Problems for Exam

I.   Principles of fault protection

1. Fault protection purposes
2. General scheme of the relay protection
3. Zone of protection – general principle
4. Basic principles of relaying philosophy
5. Primary and Back-up protection: purpose and example
6. Protective relaying scheme: unit and no-unit system
7. Instrument transformers: connection schemes
8. Source of errors in VTs and CTs
9. CT transient errors
10. CTs connection for zero-sequence current measurement
11. Overcurrent criterion: instantaneous and time-delay action
12. Defined time overcurrent relay: principle and application
13. Inverse defined time overcurrent relay
14. Direction overcurrent relay: principle and application
15. Distribution networks system grounding: characteristics and phase-to-earth fault detection problem
16. Differential protection principle: protection of lines/transformars/generators
17. Distance protection principle
18. MHO distance characteristics
19. Distance protection zones
20. Automatic reclosing: principle and application
21. Buchholz relay: principle and application

II.   Relay protection of Power System elements

1. Line protection: radial and loop network
2. Earth fault line protection: neutral earthing consideration
3. Line distance protection: phase-to-phase and phase-to-earth faults
4. The effect of infeeds in distance relay
5. Differential transformer protection: general scheme, adjusting to 3-phase winding connection
6. Earth fault transformer protection
7. Source of errors in transformer differential protection
8. Buchholz protection
9. Typical medium size transformer protection
10. Typical large transformer protection
11. Generator protection – an overview
12. Generator stator protection
13. Generator protection against unbalanced condition
14. Variable speed wind turbine characteristics and its control
15. Different converter topologies for Doubly-Fed Induction Generator (DFIG) based wind generation
16. Different inverter configuration for Grid-connected PV system
17. Issues and challenges involved in grid integration of wind power systems
18. Anti-islanding protection
19. Distributed Generation impact on line protection
20. Type of rotating generators applied in the Wind Generation
21. Short notes on digital filtering based on Recursive DFT algorithm for phase detection

22. Principle of variable speed generators connection to the grid
23. Doubly Fed Induction Generator: structure and control basis
24. DFIG protection methods
25. Off-shore farm interconnection principle