

## CHAPTER 1 – Safety & Prevention of Accidents

### Multiple Choice Questions

1. Do's and Don'ts are observed carefully in safety precautions as per.....
  - A. IS 5216-1962
  - B. IS 5216-1964
  - C. IS 5216-1966
  - D. IS 5216-1969

ANS: D

2. In fire extinguisher we use
  - A. CO<sub>2</sub>
  - B. SO<sub>2</sub>
  - C. O<sub>2</sub>
  - D. H<sub>2</sub>O

ANS: A

3. Which of the following methods providing artificial respiration
  - A. Schafer's prone pressure method
  - B. Silvester's method
  - C. Both a & b
  - D. Narcol Method

ANS: C

4. Severity of electric shock is mainly depends on
  - A. Voltage
  - B. current
  - C. Type of supply
  - D. All of these

ANS: D

5. The most common method of artificial respiration is
- A. Schafer's method
  - B. Silvester's method
  - C. Neilson's method
  - D. mouth to mouth method

ANS: A

## CHAPTER 2 – Estimating and Conductor Size Calculation

### Multiple Choice Questions

1. What percentage is the stock incidental charge?
  - A. 10 %
  - B. 5 %
  - C. 12 %
  - D. 2 %

ANS: D

2. Which state in India does not follow IE (Indian Electricity rules)?
  - A. Sikkim
  - B. Jammu Kashmir
  - C. Nagaland
  - D. Mizoram

ANS: B

3. Which rule deals with the supply to X- rays and high frequency installations?
  - A. Rule 30
  - B. Rule 39
  - C. Rule 73
  - D. Rule 51

ANS: C

4. Which section in the IE Act deals with the 'theft of energy'?
  - A. Section 39
  - B. Section 40

- C. Section 43
- D. Section 44

ANS: A

5. Which insulating material is used for low voltage cables?
- A. Impregnated paper
  - B. Rubber
  - C. Silk and cotton
  - D. Vulcanised Indian rubber

ANS: C

6. What does section 44 refer to?
- A. Penalty for interference with meters
  - B. Penalty for illegal transmission or use of energy
  - C. Penalty for maliciously wasting energy
  - D. Theft of energy

ANS: A

7. What are the types of conduits available?
- A. PVC conduit
  - B. Flexible conduit
  - C. Heavy gauge steel screwed conduit
  - D. All of these.
  - E. None of these

ANS: D

8. What is / are the various types of fuse?
- A. Kit Kat type
  - B. Cartridge type
  - C. Round type
  - D. Both (a) & (c)
  - E. All of these

ANS: D

9. Which among these fuse is very fast in operation?

- A. Semiconductor fuses
- B. High rupturing capacity
- C. Cartridge type
- D. Kit Kat type

ANS: A

10. For what range is the underground service lines used?

- A. Distance more than 25 m
- B. Distance more than 100 m
- C. Distance less than 1 km
- D. Distance more than 1 km

ANS: A

11. Which among these is a demerit of underground service mains?

- A. Ugly appearance
- B. Frequent fault occurrence
- C. Costly
- D. All of these
- E. None of these

ANS: C

12. Which IE rule is applicable to service mains?

- A. Rule 30
- B. Rule 33

- C. Rule 77
- D. Both (a) & (b)
- E. All of these

ANS: E

13. What should be the insulation resistance in case of PVC wires?
- A.  $12.5 \text{ M}\Omega$  / number of outlet
  - B.  $82.5 \text{ M}\Omega$  / number of outlet
  - C.  $2.5 \text{ M}\Omega$  / number of outlet
  - D.  $10.5 \text{ M}\Omega$  / number of outlet

ANS: A

14. What is the reason for excess reading of the energy meter?
- A. Defective wiring
  - B. Meter defects
  - C. Over voltage
  - D. Both (A) & (B)
  - E. All of these

ANS: D

15. If the measured insulation value is more than unity what value should be taken as the maximum working value?

- A.  $0.75 \text{ M}\Omega$
- B. One  $\text{M}\Omega$
- C.  $0.5 \text{ M}\Omega$
- D. One ohm

ANS: B

16. Which among these tests are to be conducted on wiring installations?

- A. Testing of polarity of non linked single pole switches
- B. Testing of earth continuity path
- C. Testing of earth resistance
- D. All of these
- E. None of these

ANS: D

17. Which lamp is used in the outdoor illumination of buildings and airport runway?

- A. Halogen lamp
- B. Gaseous discharge lamp
- C. Sodium vapour lamp
- D. All of these

ANS: A

18. How is the ballast resistance connected with the choke?

- A. Parallel
- B. Series
- C. Can be connected in either way
- D. Both (a) & (b)
- E. None of these

ANS: B

19. What is the normal life of a fluorescent lamp?

- A. 2000 hours
- B. 3500 hours
- C. 7500 hours
- D. 10000 hours

ANS: C

20. How many earth connections are required for the motor frame as per the IE rule 61?

- A. One
- B. Two separate and distinct
- C. Three separate and distinct
- D. All of these
- E. None of these

ANS: B

21. What should be the spacing between the two conductors if the working voltage is 11 kV?

- A. 76 mm
- B. 101 mm
- C. 190 mm
- D. 250 mm

ANS: B

22. What should be the minimum clearance for laying power cables near communication lines?

- A. 0.2 m horizontally and vertically
- B. 0.6 m horizontally and vertically
- C. 1 m horizontally and vertically
- D. 1.5 m horizontally and vertically



ANS: B

23. What is the multiplication factor used for the determination of maximum current carrying capacity of an 11 kV line?

- A. 0.88
- B. 0.95
- C. 0.9
- D. 0.8

ANS: C

24. Which type of cable is used for underground service connections?

- A. Low tension 3  $\frac{1}{4}$  core cable
- B. Low tension 3  $\frac{1}{2}$  core cable
- C. Low tension 2  $\frac{1}{4}$  core cable
- D. Low tension 2  $\frac{1}{2}$  core cable

ANS: B

25. What should be the height of the 'Roof Pole'?

- A. Less than 5m
- B. Less than 3m
- C. More than 3m
- D. More than 10m

ANS: B

## CHAPTER 3 – Testing and maintenance of rotating machine

### Multiple Choice Questions

1. The torque of induction motor is
  - A. Directly proportional to  $V$
  - B. Directly proportional to  $V^2$
  - C. Inversely proportional to  $V$
  - D. Inversely proportional to  $V^2$

ANS: B

2. Brake test is..... method of testing machine.
  - A. Regenerative
  - B. Direct
  - C. Indirect
  - D. All of these

ANS: B

3. Swinburne test is also called as.....
  - A. Load test
  - B. brake test
  - C. no load test
  - D. full load test

ANS: C

4. Swinburn test is
  - A. direct test
  - B. indirect test
  - C. special test
  - D. All of these

ANS: B

5. Swinburn test is conducted on machine at
  - A. No load
  - B. Full load
  - C. fractional load
  - D. All of these

ANS: A

6. To perform field test on d.c. machines two motors are required. The motors used are
- A. Series motors
  - B. One will be series motor and other will be shunt motors
  - C. Shunt motors
  - D. None of these

ANS: A

7. The most common method used to check for shorted windings is to perform
- A. Field test
  - B. Drop test
  - C. Regenerative test
  - D. Brake test

ANS: B

8. Iron losses are considered to be the constant losses. It depends on
- A. Voltage
  - B. Frequency
  - C. Both (a) and (b)
  - D. None of these

ANS: C

9. Copper losses in a rotating machine is
- A. Variable losses
  - B. Constant losses
  - C. Either (a) or (b)
  - D. None of these

ANS: A

10. Stray losses are the losses which vary with the load but their relationship with load current cannot be identified. Stray losses is maximum in

- A. Synchronous machines
- B. D.C. machines
- C. Induction machines
- D. Equal in all types of machines

ANS: B

11. The brush contact losses in a d.c. machine is

- A. Inversely proportional to the square of current
- B. Directly proportional to the square of current
- C. Inversely proportional to the current
- D. Directly proportional to the current

ANS: D

12. Electrical power output in a d.c. generator is equal to

- A. Electrical power developed in armature – copper losses
- B. Mechanical power input – iron and friction losses
- C. Electrical power developed in armature – iron and copper losses
- D. Mechanical power input – iron and friction losses – copper losses

ANS: D

13. While conducting momentary overload test on induction motor, the duration of excess load 50H.P. motor is
- A. 2 sec
  - B. 5 sec
  - C. 8 sec
  - D. 9.5 sec

ANS: B

14. While conducting momentary overload test on induction motor, the duration of excess load above 500H.P. motor is
- A. 5 sec
  - B. 10 sec
  - C. 15 sec
  - D. 20 sec

ANS: C

15. As per I.E.C. for 132 kv system voltage, the impulse withstand voltage is
- A. 250kv
  - B. 350kv
  - C. 450kv
  - D. 550kv

ANS: D

16. Out of different methods available for testing of d.c. motors, Swinburne's test and Hopkinson's test are commonly used in practice on

- A. Shunt generators
- B. Series motors
- C. Shunt motors
- D. All of these

ANS: C

17. Swinburne's test and brake tests

- A. Both are direct method of testing
- B. Direct method of testing, indirect method of testing
- C. Indirect method of testing, direct method of testing
- D. Both are indirect method of testing

ANS: C

18. Swinburne's test can be performed at

- A. Any load
- B. Only no load
- C. Only full load
- D. Only half load

ANS: B

19. While performing Swinburne's test, the iron losses are assumed to be

- A. Constant

- B. Absent
- C. Variable
- D. None of these

ANS: A

20. The speed in d.c. machine can be measured by using

- A. Anemometer
- B. Tachometer
- C. Voltmeter
- D. Ammeter

ANS: B

21. While carrying out brake tests if the belt snaps, then the motor will

- A. Rotate at reduced speed but in forward direction
- B. Rotate at increased speed but in forward direction
- C. Rotate at reduced speed but in backward direction
- D. Rotate at increased speed but in backward direction

ANS: B

22. While performing retardation tests, the machine whose test is to be taken is run at a speed which is

- A. Slightly less than its rated speed
- B. Equal to its rated speed
- C. Slightly greater than its rated speed
- D. All of these

ANS: C

23. The rotational or stray losses includes

- A. Iron losses only
- B. Iron losses, friction and windage losses
- C. Iron losses, copper losses, friction and windage losses
- D. None of these

ANS: C

24. The rotational losses in d.c. machines is equal to the

- A. Kinetic energy of armature
- B. Half of the kinetic energy of armature
- C. Square of the kinetic energy of armature
- D. **Rate of change of kinetic energy**

ANS: D

25. In regenerative test, the supply is given to the motor

- A. To account for losses
- B. To drive generator
- C. Both (a) and (b)
- D. None of these

ANS: A

26. While conducting momentary overload test on induction motor, the duration of excess load above 500H.P. motor is



- A. 5 sec
- B. 10 sec
- C. 15 sec
- D. 20 sec

ANS: C

## CHAPTER 4 – Testing and Maintenance of Transformer

### Multiple Choice Questions

1. The impulse test level is determined by operating level is.....times normal operating value
  - A. 1 to 2
  - B. 2 to 2.5
  - C. 4 to 5
  - D. 7 to 9

ANS: C

2. As per I.E.C. for 66 kv system voltage, the impulse withstand voltage is
  - A. 100kv
  - B. 150kv
  - C. 220kv
  - D. 325kv

ANS: D

3. In insulation resistance test of 132 kv transformer, minimum insulation resistance is
  - A. 250M $\Omega$
  - B. 500M $\Omega$
  - C. 750M $\Omega$
  - D. 1000M $\Omega$

ANS: B

4. For induced type transformer test, test voltage is equal to ..... highest system voltage + 1000 volt.
- A. Twice
  - B. thrice
  - C. four times
  - D. None of these

ANS: A

5. Which of the following factors affects on life of insulating material
- A. Temperature
  - B. Deposition of dust
  - C. Impurities
  - D. All of these

ANS: D

6. .... is a special type of megger and it has some modifications like rotating current reverse and rectifier
- A. Spirit level
  - B. Dial indicator
  - C. Earth tester
  - D. Filler gauge

ANS: C

7. Two transformer operating in parallel will share the load depending upon their
- A. leakage reactance
  - B. per unit impedance
  - C. Efficiency
  - D. rating

ANS: B

8. The magnetizing current of transformer is usually small because it has
- A. Small air gap
  - B. large leakage flux
  - C. laminated silicon steel core
  - D. fewer rotating parts

ANS: A

9. Which of the following are temp rise test for transformer?
- A. short circuit test
  - B. back to back test
  - C. open delta test
  - D. All of these

ANS: C

10. Power transformers are designed to have maximum efficiency at
- A. Nearly full load
  - B. 70% of full load
  - C. 50% of full load
  - D. No load

ANS: A

11. No load test on transformer is carried out to determine
- A. copper losses
  - B. magnetizing current

- C. magnetizing current & loss
- D. efficiency of transformer

ANS: C

12. While conducting the short circuit test on transformer following side is short circuited
- A. HV side
  - B. LV side
  - C. Primary side
  - D. Secondary side

ANS: D

## CHAPTER 5 – Testing of Insulation

### Multiple Choice Questions

1. In moisture proofness test, humidity is maintained to.....
  - A. 70%
  - B. 80%
  - C. 90%
  - D. 110%

ANS: C

2. In dielectric absorption test by using megger, insulation resistance is measured at regular interval of ..... and recorded.
  - A. 24 hour
  - B. 12 hour
  - C. 30min
  - D. 5min

ANS: C

3. For class A insulating material, maximum operating temperature is
  - A. 60°C
  - B. 90°C
  - C. 95°C
  - D. 105°C

ANS: D

4. Polarization index is greater than..... for class A insulation
- A. 1
  - B. 1.5
  - C. 2
  - D. 2.5

ANS: B

5. Which of the following factors affects on life of insulating material
- A. Temperature
  - B. Deposition of dust
  - C. Impurities
  - D. All of these

ANS: D

6. In lead acid battery positive plate(anode) made up of
- A.  $\text{PbO}_2$
  - B. Pb
  - C.  $\text{SO}_2$
  - D.  $\text{PbO}_3$

ANS: A

7. In insulation resistance test of 11kv transformer, minimum insulation resistance is
- A.  $25\text{M}\Omega$
  - B.  $50\text{M}\Omega$
  - C.  $75\text{M}\Omega$

D.  $100\text{M}\Omega$

ANS: B

8. Which of the following fire extinguisher are toxic
- A. Carbon tetrachloride
  - B. Sulphur hexachloride
  - C. Carbon hexachloride
  - D. Sulphur tetrachloride

ANS: A

9. In moisture proofness test, temperature is maintained to.....
- A.  $32^{\circ}\text{C}$
  - B.  $42^{\circ}\text{C}$
  - C.  $52^{\circ}\text{C}$
  - D.  $62^{\circ}\text{C}$

ANS: B

10. For class C insulating material, maximum operating temperature is
- A.  $90^{\circ}\text{C}$
  - B.  $100^{\circ}\text{C}$
  - C.  $150^{\circ}\text{C}$
  - D. Above  $180^{\circ}\text{C}$

ANS: D

11. Polarization index is greater than..... for class B insulation
- A. 1
  - B. 1.5
  - C. 2
  - D. 2.5



ANS: C

12. Which of the following method used for measuring temperature of insulation

- A. Embedded detector method
- B. Voltmeter method
- C. Megger
- D. None of these

ANS: A

13. For good transformer oil, as per IS density should be equal to

- A.  $0.5\text{gm/cm}^3$
- B.  $0.65\text{gm/cm}^3$
- C.  $0.89\text{ gm/cm}^3$
- D.  $1.15\text{gm/cm}^3$

ANS: C

14. In insulation resistance test of 132 kv transformer, minimum insulation resistance is

- A.  $250\text{M}\Omega$
- B.  $500\text{M}\Omega$
- C.  $750\text{M}\Omega$
- D.  $1000\text{M}\Omega$

ANS: B

15. For induced type transformer test, test voltage is equal to ..... highest system voltage + 1000 volt.

- A. twice
- B. thrice
- C. four times
- D. Can't say

ANS: A

16. As per I.E.C. for 132 kv system voltage, the impulse withstand voltage is

- A. 250kv
- B. 350kv
- C. 450kv
- D. 550kv

ANS: D

17. The thickness of insulation provided on the conductor in the cable depends on which among the following factor?

- A. Operating voltage.
- B. Current to be carried
- C. Power factor.
- D. Both (a) and (b)

ANS: A

1. Do's and Don'ts are observed carefully in safety precautions as per.....

- A. IS 5216-1962
- B. IS 5216-1964
- C. IS 5216-1966
- D. IS 5216-1969

ANS: D

2. In fire extinguisher we use

- A. CO<sub>2</sub>
- B. SO<sub>2</sub>
- C. O<sub>2</sub>
- D. H<sub>2</sub>O

ANS: A

3. Which of the following methods providing artificial respiration
- A. Schafer's prone pressure method
  - B. Silvester's method
  - C. Both a & b
  - D. Narcol Method

ANS: C

4. Severity of electric shock is mainly depends on
- A. Voltage
  - B. current
  - C. Type of supply
  - D. All of these

ANS: D

5. The most common method of artificial respiration is
- A. Schafer's method
  - B. Silvester's method
  - C. Neilson's method
  - D. mouth to mouth method

ANS: A

## CHAPTER 6 – Installation

### Multiple Choice Questions

1. While installing electrical machines, checking of foundation for correct level is to be carried out then, we use
  - A. **Spirit level**
  - B. Dial indicator
  - C. Bearing puller
  - D. Filler gauge

ANS: A

2. Thermal relays are used for the protection of motors against over-current owing to:
  - A. Short circuit
  - B. **Heavy loads**
  - C. Earth fault
  - D. All the above

ANS: B

3. Buchholz relay is:
  - A. Located in the conservator tank
  - B. Located in the transformer tank itself
  - C. **Connected in the pipe connecting main tank of transformer and conservator**
  - D. Installed in the circuit breaker

ANS: C

4. The arc voltage in C.B. is

- A. **in the phase of arc current**
- B. lagging the arc current by  $90^\circ$
- C. leading the arc current by  $90^\circ$
- D. lagging the arc current by  $180^\circ$

ANS: A

5. A fuse is normally a

- A. power limiting device
- B. voltage limiting device
- C. **current limiting device**
- D. p.f. correcting device

ANS: C

6. In HRC fuse the time between cut-off and final current zero is called

- A. Pre-arcing time
- B. **arcing time**
- C. total operating time
- D. none of above

ANS: B

7. The resistance of an electric arc can be increased by

- A. Increasing the concentration of ionised particles
- B. Reducing the arc length
- C. **Splitting the arc**
- D. Increasing arc X-section

ANS: C

8. An isolator is installed
- A. to isolate one portion of circuit from another
  - B. **usually on both sides of circuit breakers**
  - C. as a substitute for a circuit breaker
  - D. both a) and b)

ANS: B

9. In the protection scheme, relay functions as
- A. switching device
  - B. **sensing device**
  - C. breaking device
  - D. none of the above

ANS: B

10. For rotating machinery, the concrete foundation should be about .....larger in length and breadth.
- A. 5cms
  - B. **15cms**
  - C. 25 cms
  - D. None of above

ANS: B

11. For 75H.P to 100 H.P. rating machine, depth of foundation is
- A. 1 cm to 10 cms
  - B. 5 cm to 20 cms
  - C. 20 cm to 35 cms

D. **35cm to 60 cms**

ANS: D

12. When motor arranged in the same line as that of driven machine this coupling is also called as

- A. **Direct coupling**
- B. Indirect coupling
- C. Both a and b
- D. None of these

ANS: A

13. The type of ELCB are

- A. Voltage operated
- B. Current operated
- C. **Both a and b**
- D. Frequency operated

ANS: C

14. While doing procedure for leveling and alignment for gear and pulley drive, we should ensure that both shafts are.....

- A. **Parallel**

- B. Perpendicular
- C. Any position
- D. Can't say

ANS: A

15. For 20H.P to 50 H.P. rating machine, depth of foundation is

- A. 1 cm to 10 cms
- B. 5 cm to 15 cms
- C. **20 cm to 25 cms**
- D. 35cm to 60 cms

ANS: C

16. Depth of foundation is dependent on

- A. Cost of equipment
- B. Frequency
- C. **H.P. rating**
- D. None of these

ANS: C



