

Class: B.E. (Electrical)

Subject: Switchgear and Protection

Unit I : Fundamental of Protective Relaying

MCQ Type Questions:

1. In between the generating station and consumers a number of transformation and switching stations exist, these are called the
 - a. Switchgears
 - b. Substations**
 - c. Intermediate substations
 - d. Transformation stations
2. The primary function of a fuse is to
 - a. Open the circuit
 - b. Protect the appliance
 - c. Protect the line
 - d. Prevent excessive currents from flow through the circuit**
3. The fuse rating is expressed in terms of
 - a. Current**
 - b. Voltage
 - c. VAR
 - d. KVA
4. A relay is used to
 - a. Break the fault current
 - b. Sense the fault
 - c. Sense the fault and direct to trip the circuit breaker**
 - d. All of these
5. Basic relay connection requirement is that the relay must operate for
 - a. Load
 - b. Internal faults**
 - c. Both (a) and (b)
 - d. None of these
6. Relay gets its operating energy from
 - a. Transformer
 - b. Alternator
 - c. Overhead lines
 - d. C.T., P.T.**
7. Good relay should possess
 - a. Speed & reliability**
 - b. Sensitivity**
 - c. Adequateness & selectivity**
 - d. All of these**

8. Protective relays are the devices that detect abnormal conditions in electrical circuits by measuring
- Voltage
 - Current
 - Constantly the electrical quantities which differ during normal and abnormal conditions**
 - Note the above
9. Protective relays can be designed to respond to
- Light intensity
 - Temperature
 - Resistance, reactance or impedance
 - All of the above**
10. The protective relays is provided to
- Provide additional safety to the circuit breaker in its operation
 - Close the contacts when the actuating quantity attains a certain predetermined value**
 - Limit the arcing current during the circuit breaker operation
 - Earth any stray voltage
11. Burden of a protective relay is the power
- Required to operate the circuit breaker
 - Absorbed by the circuit of relay**
 - Developed by the relay circuit
 - None of the above
12. Protective relays can be designed to respond to
- Light intensity
 - Temperature
 - Resistance, reactance or impedance
 - All of the above**
13. The protective relays is provided to
- Provide additional safety to the circuit breaker in its operation
 - Close the contacts when the actuating quantity attains a certain predetermined value**
 - Limit the arcing current during the circuit breaker operation
 - Earth any stray voltage
14. Short-circuit currents are due to
- Single phase to ground faults
 - Phase to phase faults
 - Three phase faults
 - Any of these**
15. Least number of faults are generally reported for
- Transmission lines
 - Cables**
 - Switchgears
 - Transformers
16. More faults occur in
- Generators
 - Underground cables

- c. Transformers
- d. **Over head lines**

17. Time classification of relays includes

- a. Instantaneous relays
- b. Definite time lag
- c. Inverse time lag
- d. **All of these**

18. Over current fault is most likely in

- a. Transformer
- b. **Overhead line equipment**
- c. Alternator
- d. Motors

19. Percentage differential protection is used to prevent against

- a. Inter-turn faults
- b. Heavy Loads
- c. External Faults
- d. **Magnetizing current**

20. Back up protection is needed for

- a. Over voltage
- b. **Short circuits**
- c. Over current
- d. All of these

21. Induction cup relays responds to

- a. Current
- b. Power
- c. Voltage
- d. **Impedance**

22. Time classification of relays includes

- a. Instantaneous relays
- b. Definite time lag
- c. Inverse time lag
- d. **All of these**

23. The operating speed of a relay depends upon the

- a. Rate of flux built up
- b. Armature core air gap
- c. Spring tension
- d. **All of these**

24. Relays can be designed to respond to changes in

- a. Resistance, reactance or impedance
- b. Voltage and current
- c. Light intensity
- d. **All of the above**

25. Interruption of large currents by relay requires
- Arc suppressing blow out coils
 - Wide separation of the open contacts
 - High speed opening of contacts
 - d. All of the above**
26. To protect most of the electrical equipment handling low power, the types of relays used are
- Thermocouple
 - Electronic and bimetallic
 - c. Both A and B**
 - None of the above
27. For the protection of very long extra high-voltage lines, the productive relay used is
- Over currently with extremely inverse characteristics
 - Percentage differential relay
 - Reactance type distance relay
 - D. Mho type distance relay**
28. The least expensive protection for over current in low-voltage system is
- A. Rewirable fuse**
 - Isolator
 - Circuit breaker
 - Air-break switch
29. Differential relay measures the vector difference between
- Two current
 - Two voltage
 - Two similar quantities
 - d. Any of the above**
30. Directional relays responds to
- a) Power**
 - Voltage
 - Current
 - Reactance
31. Shape of the disc of an induction disc relay is
- Circular
 - b) Spiral**
 - Elliptic
32. Distance relays are generally
- Impedance type
 - MHO type
 - Reactance type
 - d) All of these**
33. The most efficient torque producing actuating structure for the induction type relays is
- Shaded pole structure
 - Watt hour meter structure
 - c. Induction cup structure**
 - Single induction loop structure

34. The tripping circuit is _____
- a. AC
 - b. DC
 - c. Either AC or DC**
 - d. None of these
35. Purpose of backup protection is
- A. To increase the speed
 - B. To increase a reach
 - C. To leave no blind spot
 - D. To guard against failure of primary**
36. Which of the following is essential quality of protective relaying
- A. Selectivity
 - B. Reliability
 - C. Speed –time
 - D. all above
37. Discrimination between main and back up protection is provided by use of relays which are
- A. Fast
 - B. Sensitive
 - C. Slow**
 - D. None of the above
38. Distance protection scheme is preferred over graded time-lag over-current protection in HV and EHV lines because
- A. It is faster in operation**
 - B. It is simple
 - C. It is cheaper in cost
 - D. All of the above
39. In distance protection, the relay measures
- A. Negative sequence impedance of the line from relay up to the fault point
 - B. Positive sequence impedance of the line from relay up to the fault point**
 - C. Self impedance of the line from relay up to the fault point
 - D. Zero sequence impedance of the line from relay up to the fault point
40. Admittance relay
- A. Nondirectional relay
 - B. Directional relay**
 - C. Differential relay
 - D. None of the above
41. Impedance relay can be used for
- A. Phase faults only**
 - B. Earth faults only
 - C. Both earth and phase faults
 - D. None of the above
42. Differential relays are used for protection of
- A. Feeders
 - B. Alternators

- C. Transformers
- D. All of the above**

43. Differential relays are used for protection of equipments against
- A. Internal faults**
 - B. Over current
 - C. Reverse current
 - D. Reverse power
44. Both voltage and current signals are required for
- A. A plain over current relay
 - B. A differential relay
 - C. A directional relay**
 - D. A biased directional relay
45. In an impedance relay, fault current is maximum if fault occurs near the
- a) Relay**
 - b) Center of the line
 - c) Transformer
 - d) None of these
46. MHO relay is inherently a
- a) Directional type**
 - b) Non-directional type
 - c) Unidirectional type
 - d) None of these
47. Basic relay connection requirement is that the relay must operate for
- a) Load
 - b) Internal faults**
 - c) Both (a) and (b)
 - d) None of these
48. If the time of operating of a relay for unity TMS is 10 secs., the time of operation for 0.5 TMS will be
- a) 20 secs.
 - b) 5 secs.**
 - c) 10 secs.
 - d) None of the above
49. If the fault current is 2000 amps, the relay setting 50% and the C.T. ratio is 400/5, then the plug setting multiplier will be
- a) 25 amps
 - b) 45 amps
 - c) 50 amps
 - d) None of the above**
50. Plug setting of a relay can be changed by changing
- a) Air gap
 - b) Back up stop
 - c) Number of ampere turns**
 - d) All of these