

SF₆ is which type of gas?

- a. Electro positive
- b. Electro negative
- c. Both (a) and (b)
- d. None of these

2) What is the average rate of rise of restriking voltage upto the first peak?

- a. $525 * 10^3 \text{ kV / sec}$
- b. $453 * 10^3 \text{ kV / sec}$
- c. $582 * 10^3 \text{ kV / sec}$
- d. $467 * 10^3 \text{ kV / sec}$

3) Circuit breakers usually operate under

- a. Steady short circuit current
- b. Sub transient state of short circuit current
- c. Transient state of short circuit current
- d. None of these

4) What is the actuating quantity for the relays?

- a. Magnitude
- b. Frequency
- c. Phase angle
- d. All of these

5) Which among these are the main characteristics of a fuse element?

- a. Low melting point
- b. High conductivity
- c. Least deterioration due to oxidation
- d. All of the above

6) What is the making capacity of the circuit breaker?

- a. Less than the asymmetrical breaking capacity of the breaker
- b. Greater than the asymmetrical breaking capacity of the breaker
- c. Equal to the asymmetrical breaking capacity of the breaker
- d. Equal to the symmetrical breaking capacity of the breaker

7) In a circuit breaker the contact space is ionised by what?

- a. Field emission from the contact surface.
- b. Thermal emission from the contact surface.
- c. Thermal ionisation of gas.
- d. All of above.

8) A three phase, 33 kV oil circuit breaker is rated 1200 A, 2000 MVA, 3s. What is its symmetrical breaking current?

- a. 1200 A
- b. 3600 A
- c. 35 kA
- d. 104.8 kA

9) What should be the value of fusing factor?

- a. Equal to zero
- b. Equal to one

- c. Less than one
- d. More than one

10) What is the relation between the fusing current and the diameter of the wire?

- a. $I = k d^3$
- b. $I = k d^{3/2}$
- c. $I = k d^2$
- d. $I = k d^{2/3}$

11) The making and breaking currents of a 3 phase ac circuit breakers in power systems are respectively in _____ form.

- a. rms value, rms value
- b. instantaneous value, rms value
- c. rms value, instantaneous value
- d. instantaneous value, instantaneous value

12) Why is an isolator installed?

- a. To isolate one portion of the circuit from another
- b. As an substitute for the circuit breaker
- c. It used on either sides of the circuit breaker
- d. Both (a) and (c)
- e. None of these

13) Assertion (A): In comparison to making capacity of a circuit breaker its breaking capacity is normally higher.

Reason (R): The breaking capacity of a CB is expressed as $\sqrt{3} * VI * 10^{-6}$ MVA

- a. Both A and R are true and R is the correct explanation of A
- b. Both A and R are true and R is not the explanation of A
- c. A is true but R is false
- d. A is false but R is true.

14) What is the cut off current in the fuse?

- a. Maximum value actually reached.
- b. Rms value actually reached.
- c. Average value actually reached.
- d. None of the above

15) Which circuit breaker is preferred to be installed in extra high voltage AC system?

- a. Bulk oil type circuit breaker
- b. Air blast circuit breaker
- c. SF6 circuit breaker
- d. Vacuum circuit breaker

16) A three phase circuit breaker is rated 2000 MVA, 33 kV. What will be its making current?

- a. 35 kA
- b. 49 kA
- c. 70 kA

d. 89 kA

17) A fuse wire of circular cross section has a radius of 0.8mm. The wire blows off at a current of 9A. What will be the radius of the wire that will blow off at a current of 1A?

- a. 0.2 mm
- b. 0.18 mm
- c. 0.28 mm
- d. 0.3 mm

18) Which among these tests are performed to check the nation or international standards?

- a. Type test.
- b. Production tests.
- c. Site checks.
- d. All of the above.

19) Refer to the following facts to answer the question

A 50 Hz, 11 kV, 3 phase alternator with earthed neutral having a reactance of 3 ohms per phase and is connected to a bus bar through a circuit breaker, if the distributed capacitance upto CB between the phase and neutral is $0.01 \mu\text{F}$.

What is the frequency of oscillations?

- a. 10000 Hz
- b. 12500 Hz
- c. 12628 Hz
- d. 13265 Hz

20) What is switchgear?

- a. An apparatus used for switching, controlling and protecting the electrical circuits and equipments.
- b. It detects the faults only.
- c. It corrects the faults only.
- d. All of the above.

21) What is / are the main disadvantage / s of using oil as the quenching medium in the circuit breakers?

- a. Need periodical replacement.
- b. Risk of formation of explosive mixture with air.
- c. Possibility of causing fire hazards.
- d. All of the above.

22) Which of the following circuit breakers has the lowest operating voltage?

- a. SF6 circuit breaker
- b. Air break
- c. Air blast
- d. Minimum oil circuit breaker

23) The most efficient torque producing actuating structure for the induction type relays is

- a. Shaded pole structure
- b. Watt hour meter structure

- c. Induction cup structure
- d. Single induction loop structure

24) Plug setting of a electromagnetic relay can be altered by varying

- a. Number of ampere turns
- b. Air gap of magnetic path
- c. Adjustable back stop
- d. None of these

25) In the following figure, the tripping circuit is_____.

- a. AC
- b. DC
- c. Either AC or DC
- d. None of these

26) In the following figure, which component ensures the safety of the line from damage?

- a. Relay
- b. Circuit breaker
- c. Bus bar
- d. Current transformer

27) In the following figure, the relay circuit is divided into three parts. What does the third part consist of?

- a. Primary winding of a current CT which is connected in series with the line to be protected.
- b. Secondary of the CT and the operating coil.
- c. Tripping circuit.
- d. None of these

28) In the following figure, the relay circuit is divided into three parts. What does the first part consist of?

- a. Primary winding of a current CT which is connected in series with the line to be protected.
- b. Secondary of the CT and the operating coil.
- c. Tripping circuit.
- d. None of these

29) On what factor does the operating speed of the relay depend?

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

30) Protective relays can be designed to respond to _____.

- a. Light intensity, impedance
- b. Temperature, resistance, reactance

- c. Voltage and current
- d. All of these

31) What is the purpose of back up protection?

- a. To increase the speed
- b. To increase the reach
- c. To leave no blind spot
- d. To guard against failure of primary

32) What is the major cause of the failure of the circuit breaker?

- a. Trip circuit open
- b. Trip latch defective
- c. Spring defective
- d. All of these

33) Why are the isolators used?

- a. Break abnormal current
- b. Making under fault conditions
- c. Breaking the circuit under no load condition
- d. None of the above

34) The isolators used in the transmission lines are capable of breaking

- a. Fault current
- b. No current
- c. Charging current
- d. Load current

35) For which among the following the current ratings are not required?

- a. Circuit breakers
- b. Relays
- c. Isolators
- d. Load break switch

36) What is the making to breaking current ratio for an extra high voltage circuit breaker?

- a. More than 1
- b. Equal to 1
- c. Less than 1
- d. A negative value

37) The breaking capacity of a three phase circuit breaker is given by

- a. Service line voltage * rated symmetrical current in amperes * 10⁻⁶ MVA
- b. $\sqrt{3}$ * Service line voltage * rated symmetrical current in amperes * 10⁻⁶ MVA
- c. 1.1 * Service line voltage * rated symmetrical current in amperes * 10⁻⁶ MVA
- d. $\sqrt{2}$ * Service line voltage * rated symmetrical current in amperes * 10⁻⁶ MVA

38) Which of the following circuit breaker is highly reliable and has a least maintenance?

- a. Oil circuit breakers
- b. Air blast
- c. Vacuum circuit breakers
- d. SF6 circuit breakers

39) The rating of the circuit breaker is usually determined on the basis of _____ fault.

- a. Symmetrical
- b. Line to line
- c. Single line to ground
- d. Double line to ground

40) Which among these circuit breakers produce the least arc energy?

- a. Plain oil
- b. Minimum oil
- c. Air blast
- d. Air break

41) Which of the following circuit breakers is used for the railway electrification?

- a. Air blast circuit breaker
- b. SF6 circuit breaker
- c. Bulk oil circuit breaker
- d. Minimum oil circuit breaker

42) A thermal protection switch provides protection against what?

- a. Overload
- b. Temperature
- c. Short circuit
- d. Over voltage

43) What does protective relay provide?

- a. Provide additional safety to the circuit breaker in its operation.
- b. Close the contacts when the actuating quantity attains a certain predetermined value.
- c. Limit the arcing current during the circuit breaker operation.
- d. Earth or ground any stray voltage.

44) What is the main purpose of oil in oil circuit breakers?

- a. Provide insulation
- b. Quenching arc.
- c. Provide cooling of contacts.
- d. None of the above

45) What is the advantage of using oil as the arc quenching medium?

- a. Good cooling properties.

- b. High dielectric strength.
- c. Acts as an insulator.
- d. All of these.

46) When does the arc interruption in oil circuit breaker take place?

- a. Contacts apart.
- b. Voltages becomes zero
- c. Current goes through zero
- d. All of the above

47) For rural electrification in India, which circuit breaker is generally used?

- a. Oil
- b. SF6
- c. Vacuum
- d. Air blast

48) Keeping in view the cost and the overall effectiveness, which of the following circuit breaker is best suited for capacitor bank switching?

- a. Vacuum circuit breaker
- b. Air blast CB
- c. SF6
- d. Oil CB

49) To limit current chopping in vacuum circuit breakers, the contact material employed should have the properties of

- a. Low conductivity and high vapour pressure.
- b. Low conductivity and low vapour pressure.
- c. High conductivity and high vapour pressure.
- d. High conductivity and low vapour pressure.

50) SF6 gas is imported in _____.

- a. Air cylinders
- b. Gas cylinders
- c. Liquid form in cylinders
- d. Solid form.

51) During arc extinction SF6 gas gets converted to which among these?

- a. Gets decomposed to SF4 and SF2
- b. Gets decomposed to S and F
- c. Gets reduced to SF6
- d. Gets oxidized

52) What is the most important property which makes the SF6 very efficient medium for circuit breaking?

- a. Is non toxic and non inflammable.
- b. Has a high dielectric constant.
- c. Has a high breakdown strength
- d. Is highly electronegative gas

53) What is the normal pressure at which the SF₆ gas is maintained in the closed position of the breaker?

- a. 2 kg / cm²
- b. 2.5 kg / cm²
- c. 2.8 kg / cm²
- d. 3 kg / cm²

54) What is the major drawback of using SF₆ circuit breakers?

- a. Sealing problems of the gas.
- b. Ingress of moisture in the gas system – dangerous.
- c. Deterioration of SF₆ gas with time.
- d. Both (a) and (b)
- e. None of these

55) Why do the SF₆ gases have an excellent heat transfer property?

- a. Low gaseous viscosity.
- b. High dielectric strength.
- c. Higher molecular weight.
- d. Both (a) and (c)
- e. None of these

56) What is the breaking capacity of the air blast circuit breaker?

- a. 5000 MVA
- b. 6000 MVA
- c. 7000 MVA
- d. 10000 MVA

57) In axial blast type of CB, expansion of air takes place from _____.

- a. High pressure to low pressure.
- b. Low pressure to high pressure.
- c. Always in high pressure.
- d. Always in low pressure.

58) The air blast circuit breakers for 400 kV systems are designed to operate in how much time?

- a. 0.1 s
- b. 0.5 s
- c. 50 ms
- d. 100μs

59) What is the type of air blast in cross blast type CB?

- a. The blast of air is along the arc.
- b. The blast of air cuts across the arc.
- c. Both (a) and (b)
- d. None of the above.

60) Why is the resistance switching used in a air blast circuit breaker?

- a. Reduce the magnitude of fault current.
- b. Control the CB operating time.
- c. Damp out the fast transient.
- d. Change the fault current power factor.