Waves on power lines – open and short-circuit end reflection, passing through a boundary cable – overhead line
24. Waves on power lines – cross capacity, cross resistance
25. Generator protections
26. Transformer protections, overcurrent number
27. Power line protections
28. Protection in LV distribution
29. Supply source dimensioning, calculational loading
30. Conductors cross-section dimensioning principles
31. Busbar systems types, combined busbar switches, auxiliary busbar, no busbar substations
32. HV substation branches equipment, electrical stations realization (pros and cons)
33. Grounding, its purpose and components, step and touch voltage
34. Ground electrodes
35. Ground resistance size and measurement
36. Reactive power compensation