108/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The shape and colour of mandatory sign is :
   (A) circular shape — black symbol on yellow background
   (B) circular shape — white symbol on blue background
   (C) square shape — green symbol on white background
   (D) triangular shape — black symbol on blue background

2. Open circuit test should be conducted before the ———— to make sure that the complete circuit included in the test.
   (A) insulation test (B) ground test
   (C) s.c. test (D) o.c. test

3. Which tool is not used for making pilot holes on wooden/metal article?
   (A) Center punch (B) Bradawl
   (C) Pocker (D) Rawal plug tool

4. What effect of electric current is used in electric motors?
   (A) chemical effect (B) magnetic effect
   (C) heating effect (D) shock effect

5. The method of fire extinguishing by isolating the fire from the supply of oxygen by blanketing it is known as :
   (A) smothering (B) starving
   (C) accumulation (D) cooling

6. What does S.W.G. stands for?
   (A) Standard Western Gauge (B) Swiss Wire Gauge
   (C) Swiss Western Gauge (D) Standard Wire Gauge

7. Combination pliers are not used for :
   (A) cutting (B) twisting
   (C) hammering (D) holding

8. Armouring is provided in the cables to safeguard against :
   (A) moisture entry (B) white ant
   (C) bursting of failure (D) mechanical injury

9. The floats used in the Buchholz relay is operated by :
   (A) mercury switches
   (B) iron clad switches
   (C) centrifugal switches
   (D) flush mounting switches

10. A source of e.m.f. is required in order to :
   (A) prevent the escape of electrons
   (B) insulate the electrons from the unbalanced atoms
   (C) get the electrons into motion
   (D) change the property of conductance into resistance

11. Three resistors are connected in series across a 27 V supply. The second resistor has twice the resistance of the first, the third resistor has three times the resistance of the second. The voltage across the third resistor is :
   (A) 18 V
   (B) 6 V
   (C) 9 V
   (D) 3 V

12. According to Fleming's L.H.R. the angle between the thumb, middle finger and forefinger must be :
   (A) 180° between any two
   (B) right angle between any two
   (C) all must be 45° apart
   (D) mutually at right angle each other

13. The standard supply frequency in India is :
   (A) 60 c/s
   (B) 50 c/s
   (C) 55 Hz
   (D) 45 c/s

14. Luminous efficiency of a Fluorescent Tube is :
   (A) 30 lumen/watt
   (B) 40 lumen/watt
   (C) 60 lumen/watt
   (D) 80 lumen/watt

15. If two capacitors having capacitance C_1 and C_2 are connected in series, then the total capacitance $[C_T]$ of the circuit is :
   (A) $C_T = C_1 + C_2$
   (B) $C_T = C_1C_2/[C_1 + C_2]$
   (C) $C_T = 1/C_1 + 1/C_2$
   (D) $C_T = [C_1 + C_2]/C_1C_2$

16. What is the unit of Magneto Motive Force?
   (A) Volt
   (B) Ampere
   (C) Ampere-turns
   (D) Weber

17. Whenever the magnetic flux linking with a conductor changes, an e.m.f. is induced in that conductor. The above statement is due to :
    (A) Weber and Ewing's law
    (B) Faraday's law of electrolysis
    (C) Coulomb's law
    (D) Faraday's law of electromagnetic induction

18. According to Steinmentz Hysterisis law, the hysteresis loss in a material is proportional to :
    (A) $B_m^{1.2}$ (B) $B_m^{1.6}$
    (C) $B_m^{2.0}$ (D) $B_m^{2.6}$

19. Which of the following is not a diamagnetic material?
    (A) Air (B) Water
    (C) Glass (D) Sulpur

20. Which series MCBs are designed to protect circuits with inductive loads?
    (A) L series MCB (B) G series MCB
    (C) AC series MCB (D) DC series MCB

21. Out of the four metal/alloys given below, one has almost no change in resistance for change in temperature :
    (A) Nickel (B) Nichrome
    (C) Manganin (D) Platinum

22. As per the recommendation of BIS and NEC, the minimum clearance between the ceiling and the plane of the blades of the ceiling fan shall not be less than :
    (A) 300 mm (B) 1300 mm
    (C) 2400 mm (D) 200 mm

23. To control one lamp from three places we use :
    (A) 3 one way switches
    (B) 2 two way switches and 1 one way switch
    (C) 3 two way switches
    (D) 2 two way switches and 1 intermediate switch

24. In simple voltaic cell, zinc plate is amalgamating with mercury to prevent :
    (A) Local action (B) Polarization
    (C) Buckling (D) Sulphation

25. In a parallel plate capacitor, if a dielectric slab is introduced, the p. d. between plates will :
    (A) remains the same (B) decrease
    (C) increase (D) becomes zero

26. Number of light points admissible in one circuit are :
(A) 4 points of 400 w each
(B) 8 points of 200 w each
(C) 12 points of 60 w each
(D) 8 points of 100 w each

27. Bayonet Cap lamp holders cannot be used for lamps having wattage rating more than :
(A) 60 w
(B) 100 w
(C) 200 w
(D) 1000 w

28. Other than Nichrome, which of the following materials are used as heating element?
(A) Tungsten
(B) Kanthal
(C) Porcelain
(D) Mica

29. One Calory is equal to :
(A) 4187 joules
(B) 41 .87 joules
(C) 418.7 joules
(D) 4.187 joules

30. A 1 KW, 230 V kettle is connected to 15 A plug socket using a power cord rated to carry 15 amperes. What should be the fuse rating of this appliance circuit?
(A) 6 amps
(B) 4 amps
(C) 10 amps
(D) 15 amps

31. A heater with short-circuited heating element is tested with a series test lamp, the test lamp will :
(A) glow brightly
(B) glow dim
(C) glow normally
(D) not glow

32. The unit of luminous intensity is :
(A) Candela
(B) Steradian
(C) Lux
(D) Lumen

33. The purpose of a resistor connected in series with the heating element of an automatic electric iron is to :
(A) control the current through the heating element
(B) apply low voltage to pilot lamp
(C) give safety for the thermostat
(D) control the heat

34. In batten wiring, the distance between link clips in vertical runs shall not exceed :
(A) 5 cm
(B) 10 cm
(C) 12 cm
(D) 15 cm

35. The process by which an emf induced in a DC generator is known as _____ method.

(A) static
(B) dynamic
(C) mutual induction
(D) self induction

36. Testing a wiring installation for insulation resistance is to ensure that :

(A) all conductors have high ohmic value in the circuit
(B) all outlet points are earthed properly to ground
(C) leakage current beyond the stipulated value does not flow to earth
(D) live and neutral conductors in the installation are continuous

37. In this wiring, to operate 3 lamps in all we require 6 two way switches :

(A) corridor wiring
(B) godown wiring
(C) tunnel wiring
(D) hostel wiring

38. Fleming's Right hand rule is used to identify the :

(A) direction of current in a motor
(B) direction of rotation in a generator
(C) direction of rotation in a motor
(D) direction of induced emf

39. To get sinusoidal wave shape of an alternating current :

(A) coil should rotate under uniform field
(B) coil should rotate under more number of poles
(C) two slip rings must be used
(D) armature should have more number of coils

40. In a DC machine, the conductors of the armature windings are soldered to commutator at the :

(A) segment internally
(B) riser
(C) segments directly
(D) brushes

41. The inter poles are connected in a dc generator :

(A) in series with armature and of same polarity ahead of approaching pole
(B) in series with armature and of opposite polarity ahead of approaching pole
(C) in parallel with armature and of same polarity ahead of approaching pole
(D) in parallel with armature and of opposite polarity ahead of approaching pole

42. If different quantities of water are heated for the same time by the same capacity heaters, then the temperature developed at the :

(A) larger quantity of water will have a higher temperature than the smaller quantity of water

(B) smaller quantity of water will have a higher temperature than the larger quantity of water

(C) larger quantity of water will have the same temperature than the smaller quantity of water

(D) none of the above

43. The meter used to measure the temperature of furnace is :

(A) thermometer (B) thermostat

(C) hygrometer (D) pyrometer

44. Resistors of 5 ohms, 5 kilo ohms, 50 kilo ohms, 5 mega ohms are connected in parallel. Their equivalent resistance will be very near to :

(A) 4.5 ohms (B) 4.5 kilo ohms

(C) 45 kilo ohms (D) 4.5 mega ohms

45. A substance that has low retentivity can be used for the manufacture of :

(A) electromagnets (B) permanent magnets

(C) bar magnets (D) paramagnets

46. When the fluorescent lamp is switched ON there is some vibrating sound from the choke. This is due to loose :

(A) connection in the choke (B) winding turns

(C) core (D) screws in the cover

47. How big is the peak amplitude of a sine-wave with an effective value of 220 volts?

(A) 440 V (B) 400 V

(C) 380 V (D) 311 V

48. Which type of formula may be used for any type of circuit?

(A) $P = I^2R$ (B) $P = EI$

(C) $P = E^2/X$ (D) There is no such formula

49. In a capacitive AC circuit the :

(A) current lags voltage (B) voltage leads current

(C) voltage lags current (D) voltage is in phase with current

50. In a RL parallel circuit, the opposition to total current is called :

(A) reactance (B) impedance

(C) resistance (D) a vector sum

51. A 4 pole simplex lap-wound armature having 48 slots, each slot has 4 conductors and each conductor is having resistance of 0.1 ohms. What will be the total armature resistance?
(A) 0.48 ohm
(B) 1.2 ohms
(C) 1.92 ohms
(D) 4.8 ohms

52. Speed of DC shunt motor has to be controlled through the field. Which starter is most suitable in this case?
(A) 4 point starter
(B) 3 point starter
(C) 2 point starter
(D) DOL starter

53. A very low value of insulation resistance indicates :
(A) good operating condition
(B) fair operating condition
(C) an immediate investigation
(D) that the measuring instrument is wrong

54. The magnetic field produced in the stator of a 3 phase induction motor travels at :
(A) rotating speed
(B) asynchronous speed
(C) synchronous speed
(D) slip speed

55. The motor which requires least maintenance is :
(A) squirrel cage induction motor
(B) slip ring induction motor
(C) dc series motor
(D) dc shunt motor

56. When testing the shunt winding of a DC machine for continuity with test lamp of high wattage, the prods when touched on shunt field terminals give spark. What is the reason?
(A) Shunt field winding is grounded
(B) Shunt field winding is open circuited
(C) Shunt field winding has low resistance
(D) Shunt field winding has high resistance

57. The main function of NVC generally used with a motor starter is to :
(A) open the main contacts of the starter on failure or reduction of input voltage and automatically reclose it on return of normal voltage
(B) open the main contacts of the starter on failure or reduction of input voltage and keep it open until manually closed
(C) control motor voltage and keep it at the rated value
(D) prevent the main contact of the starter from opening when fluctuations occur in the power system

58. "Eyre No.7" is :
(A) Copper soldering flux
(B) Aluminium solder
(C) Copper solder
(D) Aluminium soldering flux