Kerala PSC OVERSEER - ELECTRICAL - KERALA PORT DEPT 2014

1. 1 volt is equal to :
   (A) One coulomb per second
   (B) One joule per coulomb
   (C) One coulomb per joule
   (D) Work done is transfering a charge of one coulomb

2. The resistance of a conductor increases as its :
   (A) Cross sectional area decreases
   (B) Length decreases
   (C) Resistivity decreases
   (D) Length is reduced and cross sectional area is increased

3. A 3 phase load is balanced, if all the 3 phases have the same :
   (A) impedance
   (B) Power factor
   (C) impedance and power factor
   (D) None of the above

4. Candela is the unit of :
   (A) Potential difference
   (B) Magnetic flux
   (C) Thermodynamic temperature
   (D) Luminous intensity

5. Kirchoff's laws are valid for :
   (A) Linear circuits only
   (B) Non linear circuits only
   (C) Both linear and non linear circuits
   (D) None of the above

6. In a lead acid battery, level of electrolyte should be :
   (A) Above the level of plates
   (B) Below the level of plates
   (C) Equal to that of plates
   (D) None of the above

7. Electromagnetic torque and speed are in opposite directions in case of :
   (A) Shunt generators
   (B) Shunt motors
   (C) Series motors
   (D) All of the above

8. If the voltage and current are out of the phase by 90°; the power is :
   (A) Zero (B) Maximum
   (C) Minimum (D) None of the above

9. Neon gas in sodium vapour lamp :
   (A) Changes the colour of the lamp
   (B) Acts as a shield around the filament
   (C) Assists in developing enough heat to vapourize the sodium
   (D) Prevent vapourisation of filament

10. Three 2 ohm resistors are connected to form a triangle. The resistance between any two corners is :
   (A) $6\ \Omega$ (B) $2\ \Omega$ (C) $\frac{3}{4}\ \Omega$ (D) $\frac{4}{3}\ \Omega$

11. An electric bulb rated 220 V is connected to 220 V, 5Hz source, then the bulb :
   (A) Does not glow (B) Fuses
   (C) Glows intermittently (D) Glows continuously

12. A closed path made by several branches of network is known as :
   (A) Branch (B) Junction (C) Circuit (D) Loop

13. An inductor stores energy in :
   (A) Core (B) Electromagnetic field
   (C) Electrostatic field (D) Magnetic field

14. Lenz's law is a consequence of the law of conservation of :
   (A) Mass (B) Charge
   (C) Energy (D) None of the above

15. The form factor of d.c. supply voltage is always :
   (A) unity (B) 0.5 (C) zero (D) infinite

16. In 3 phase star connections, line voltage is same as :
   (A) Phase voltage (B) $\frac{1}{\sqrt{3}}$ phase voltage
   (C) $\sqrt{3}$ phase voltage (D) 3 phase voltage

17. Damper windings are provided in synchronous machines to :
(A) Damp out rotor oscillations
(B) Reduce the over voltages under abnormal conditions
(C) Facilitate starting
(D) All of the above

18. The speed of a d.c. motor is :
(A) Always constant
(B) Directly proportional to back e.m.f
(C) Directly proportional to flux
(D) Inversely proportional to the product of back e.m.f and flux

19. Which test can be used to determine the **no** load losses of a shunt motor ?
(A) Retardation test (B) Hopkinson's test
(C) Swinburne's test (D) Brake test

20. Select the **wrong** statement from below, which is the essential condition for parallel operation of two or more transformers.
(A) Current ratios should be same (B) Voltage ratios should be same
(C) Polarity should be same (D) Phase sequence should be same

21. Distribution transformers are usually designed to have maximum efficiency :
(A) Near full load (B) Near 75% of full load
(C) Near 50% of full load (D) Near no load

22. The major disadvantage, with solar cells for power generation is :
(A) Lack of availability of sunlight (B) Large area requirement
(C) Variable power (D) High cost

23. The type of d.c. generator used for arc welding purposes is :
(A) Cumulatively compounded generator
(B) Shunt generator
(C) Series generator
(D) Differentially compounded generator

24. Class H insulation is normally used in :
(A) Traction motors (B) Submersible pump motors
(C) Single phase motors (D) d.c. motors

25. The increase in resistance due to non uniform distribution of current in a conductor is known as :

(A) Electro magnetic effect (B) Proximity effect

(C) Electro static effect (D) Skin effect

26. For moving iron instruments, which statement below is **not** correct ?

(A) Scales of this instrument are uniform

(B) This instruments can be used both in d.c. as well as in a.c. circuits

(C) This instruments posses high operating torque

(D) Simplicity in construction

27. In a delta connected circuit, the relationship between line and phase voltage of a delta connected circuit is given by :

(A) $V_L = V_p$ (B) $V_L = \sqrt{3}\, V_p$ (C) $V_L = \left(\frac{2}{\pi}\right) V_p$ (D) $V_L = \frac{V_p}{\sqrt{2}}$

28. In the measurement of 3 phase power by 2 wattmeter method if 2 wattmeter readings are equal, the power factor of the circuit is :

(A) unity (B) zero (C) 0.8 lagging (D) 0.8 leading

29. Oil in transformer is used as :

(A) Insulating medium (B) Cooling medium

(C) Both (A) and (B) (D) None of the above

30. The pole and pole shoes of a synchronous machine are laminated in order to reduce :

(A) Hysterisis loss (B) Copper loss

(C) Reluctance of magnetic circuit (D) Heating due to eddy currents

31. Economiser in a boiler is used to :

(A) Increase life of boiler (B) Increase steam production

(C) Reduce fuel consumption (D) Reduce steam pressure

32. In a ACSR conductors, steel wire is used for :

(A) Reducing inductance

(B) Compensation for skin effect

(C) Providing additional mechanical strength

(D) Take care of surges

33. For repetitive type projects, the mostly used network technique is :
(A) PERT (B) CPM (C) Both (A) and (B) (D) None of these

34. In quality system, which is the model for quality assurance in design production, installation and servicing ?
(A) ISO 9000 (B) ISO 9001 (C) ISO 9002 (D) ISO 9003

35. When the relative permeability of a material is slightly less than 1, it is called a :
(A) Diamagnetic material (B) Paramagnetic material
(C) Ferromagnetic material (D) None of the above

36. Transportation method is :
(A) Project management technique
(B) Sales management technique
(C) Quantitative management technique
(D) Human resource management technique

37. In induction heating, which of the following is of high value ?
(A) Voltage (B) Current (C) Frequency (D) Power factor

38. The method of heating used for **non** conducting material is :
(A) Dielectric heating (B) Induction heating
(C) Electric arc heating (D) Resistance heating

39. The power factor in a transformer :
(A) Is always lagging (B) Is always leading
(C) Is always unity (D) Depends on power factor of the load

40. The advantage of salient poles in an alternator is :
(A) Reduce bearing loads and noise
(B) Reduced windage loss
(C) Adaptability to low and medium speed operation
(D) Reduce noise

41. In which of the following motors, the stator and rotor magnetic fields rotate at the same speed :
(A) Synchronous motor (B) Reluctance motor
(C) Universal motor (D) Induction motor

42. In which method of starting a motor, the starting current is maximum ?
(A) Autotransformer (B) Star delta starter
(C) Stator rotor starter (D) Direct online

43. One lux is same as :
(A) One lumen/sq.cm (B) One lumen/sq.m
(C) One lumen/100 sq.m (D) One lumen/1000 sq.m

44. Which of the following materials has the highest permeability ?
(A) Permalloy (B) Pure iron (C) Nickel (D) Cobalt

45. In performing the short circuit test of a transformer :
(A) High-voltage side is usually short circuited
(B) Low-voltage side is usually short circuited
(C) Any side is short circuited with preference
(D) None of these

46. In a d.c. machine, armature emf is :
(A) stationary w.r.t armature (B) rotating w.r.t field
(C) stationary w.r.t field (D) rotating w.r.t brushes

47. An electric field can deflect :
(A) X-rays (B) Neutrons (C) α-particles (D) γ-rays

48. PERT is :
(A) Problem evaluation and review technique
(B) Programme evaluation and review technique
(C) Problem evaluation and repeat technique
(D) Project evaluation and review technique

49. Mutual inductance between two coils can be decreased by :
(A) Increasing the number of turns of either coil
(B) By moving the coils closer
(C) By moving the coils by apart
(D) None of the above

50. Transient currents in electrical circuits are associated with :
(A) Inductors (B) Capacitors (C) Resisters (D) Both (A) and (B)

51. The rotor of the salient pole alternator has 24 poles. The number of cycles of emf in one revolution would be :

(A) 24 (B) 12 (C) 6 (D) 4

52. The synchronous motors are not self-starting because :

(A) Stator is not used

(B) Starting winding is not provided

(C) The direction of instantaneous torque on the rotor reverses after half cycle

(D) There is no slip

53. 1 Tesla is the same as one :

(A) weber/metre (B) Weber/(metre)^2 (C) Farad/metre (D) Henry/(metre)^2

54. Load shading is done :

(A) To reduce heat demand (B) To improve power factor

(C) To run the equipment efficiency (D) To repair the machine

55. Circular coil sections are used because they :

(A) Reduce iron material (B) Reduce copper material

(C) Have the strongest mechanical shape (D) All of these

56. Transient disturbances are due to :

(A) Switching operations (B) Load variations

(C) Faults (D) Any of the above

57. The core flux in a transformer depends mainly on :

(A) Supply voltage

(B) Supply voltage and frequency

(C) Supply voltage, frequency and load

(D) Supply voltage and load independent of frequency

58. Ohm's law (E = IR)

(A) Can never be applied to a.c.

(B) Can be applied to a.c. in the same manner as to d.c.

(C) Can be applied to a.c. but after replacing R by Z

(D) None of the above

59. Luminous flux is :

(A) Rate of energy radiation in the form of light waves

(B) Light energy radiated by sun

(C) Part of light energy, radiated by sun which is received on earth

(D) None of the above

60. In a transformer, the voltage regulation will be zero, when it is operated at :

(A) unity p.f. (B) leading p.f. (C) lagging p.f. (D) zero p.f. leading

61. The fundamental voltage equation of motor is expressed by :

(A) $E_b = V + I_a R_a$ (B) $V = E_b + I_a R_a$

(C) $V = E_b I_a + R_a$ (D) None of these

62. The 'dead time' of the instrument is :

(A) The time required by an instrument for initial warming up

(B) The time required by an instrument to begin to respond to a change in the measurand

(C) The largest change of input quantity for which there is no output of the instrument

(D) None of the above

63. Which motor has the highest power to weight ratio ?

(A) Universal motor (B) Induction motor

(C) Synchronous motor (D) Capacitor motor

64. Resistance : Conductance : :

(A) Faraday's law : mutual inductance

(B) Power : voltage × current

(C) Tesla : permeance

(D) Reluctance : permeance

65. A lag network for compensation normally consists of :

(A) R only (B) R and C elements

(C) R and L elements (D) R, L and C elements

66. Which type of wattmeter cannot be used for d.c ?

(A) Electrostatic type (B) Dynamometer type

(C) Induction type (D) None of the above

67. Transformer-core laminations are made of :

(A) Silicon steel (B) Wrought iron

(C) Cast iron (D) Cast steel

68. Skewing of rotor slots helps in :

(A) Improving heat transfer

(B) Reducing noise

(C) Suppressing undesirable harmonics

(D) All of the above

69. The colour of sodium lamp is :

(A) Blue (B) Yellow (C) Red (D) White

70. Electric potential is a :

(A) Scalar quantity (B) Vector quantity

(C) Dimensionless (D) Nothing can be said

71. Fleming's left hand rule is applicable to :

(A) Transformer (B) d.c. generator (C) Alternator (D) d.c. motor

72. Application of Nortion's theorem to a circuit yields :

(A) Equivalent current source

(B) Equivalent current source and impedance in series

(C) Equivalent impedance

(D) Equivalent current source and impedance in parallel

73. As the voltage of transmission increases, the volume of conductor :

(A) Increases (B) Does not change

(C) Decreases (D) Increases proportionately

74. A material commonly used for shielding or screening magnetism is :

(A) Brass (B) Copper (C) Soft iron (D) Aluminium

75. Which of the following devices cannot convey from d.c. to a.c. ?

(A) Mercury arc rectifier (B) Motor convertor

(C) Motor generator (D) All of the above

76. Heat from the filament of a lamp is transmitted to the surrounding mainly through :
(A) Conduction (B) Convection
(C) Radiation (D) None of the above

77. The form factor for half wave rectified sine wave is :
(A) 1.0 (B) 1.11 (C) 1.44 (D) 1.57

78. The frequency of e.m.f generated by a generator depends upon its :
(A) Speed (B) No. of poles
(C) Machine rating (D) Both (A) and (B)

79. Cylindrical winding on transformers is generally used beyond :
(A) 6 KV (B) 30 KV (C) 66 KV (D) 132 KV

80. The superposition theorem is used when the circuit contains :
(A) A single voltage source (B) A no. of voltage sources
(C) Passive elements only (D) None of the above

81. The time required for 1 KW electric heater to raise the temperature of 10 litres of water through 10°C is :
(A) 210 sec (B) 420 sec (C) 42 sec (D) 840 sec

82. The most convenient way of achieving large capacitance is by using :
(A) multiplate construction (B) decreased distance between plates
(C) air as dielectric (D) dielectric of low permittivity

83. The source of magnetic filed is :
(A) An isolated magnetic pole (B) Current loop
(C) Magnetic substances (D) Static electric charge

84. Which of the following is a dry storage cell ?
(A) Edison cell (B) Nickel cadmium cell
(C) Mercury cell (D) Carbon zinc cell

85. Q factor of a coil is :
(A) X_C/R (B) X_L/L (C) X_L/R (D) X_C/L

86. For both series as well as parallel circuits, which statement is **true** ?
(A) Voltage drops are additive (B) Powers are additive
(C) Resistances are additive (D) Currents are additive

87. Dynamometer type instruments can be used for :
(A) a.c. only (B) d.c. only
(C) a.c. and d.c. (D) None of the above

88. The actuating quantity for the relays can be :
(A) Magnitude (B) Phase angle
(C) Frequency (D) Any of the above

89. The unit of relative permeability is :
(A) Henry (B) Henry/m
(C) Henry/sq.m (D) Dimensionless

90. Which of the following is a ferromagnetic material ?
(A) Nickel (B) Copper (C) Aluminium (D) Tungsten

91. The back e.m.f of a d.c. motor depends on :
(A) Field flux (B) Shape of conductors
(C) Type of slip rings (D) Brush material

92. EMF of cell depends on :
(A) External resistance (B) internal resistance
(C) Electrolyte (D) area of plates inside electrolyte

93. In two phase system, the phase will differ by an angle of :
(A) 90° (B) 180° (C) 360° (D) 45°

94. Thermocouple work on which of the following effects ?
(A) Thomson effect (B) Seebeck effect
(C) Peltier effect (D) Joule effect

95. For parallel operation, the generators normally preferred are :
(A) Series generators (B) Shunt generators
(C) Compound generators (D) Shunt and Series generators

96. For wave winding, the average pitch must be :

(A) Odd (B) Even (C) Odd or Even (D) Fractional

97. Energy stored in magnetic field is :

(A) $E = \frac{1}{2} MV^2$ (B) $E = \frac{1}{2} LI^2$ (C) $M = \frac{1}{2} EV^2$ (D) $E = \frac{1}{4} MI^2$

98. The starting resistor is connected in :

(A) series with the field winding (B) parallel across the field winding

(C) parallel across the armature (D) series with the armature

99. The drive motor used in a mixer grinder is a :

(A) d.c. motor (B) Induction motor

(C) Synchronous motor (D) Universal motor

100. The period of $\frac{1}{50}$ second corresponds to a frequency of :

(A) 2 Hz (B) 0.2 Hz

(C) 50 Hz (D) None of the above

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