

107/2022

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. Power factor is given by the ratio of circuit resistance to :
 - (i) Impedance
 - (ii) Inductance
 - (iii) Capacitance

(A) Only (i) (B) Only (ii)
(C) Only (iii) (D) Both (i) and (iii)
2. In a three phase star connected system which statement is correct?
 - (i) Line voltage equal to phase voltage
 - (ii) Line current equal to phase current
 - (iii) Line voltage and line current have phase difference 30°

(A) Statement (i) (B) Statement (ii)
(C) Statement (iii) (D) Statement (ii) and (iii)
3. In three phase measurement by Two Watt meter method, both the Watt meter having identical reading the power factor of load would be :

(A) Zero (B) 0.7
(C) 0.8 (D) Unity
4. The ratio of rms value to the average value in a ac circuit is :

(A) Power factor (B) Form factor
(C) Crest factor (D) Phase difference
5. Which statement is correct?
 - (i) Reciprocal of impedance is reactance
 - (ii) Reciprocal of impedance is conductance
 - (iii) Reciprocal of impedance is admittance
 - (iv) Reciprocal of impedance is Q factor

(A) Statement (i) (B) Statement (ii)
(C) Statement (iii) (D) Statement (iv)

6. In a parallel ac circuit is in resonance it :
- (A) Draws maximum current (B) Offers minimum impedance
(C) Has no branch current (D) Is called a rejecter circuit
7. The reciprocal of frequency in an alternating quantity is :
- (A) Cycle (B) Time period
(C) Rms value (D) Amplitude
8. The amplitude factor for sinusoidal alternating voltage is :
- (A) 0.707 (B) 0.637
(C) 1.414 (D) 1
9. Higher the frequency of an ac current, ————— the reactance offered by a capacitor.
- (A) High (B) Medium
(C) Lower (D) No change
10. Rms value of a sinusoidal alternating current is ————— times the maximum value.
- (A) 0.707 (B) 1.2
(C) 0.637 (D) 2
11. The specific gravity of electrolyte can be measured by :
- (A) Hygrometer (B) Hydrometer
(C) Pyrometer (D) Thermometer
12. The positive plate of Lead acid battery is made of :
- (A) Spongy Lead (B) Lead sulphate
(C) Lead peroxide (D) Carbon
13. What does a capacitor stored?
- (A) Current (B) Voltage
(C) Charge (D) Energy
14. The resistance of a conductor varies inversely as :
- (A) Area of cross section (B) Temperature
(C) Length (D) Specific resistance
15. Two lamps 100 W and 60 W are connected in series across 230 V ac :
- (A) 100 W lamp will glow brighter (B) Both lamp will equally bright
(C) 60 W lamp will glow brighter (D) 100 W lamp will fuse

16. The unit of conductance is :
 (A) ampere (B) mho
 (C) ohm (D) volt
17. In metric system 1 hp equals :
 (A) 735.5 W (B) 746 W
 (C) 745.5 W (D) 725 W
18. The resistance between opposite faces of a unit cube of material is called :
 (A) ohm (B) impedance
 (C) specific gravity (D) resistivity
19. Two resistances $10\ \Omega$ are connected in parallel, the total resistance is :
 (A) $10\ \Omega$ (B) $20\ \Omega$
 (C) $5\ \Omega$ (D) $2.5\ \Omega$
20. The defect that occurs in simple electric cells due to the accumulation of hydrogen gas around the positive electrode :
 (A) Local action (B) Polarisation
 (C) Amalgamation (D) Depolarisation
21. The S.I. unit of flux density is :
 (A) weber (B) tesla
 (C) ampere turns (D) ampere turns/weber
22. Magnetic field intensity (H) can be calculated by the formula?
 (A) $H = \text{reluctance}/\text{mmf}$ (B) $H = \text{mmf}/\text{reluctance}$
 (C) $H = \text{mmf}/\text{length of coil in metre}$ (D) $H = \text{length of coil in metre}/\text{mmf}$
23. Which law states that a counter emf always oppose the force that creates it?
 (A) Lenz's law (B) Ohm's law
 (C) Oersted's law (D) Faraday's law
24. The imaginary line joining the two poles of magnet is known as :
 (A) Magnetic neutral axis (B) Magnetic lines
 (C) Magnetic poles (D) Magnetic axis

25. S.I. unit of magnetic reluctance is :
- (A) Wb/AT (B) AT/Wb
(C) Weber (D) Ampere turns
26. Capacitance 'C' is calculated by the formula :
- (A) $C = Q/V$ (B) $C = V/Q$
(C) $C = QC$ (D) None of these
27. Capacitors are connected in parallel to obtain :
- (A) Low capacitance value (B) Higher capacitance value
(C) Zero capacitance value (D) Infinity capacitance value
28. Unit of capacitive reactance is :
- (A) Farad (B) Henry
(C) Ohm (D) Volt
29. Capacitance of a capacitor is increased by :
- (A) Decreasing plate area
(B) Decreasing distance between plates
(C) Increasing distance between plates
(D) None of these
30. What is the unit of electric charge?
- (A) Farad (B) Volt
(C) Coulomb (D) Ampere
31. When compared to copper, aluminium has ————— percentage conductivity.
- (A) 60.60% (B) 70.60%
(C) 80.60% (D) 90.60%
32. Which of the following is used as an insulating oil in transformer?
- (A) Mineral oil (B) Silicon liquid
(C) Hydro carbon liquid (D) All of them
33. For temperature above 600°C mica is mixed with shellac or resin adhesive, it is known as :
- (A) Mica paper (B) Mica cloth
(C) Micanite (D) All of them

34. In ACSR conductor the function of steel is to :
- (A) provide additional mechanical strength
 - (B) prevent corona
 - (C) take care of surges
 - (D) reduce inductance and improve power factor
35. Porcelain is used as an insulator in :
- (A) Transformer bushings
 - (B) Kit-kat fuse
 - (C) HT insulator in OH line
 - (D) All of them
36. To make soft rubber hard, 5% ————— is added to it.
- (A) phosphorous
 - (B) sulphur
 - (C) tungsten
 - (D) None of these
37. The melting point of tungsten is :
- (A) 3400 °C
 - (B) 3600 °C
 - (C) 3650 °C
 - (D) 4600 °C
38. Which insulation prepared chemically to insulate the winding wires?
- (A) Varnish
 - (B) Shellac
 - (C) Enamel
 - (D) None of these
39. Which insulating material is used for making electrical accessories such as switches, wall socket, ceiling roses and holders?
- (A) Asbestos
 - (B) Bakelite
 - (C) Glass
 - (D) None of these
40. Aluminium has a specific gravity of :
- (A) 1.5
 - (B) 1.7
 - (C) 2.7
 - (D) 7.8
41. Which force is required to move the pointer from zero position in an indicating instrument?
- (A) Controlling force
 - (B) Deflecting force
 - (C) Air friction damping
 - (D) Eddy current damping

42. What is the reason for the moving coil meter having uniform scale?
- (A) Deflecting torque is directly proportional to the current
 - (B) Deflecting torque is inversely proportional to the current
 - (C) Deflecting torque is directly proportional to the square of current
 - (D) Deflecting torque is inversely proportional to the square of current
43. Which error if the energy meter disc rotating continuously on no load?
- (A) Speed error
 - (B) Phase error
 - (C) Friction error
 - (D) Creeping error
44. Which material is used to make control spring in measuring instruments?
- (A) Steel
 - (B) Silver
 - (C) Phosphor bronze
 - (D) Tinned copper
45. Which electrical effect single phase energy meter works?
- (A) Heating effect
 - (B) Induction effect
 - (C) Chemical effect
 - (D) Electrostatic effect
46. Which instrument is example for an integrating instrument?
- (A) AC voltmeter
 - (B) DC voltmeter
 - (C) Energy meter
 - (D) Tangent galvanometer
47. Which is an absolute instrument?
- (A) Ammeter
 - (B) Volt meter
 - (C) Energy meter
 - (D) Tangent galvanometer
48. Which position an instrument using gravity control reads accurately?
- (A) Any position
 - (B) Vertical position
 - (C) Inclined position
 - (D) Horizontal position
49. Which quantity is measured by a electro dynamo type instrument?
- (A) Power
 - (B) Current
 - (C) Voltage
 - (D) Resistance

50. How the creeping error is controlled in energy meter?
- (A) By reducing rated voltage
 - (B) By increasing the inductive load
 - (C) By adjusting the brake magnet position
 - (D) By drilling two holes diametrically opposite on disc
51. Which type of transformer is used for high frequency applications?
- (A) Ring core transformer
 - (B) Ferrite core transformer
 - (C) Silicon steel core transformer
 - (D) Air core transformer
52. The efficiency of a transformer lies in the range of :
- (A) 90–95%
 - (B) 91–97%
 - (C) 92–99%
 - (D) 93–100%
53. Transformer cores are made of silicon steel with a composition of :
- (A) Steel 97% Silicon 3%
 - (B) Steel 95% Silicon 5%
 - (C) Steel 93% Silicon 7%
 - (D) Steel 91% Silicon 9%
54. In a shell type transformer, the low voltage winding is located closure to the core and higher voltage winding is wound on top of the lower voltage winding. This arrangement is made to :
- (A) Reduce Core size
 - (B) Increase Voltage regulation
 - (C) Minimise Hysteresis loss
 - (D) Minimise insulation
55. The turns ratio of an isolation transformer is always :
- (A) Greater than one
 - (B) Less than one
 - (C) Equal to one
 - (D) Same as a step up transformer
56. The short circuit test of a transformer is conducted to find :
- (A) Copper loss
 - (B) Hysteresis loss
 - (C) Eddy current loss
 - (D) Total losses

57. The transformer lamination are insulated from each other using :
- (A) PVC insulation (B) VIR insulation
(C) CTS insulation (D) Paper or Varnish
58. What is the condition for obtaining maximum efficiency from transformer?
- (A) Copper loss < Iron loss (B) Copper loss > Iron loss
(C) Copper loss = Iron loss (D) Copper loss $\leq$ Iron loss
59. Natural air cooling method of transformer cooling is generally adopted for a distribution transformer upto :
- (A) 50 kVA (B) 100 kVA
(C) 150 kVA (D) 200 kVA
60. Which of the following is not desired for a transformer oil?
- (A) High inflammable (B) High specific resistance
(C) High specific heat (D) High firing point
61. The ratio of maximum load which could be drawn to the rated capacity of system is known as :
- (A) Load factor (B) Diversity factor
(C) Utility factor (D) Demand factor
62. Clearance from ground for the lowest conductor in low and medium voltage transmission is :
- (A) 5.791 m (B) 5.486 m
(C) 4.572 m (D) 3.963 m
63. A coupling capacitor is used in substation for :
- (A) Improving power factor
(B) Blocking surge voltage
(C) Reducing transient response
(D) Communication
64. Ebb method is used to obtain power from :
- (A) Tidal power station
(B) Wind power station
(C) Thermal power station
(D) Hydro electric power station

65. For an ACSR conductor the size of binding wire should not be less than :
(A) 1 Sq.mm. (B) 1.5 Sq.mm
(C) 2 Sq.mm (D) 2.5 Sq.mm
66. A low load factor indicates :
(A) There is no strain on the system
(B) There is a high strain on the system
(C) There is a medium strain on the system
(D) None of these
67. Which of the following is/are true about corona?
(A) Spacing between conductors affect corona
(B) Corona increases virtual diameter of the conductor
(C) Corona reduces the effects of transients produced by surges
(D) All of these
68. The standard length of busbar section available for 200 Ampere is :
(A) 1.75 m (B) 2.44 m
(C) 2.75 m (D) 3.65 m
69. The runner of Kaplan turbine receives water :
(A) Axially (B) Radially
(C) Tangentially (D) None of these
70. Factors affecting corona :
(A) Line current (B) Line voltage
(C) Both (A) and (B) (D) Frequency
71. Which type of accessories of fuse is comes under?
(A) Controlling accessories (B) Holding accessories
(C) Safety accessories (D) Outlet accessories
72. Which is the advantage of cleat wiring system?
(A) Easy to locate fault in the wiring
(B) Moisture proof in the wiring
(C) Durable
(D) Can be used for permanent wiring

73. A switch board must be placed at a height of ————— above the ground level.
(A) 2.75 m (B) 1.5 m
(C) 1.6 m (D) 2.5 m
74. The commonly used switch used to control a lamp from three places is :
(A) Intermediate switch (B) Two way switch
(C) One way switch (D) Knife switch
75. The load on a power sub circuit should not exceed ————— Watts and number of points should not exceed ————— points.
(A) 3000 W, 2 points (B) 3000 W, 4 points
(C) 2000 W, 2 points (D) 2000 W, 4 points
76. A building has four ceiling fan (100 W each), one heater (1000 W) and 5 LED (15 W each) find the total load?
(A) 1400 W (B) 1475 W
(C) 1460 W (D) 1480 W
77. The best suited MCB category for motor protection is :
(A) 'G' series MCB (B) 'L' series MCB
(C) DC series MCB (D) None of the above
78. The atmospheric air entering the transformer is made moisture free by passing it through equipment called :
(A) Buchholz relay (B) Breather
(C) Conservator (D) None of the above
79. Transformer ratings are usually expressed in terms of :
(A) Ampere (B) Volt
(C) Watts (D) Kilo Volt ampere
80. The device which break the circuit at the time of earth fault :
(A) Voltage relay (B) MCB
(C) RCCB (D) None of the above
81. Which of the following factor affecting the choice of wiring?
(A) Durability (B) Cost
(C) Appearance (D) All of the above

82. Insulation resistance is measured in :
 (A) Mega Ohms (B) Mega Watts
 (C) Kilo Volts (D) Kilo Amps
83. The speed of a DC Motor is :
 (A) Always constant
 (B) Directly proportional to back EMF
 (C) Directly proportional to flux
 (D) Inversely proportional to product of back EMF and flux
84. Why starters are required to start DC motors in industries?
 (A) Regulate the field voltage (B) Reduce the armature current
 (C) Control the armature reaction (D) Smooth operation of motors
85. The direction of induced EMF in the armature conductors of a DC generator can be determined using :
 (A) Flemings Right hand rule (B) Right hand grip rule
 (C) Cork screw rule (D) Flemings left hand rule
86. Commutator segments are made of :
 (A) Copper (B) Mica
 (C) Tungsten (D) Cast Iron
87. Which of the following motor has high starting Torque?
 (A) DC shunt motor (B) DC series motor
 (C) DC compound motor (D) None of the above
88. Voltage equation of a DC motor is :
 (A) $V = E_b + I_a R_a$ (B) $E_b = V + I_a R_a$
 (C) $V = E_b / I_a R_a$ (D) $V = E_b + I_a^2 R_a$
89. The motor used in a mixer grinder is :
 (A) DC motor (B) Induction motor
 (C) Synchronous motor (D) Universal motor
90. The difference between the Synchronous speed and the actual speed of an induction motor is known as :
 (A) Regulation (B) Lag
 (C) Slip (D) Torque

91. Which starter will give better starting torque?
 (A) Rotor resistance starter (B) Star delta starter
 (C) D.O.L. starter (D) Auto transformer starter
92. In DC Machines, when maximum efficiency occurs?
 (A) Variable loss equal to constant loss (B) Maximum load current occurs
 (C) Minimum power output occurs (D) Minimum loads occurs
93. Number of parallel paths in lap winding is equal to :
 (A) No. of field coils (B) No. of poles
 (C) 2 (D) No. of turns
94. In film projector, the lamp used is :
 (A) Neon lamp (B) Arc lamp
 (C) Discharge lamp (D) Sodium vapour lamp
95. In offices and workshops double tube is used. It is to :
 (A) Get more light (B) Get more life
 (C) Beauty (D) Avoid stroboscopic effect
96. The cable which connects the distributor to the consumers terminal is called :
 (A) Feeder (B) Service mains
 (C) Distributor (D) None of the above
97. The expansion of LED :
 (A) Laser Emission Diode (B) Light Electric Diode
 (C) Light Emitting Diode (D) Laser Electric Diode
98. Which type of DC motor is used for sudden application of heavy loads?
 (A) Shunt motor (B) Series motor
 (C) Differential compound motor (D) Cumulative compound motor
99. The motor used in ceiling fan is :
 (A) Universal motor (B) Synchronous motor
 (C) Shaded pole motor (D) Permanent capacitor motor
100. Mercury vapour lamp gives light of :
 (A) Red colour (B) Greenish-blue colour
 (C) Yellow colour (D) Pink colour

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