Basic Electrical Engineering MCQs

UNIT 1-6

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UNIT I
ELECTROMAGNETISM

1. The complete path followed by the magnetic flux is called
a. electric circuit
b. magnetic circuit
c. electromagnetism
d. electric field
ans: b

2. Current carrying conductor is always surrounded by
a. magnetic field
b. electric field
c. Electricity
d. current
ans: a

3. The direction of magnetic field produced by current carrying conductor is given by
a. Lenz's law
b. right hand thumb rule
c. Fleming's left hand rule
d. Kirchoff's law
ans: b

4. Imaginary lines of force originating from magnet is called
a. current
b. resistance
c. flux
d. magnetic field
ans: c

5. Region surrounded by magnet is called
a. magnetic field strength
b. magnetic field
c. electric field
d. resistance
ans: b

6. Lines of force is also called
a. flux
b. current
c. resistance
d. flux density
ans:a

7. Lines of force passing per unit area is called
a. magnetic field
b. magnetic flux
c. magnetic flux density
d. magnetic field strength
ans:c

8. unit of flux is
a. weber
b. wb/m^2
c. Tesla
d. AT
ans:a

9. Unit of flux density is
a. wb/m^2
b. wb
c. AT/wb
d. A
ans:a

10. Unit of magnetic field
a. wb/m^2
b. wb
c. AT/wb
d. none of above
ans:b

11. Unit of reluctance is
a. AT/wb
b. AT

c. Tesla
d. Wb/A
ans:a

12. Opposition to the magnetic lines of force is called
a. Flux
b. resistance
c. susceptance
d. reluctance
ans:d

13. Unit of magnetic field strength is
a. AT/m
b. AT/wb
c.Tesla
d. ohms
ans: a

14. The force on two current carrying conductors in the same direction
a. have force of repulsion between them
b. have force of attraction between them
c. remains unaffected
d. none of above
ans: b

15. Magneto motive force is directly proportional to
a. no. of turns of coil
b. current through the coil
c. both a and b
d. none of above
ans: c

16. The term permeability for a material means
a. the no. of turns on an air core
b. the mmf required to produce one unit of magnetic flux
c. the ability of a material to conduct electricity through it
d. the ability of material to conduct magnetic lines of force
ans: d

17. An air gap is usually inserted in a magnetic circuit
a. to prevent saturation
b. increase flux
c. decrease flux
d. increase mmf
ans: a

18. A magnetic circuit requires 800 ampere turns to produce a certain amount of flux. If exciting coil of 100 turns has 5 ohms resistance, then the voltage to be applied to the exciting coil must be
a. 40V
b. 20 V
c.10V
d. 5V
ans: a

19. Permeability of a material is the ratio of
a. magnetic field to flux density
b. flux density to magnetic field strength
c. magnetic field strength to flux density
d. none of above
ans: b

20. The term saturation related to magnetic circuit means
a. magnetic field strength increases with current
b. flux density increases with current
c. flux density remains constant if magnetic field strength is increased
d. magnetic field strength remains constant if flux density is increased.
ans:c

21. The lines of force produced by coil completing their path through air, instead of intended path is called
a. useful flux
b. saturated flux
c. air flux
d. leakage flux
ans: d

22. The bulging of lines of force in air gap in a magnetic circuit is called
a. leaking flux
b. merging
c. fringing
d. scattering
ans: c

23. Relative permeability of vacuum is
a. $4\pi \times 10^{-7}$ H/m
b. 1 H/m
c.1
d. ¼ H/m
ans: c

24.MMF in magnetic circuit is analogous to
a. electric current in electric circuit
b. current density in conductor
c. electromotive force
d. resistance in electric circuit
ans:c

25. Reluctance is analogous to
a. emf in electric circuit
b. resistivity
c. conductivity
d. resistance in electric circuit
ans: d

26. The magnetic reluctance of a material
a. increases with increasing cross sectional area of material
b. does not vary with increasing the cross sectional area
c. decreases with increasing cross sectional area of material
d. decreases with increasing the length of material
ans: c

27. The correct relation stated as following is
a. $\phi = \frac{N}{l/a\mu 0\mu r}$
b. NI = B× l/a $\mu_0\mu_r$
c. N=H×l
d. NI = ϕ × l/$\mu_0\mu_r$ a
ans: d

28. The permeance in a magnetic circuit corresponds to
a. resistance in an electric circuit
b. emf in an electric circuit
c. conductivity in electric circuit
d. conductance in an electric circuit
ans: d

29. The ampere turns are
a. the product of the number of turns and current of the coil
b. the number of turns of a coil through which current is flowing
c. the currents of all turns of the coil
d. the turns of transformer winding
ans:a

30. What will be the current flowing through the ring shaped air core when number of turns is 800 and ampere turns are 3200
a. 0.25
b.2.5
c.4.0
d. 0.4
ans:c

31. Leakage factor is defined as the ratio of
a. flux in air gap by total flux
b. Total flux by useful flux
c. airgp flux by useful flux
d. total flux by flux produced by solenoid
ans: b

32. Effect of fringing in magnetic circuit is
a. it increases flux density
b. its effective area of air gap decreases
c. it decreases flux density
d. none of above
ans:c

33.The force experienced by unit north pole when placed at point in a magnetic field is called
a. magnetic field strength at that point
b. exerted force at that point
c.flux
d. magnetic field
ans:a

34. The mechanical force acting on current carrying on conductor when placed in magnetic field is given by relation
a. F= N dϕ/dt
b. F= Blv sinΘ
c. F= BIL sinΘ
d. F=L di/dt
ans: c

35. Which of the following has the highest magnetic permeability?
a. paramagnetic substances
b. diamagnetic substances
c. ferromagnetic substances
d. vacuum
ans: c

36. The perfect insulator for magnetic lines of force is
a. copper
b. rubber
c. glass
d. none of these
ans: d

37. The force between two parallel current carrying conductors is given by relation
a. $I_1I_2 \times 2\times 10^{-7}\times l/d$
b. $I_1 dl /I_2 \times 4\pi\times 10^{-7}$
c. $I_1I_2/2\pi\times 10^{-7}$
d. $I_1^2\times 4\times 10^{-7} ld$
ans: a

39. The magnitude of force experienced by current carrying conductor placed in magnetic field depends on
a. value of flux
b. magnitude of current flowing through conductor
c. direction of current
d. all of above
ans: d

40.Two current carrying conductor lying parallel and close to each other. They are carrying current in the opposite direction. The force between them is
a. repulsive
b. Attractive
c. Zero
d. none of these
ans: a

41. Two current carrying conductor lying parallel and close to each other. They are carrying current in the same direction. The force between them is
a. repulsive
b. Attractive
c. Zero
d. none of these

ans: b

42. Two current carrying conductor lying parallel and close to each other are exerting force of attraction on each other. The currents are
a. very high
b. in opposite direction
c. low
d. in the same direction
ans: d

43. Two current carrying conductor lying parallel and close to each other are exerting force of repulsion on each other. The currents are
a. very high2
b. in opposite direction
c. low
d. in the same direction
ans: b

44. Two conductors are carrying 1000A and 5000A currents respectively are 5cm apart. The force per meter length between two conductors is
a. 100 N/m
b. 40 N/m
c.30 N/m
d. 20 N/m
ans: d

45. Magnetic field strength due to N long straight current carrying conductors in the same direction is given by
a. H= NI/ 4πd
b. H= I/ 2πd
c. H= NI/ 2πd
d. H=NI/l
ans: c

46. A conductor of 10cm length carrying a current of 5A placed in uniform magnetic field of flux density 1.25T at 30^0 to the lines of flux. Force acting on conductor will be
a.0.3125N
b. 3.125N
c.1.325N
d. 5.321N
ans: a

47.Fleming's left hand rule is used to find
a. Magnitude of induced emf in conductor
b. Direction of magnetic field in conductor
c. Direction of force on current carrying conductor
d. Magnitude of flux density
ans: c

48. Which statement is correct related to magnetic field produced due to current carrying conductor
a. direction of rotation of screw to advance in the direction of current gives the direction of magnetic field
b. If right hand curled fingers shows the direction of current, thumb gives the direction of magnetic field
c. if direction of rotation of screw shows current ,tip gives the direction of magnetic field
d. all of these
ans: a

49. Force experienced by current carrying conductor when placed in magnetic field will be zero when
a. current in the conductor is maximum
b. Angle between conductor and field is zero
c. Both a &b
d. None of these
ans: b

50. Relative permeability is defined as the ratio of

a. magnetic field strength in a medium to flux density in the same medium
b. Magnetic flux density in vacuum to magnetic field strength in vacuum
c. Magnetic flux density in other medium to flux density in vacuum
d. Magnetic flux density in vacuum to flux density in other medium
ans: c

51. The ability with which the magnetic material allows the flux to pass through a given medium is called
a. susceptibility
b. permeability
c. conductivity
d. reluctivity
ans: b

52. Unit of permeability is
a. A/m
b. H/m
c. I/m
d. m/H
ans: b

53. Permeability of free space or vacuum is defined as the ratio of
a. magnetic flux density in vacuum to magnetic field strength
b. Magnetic flux density in other medium to magnetic field strength
c. Magnetic field strength to magnetic flux density in vacuum
d. Magnetic field strength in medium to flux density in other medium
ans: a

54. Right hand thumb rule is used to find out
a. direction of induced emf
b. direction of magnetic field due to current carrying conductor
c. magnitude of force experienced
d. direction of force
ans: a

55. In left hand rule, thumb always represents
a. current
b. voltage
c. magnetic field
d. direction of force on conductor
ans: d

56. The force between two long current carrying conductor is inversely proportional to
a. current in one conductor
b. product of current in two conductors
c. distance between the two conductors.
d. radius of conductors
ans: c

57. While comparing magnetic and electric circuit, the point of dissimilarity exists while considering
a.mmf and emf
b. Reluctance and resistance
c. flux and current
d. permeance and conductance
ans: c

59. Permeance is to reluctance as conductance is to
a. inductance
b. resistance
c. capacitance
d. ampere turns
ans: b

60. A straight cylindrical solenoid has a flux of 12mwb and a flux density of 0.9T. The diameter of solenoid must be
a.130cm
b. 13cm
c.10cm

d.5cm
ans : b

61. 1 tesla is given as
a. 1wb/m^2
b. 1wb/cm^2
c.1mwb/cm^2
d. 1wb/mm^2
ans: a

62. Which part of the magnetic path requires largest mmf
a.coil
b.core
c.airgap
d. inductance
ans: c

63. Soft steel and iron alloy allow easy passage of a magnetic flux because
a. of its high elasticity
b. of its high permeability
c. of its high conductivity
d. of its high reluctance
ans: b

64. Magnitude of the magnetic field produced by a coil is proportional to
a. Permeability of the core material
b. the no. of turns of coil
c. the magnitude of current flow through the coil
d. the product of all above
ans:d

Following data should be used for solving 65 to 67
A coil is wound uniformly with 300 turns over steel ring of relative permeability 900, having mean circumference of 40mm and cross sectional area of 50mm^2. A current of 25A is passed through coil

65. the mmf of ring is_____
a.5000AT
b. 7200AT
c.750AT
d. 7500AT
ans:d

66. The reluctance of ring is_____
a.7×10^7 AT/Wb
b. 0.7×10^6 AT/Wb
c.6×10^7 AT/Wb
d. 6×10^5 AT/Wb
ans: b

67.The value of flux is _____
a.10.7 Wb
b.70 mWb
c.10.7mWb
d. 107 mwb
ans: c

68. The relative permeability of air is_____
a. 1
b. less than 1
c. greater than 1
d. 1000
ans: a

69. Relative permeability of all non magnetic materials is_____
a. 300
b. 0.7
c.1
d. 0
ans: c

70. Which of the following is non magnetic material?
a. iron
b. Mild steel
c. brass

d. Silicon steel
ans: c

71. Which of the following is magnetic material?
a. copper
b. silicon steel
c. aluminium
d. brass
ans: b

72. Flux in the air gap is called
a. leakage flux
b. total flux
c. useful flux
d. all of above
ans: c

73. A magnetic circuit has a mmf of 400AT and a reluctance of 2×10^5 AT/wb. The magnetic flux in the magnetic circuit is
a. 3×10^{-5}Wb
b.2×10^{-3}Wb
c.1.5×10^{-2}Wb
d. 2.5×10^{-4}Wb
ans: b

74. A 2cm long coil has 10 turns and carries a current of 750mA. The magnetizing force of the coil is
a. 225 AT/m
b. 675 AT/m
c.450 AT/m
d. 375 AT/m
ans: d

75. The reluctance of a magnetic circuit varies with
a. length × area
b. length / area
c. area/length
d. $(length)^2$ + area
ans: b

76. A strength of an electromagnet is determined by
a. reluctance
b. permeability of the core
c.mmf
d. all of above
ans: d

77. The strength of the magnetic field around a conductor is directly proportional to
a. voltage across the conductor
b. current in the conductor
c. type of material of conductor
d. none of above
ans: b

78. Reluctance of magnetic material is
a. less than non magnetic material
b. more than non magnetic material
c. equal to that of non magnetic material
d. none of above
ans: a

79. The denser the flux
a. stronger is the magnetic field
b. weaker is the magnetic flux
c. no effect on the strength of field
d. none of above
ans: a

80. The direction of induced e.m.f. is given by
a. Flemings right hand rule
b. Flemings left hand rule
c. faradays law of electromagnetic induction
d. crock screw rule.
ans:a

81. Magnitude of induced e.m.f. in a generator depend on
a. flux density
b. magnitude of current

c. rate of cutting flux
d. Rate of current discharge.
ans:c

82. According to Lenz's law direction of induced e.m.f. is.
a. Same as cause produced
b. Perpendicular to cause produced
c. opposite to cause produced
d. Non above
ans:c

83. According to Faraday's Laws of electromagnetic induction, an e.m.f.is induced in a conductor whenever it
a. Lies in magnetic field
b. Cuts magnetic flux
c. moves parallel to the direction of the magnetic field
d. lies perpendicular to the magnetic flux.
ans:b

84. When a magnet moves past an object, it will produce eddy currents in the object if the object is
a. a solid
b. an insulator
c. a conductor
d. made from the magnetic material
ans:d

85. Electricity can be generated by rotating a wire loop between the poles of a magnet. In which of the following positions would induce the greatest current in the loop?
a. The plane of the loop is parallel to the magnetic field.
b. The plane of the loop is perpendicular to the magnetic field.
c. The plane of the loop makes an angle of 45° with the magnetic field.
d. The induced current is the same in all positions
ans:b

86. In which of the following situations a voltage is induced in a conductor?
a. The conductor moves through the air.
b. The conductor is connected to a battery.
c. The conductor is connected to a motor.
d. The conductor is moved in a magnetic field.
ans:d

89. In case of dynamically induced emf, direction of induced emf is given by
a. Fleming's right hand rule
b. Lenz's law
c. Faraday's first law
d. Faraday's second law
ans:a

90. Emf induced in a coil due to its own current is called _____Induction.
a. Mutual
b.Self
c. Dynamic
d. Static
ans:b

91. Emf induced in a coil due to current change in neighboring coil is called_____ induction.
a. Mutual
b. Self
c. Dynamic
d. Static
ans:a

92. Co-efficient of self induction is also called as_____
a. self- induction
b. Inductance
c. Self- inductance

d. Induction
ans:a

93. The property of a coil due to which it opposes the change of current flowing through itself is called_____ of the coil.
a. Static inductance
b. Dynamic inductance
c.Self inductance
d. Mutual inductance
ans:c

94. _____is used to sense the flow of current in a electric circuit.
a. Ammeter
b. Voltmeter
c. Wattmeter
d. Galvanometer
ans:a

95. The phenomenon of the self induction is felt only when the current in the coil is
a. Changing
b. Increasing
c. Decreasing
d. All the above
ans:a

96. The negative sign in the induced emf of self induction indicates that energy is being absorbed from the electric circuit and stored as _____ energy in the coil.
a. mechanical
b. Electronic
c. electric
d. Magnetic
ans:d

97. Unit of co-efficient of self induction of the circuit is_____
a. Volt
b. Ampere
c. Henry
d. Linkages
ans:c

98. Unit of induced emf is_____
a. Volt
b. Ampere
c. Henry
d. Linkages
ans:a

99. The property of one coil due to which it opposes the change in the other coil is called……. between two coils.
a. Dynamic inductance
b. Static inductance
c. Self inductance
d. Mutual inductance
ans:d

100. The unit of mutual inductance is_____
a. Volt
b. Ampere/ Volt
c. Henry
d. Linkages
ans:c

101. In the expression $e = \frac{Mdi_1}{dt}$, M represents
a. Mutual induction
b. Mutual inductance
c. Number of lines of force
d. None of these
ans:b

102. If 0.75 V is induced emf and resistance offered by the coil is 200 ohm then induced current is
a. 3.75 A
b. 3. 75 mA
c. 3.75μA

d. 37.5 mA
ans:b

103. If magnetic flux changes from 0.8 Wb to 0.3 Wb, then change in flux is_____ Wb.
a. 1.1
b. 0.5
c. -0.5
d. -1.1
ans:c

104. If Number of turns of coil is 200 and if the current is 100mA, then MMF is _____
a. 2000 AT
b. 200 AT
c. 20 AT
d. 0.5 AT
ans:c

105. Leakage factor is also called as
a. Fringing
b. Coefficient of inductance
c. Magnetic coefficient
d. Hopkinson's coefficient
ans:d

106. Movement of electrons are called as
a. MMF
b. Current
c. Voltage
d. Flux
ans:b

107. Flux density is equal to _____ of flux and area of cross – section.
a. Sum
b. Difference
c. Product
d. Fraction
ans:d

108. NI expression is called
a. MMF
b. EMF
c. Flux linkage
d. Magnetic intensity
ans:a

109. Expression NI/L is called
a. MMF
b. EMF
c. Flux linkage
d. Magnetic field strength
ans:d

110. Expression for mutual inductance is
a. –L dI/dt
b. MdI / dt
c. $N_2 \Phi_2 / I_1$
d. NΦ/I
ans:c

111. Faraday's law of electromagnetic induction is e=
a. –NdΦ/dt
b. MdI / dt
c. $N_2 \Phi_2 / I_1$
d. NΦ/I
ans:a

112. The constant K in case of mutual induction is equal to
a.Φ_1/Φ_2
b.Φ_2/Φ_1
c.Φ_1/I_1
d.Φ_2/I_1
ans:d

113. Product of the permeability $\mu_o\mu_r$ is equal to
a. Magnetic flux
b. Magnetic field
c. Magnetic intensity
d. Magnetic flux density / magnetic field strength

ans:d

114. Expression for self induced emf is
a. –L dI/dt
b. MdI1 / dt
c. N2 Φ2/ I1
d. NΦ/I
ans:d

115. _____is normally termed as flux linkages.
a. Φ
b. dΦ/dt
c. NΦ
d.Φ/I
ans:c

116. The term NΦ/I is generally called as_____
a. Self inductance
b. Mutual inductance
c. Flux linkage
d. Induced emf
ans:a

117. In the expression for reluctance S = *l*/μA of a conduced, letter A represents_____ of the conductor.
a. Total area
b. Surface area
c. Cross- sectional area
d. None of these.
ans:c

118. When a current carrying conductor is brought in to magnetic field, the force that moves the conductor depends on
a. direction of current.
b. length of conductor
c. value of current
d.all of the above
ans:d

119. Two current carrying conductors lying parallel to each other are exerting a force of attraction on each other. The currents are
a. Very high
b. in opposite direction
c. low
d. in the same direction
ans:d

120. Two conductors are lying parallel and close to each other. They are carrying currents in opposite directions. The force between them is.
a. Repulsive
b. attractive
c. zero
d. none of these
ans:a

121. When a coil consisting of single turn rotates at uniform speed in magnetic field, the induced emf is____
a. steady
b. alternating
c. changing
d. reversing
ans:b

122. The emf induced in a conductor of length 1 meter moving at a right angles to a uniform magnetic field of flux density 1.5 wb/m^2 with velocity of 50 m/s is.
a. 0
b.1.5 v
c. 75 v
d. 100 v
ans:c

123. Which of following statements is incorrect.
a. Whenever flux linking with the coil or circuit changes, an emf is induced.
b. The direction of dynamically induced emf can be determined by Fleming's right-hand rule.

c. the coefficient of self-inductance is proportional to the square of number of turns on it.
d. Coefficient of coupling for tightly coupled coil is zero.

ans: d

Unit II

Part (a) ELECTROSTATICS

1. A dielectric material must be_____
a. resistor
b. Insulator
c. Conductor
d. Semiconductor
ans:b

2. The energy stored in capacitance is given by_____
a. C^2V
b. $CV^2/2$
c. $C^2V/2$
d. CV
ans:b

3. Electrolytic capacitors can be used for_____
a. a.c. only
b. d.c. only
c. both a.c. and d.c.
d. 50 Hz a.c.
ans:b

4. If two 10 µF capacitors are connected in parallel, then the effective capacitance will be_____
a.2.5 µF
b.40 µF
c.0.4 µF
d.20 µF
ans:d

5. If a number of capacitors are connected in series then the total capacitance of combination is_____
a. greater than the capacitance of largest capacitor
b. greater than the capacitance of any capacitor
c. smaller than the capacitance of smallest capacitor
d. average of the capacitance of all capacitor
ans:c

6.The total capacitance of five capacitor each of 10 µF in series is_____
a.10 µF
b.2 µF
c.25 µF
d. none of these
ans:b

7. Two capacitors of capacitance C_1=0.1 µF and C_2=0.2 µF are connected in series across 300V source. The voltages across C1 will be_____
a. 100 V
b. 200 V
c. 150 V
d. 300 V
ans:b

8. A capacitor stores 0.4C charge at 2 V. Its capacitance is_____
a. 0.4 F
b. 0.2 F
c. 3.2 F
d. 0.8 F
ans:b

9. A20mF capacitor is in series with a 150 ohm resistor. The combination is placed across a 40V dc source. Time constant of the circuit is_____
a. 8 s
b. 3 s
c. 6 s

d. 2.4s
ans: b

10. Three capacitors of values 3 µF, 6 µF, and 12 µF are connected in parallel across an a.c. source. The maximum current pass through _____
a.3 µF
b.6 µF
c.12 µF
d. all the capacitors
ans:c

11.As per Coulomb's law_____
a. $F= Q_1Q_2 / \varepsilon_o\varepsilon_r d^2$
b. $F= Q_1Q_2 / 4\pi d^2$
c. $F= Q_1Q_2 / 4\pi \varepsilon_o\varepsilon_r d^2$
d. $F= Q_1Q_2 /4\pi \varepsilon_o\varepsilon_r d$
ans: c

12. Electric field intensity at any point in an electric field is equal to_____
a. potential gradient
b. $(\text{potential gradient})^2$
c. $(\text{potential gradient})^{1/2}$
d. $(\text{potential gradient})^{1/3}$
ans: a

13. The lines of forces due to isolated charged particle are_____
a. always straight
b. always curved
c. sometimes curved
d. none of the above
ans: a

14. The direction of electric field due to positive charge is___
a. away from the charge
b. towards the charge
c. both (a) and (b)
d. none of the above
ans: a

15. The unit of capacitance is
a. Volts/Coulomb
b. Coulomb/Volt
c. Ohms
d. Henry/Wb
ans: b

16. There is repulsive force between two charged objects when
a. Charges of unlike sign
b. they have the same number of protons
c. charges are of same sign
d. they have the same number of protons
ans: c

17. The capacitance of a capacitor is not affected by
a. distance between plates
b. area of plates
c. thickness of plates
d. all of the above
ans: c

18. When there is an equal amount of positive and negative charges on an object the object is
a. Positively charged
b. negatively charged
c. neutral
d. supercharged
ans:c

19. Which of the following statements is correct?
a. Air capacitors have a black band to indicate the outside foil
b. Electrolytic capacitor must be connected in the correct polarity
c. Ceramic capacitors must be connected in the correct polarity

d. Mica capacitors are available in capacitance value of 1 to 10 μF
ans: b

20. Three capacitors each of the capacity C are given. The resultant capacity 2/3 C can be obtained by using them
a. all in series
b. all in parallel
c. two in parallel and third in series with this combination
d. two in series and third in parallel across this combination.
ans:c

21. For which of the following parameter variation, the capacitance of the capacitor remains unaffected?
a. Distance between plates
b. Area of the plates
c. Nature of dielectric
d. Thickness of the plates
ans: d

22. Which of the following expression is correct for electric field strength?
a. $E = D/\epsilon$
b. $E = D^2/\epsilon$
c. $E = \pi D$
d. $E = \pi D^2$
ans: a

23. Which of the following statement is true?
a. The current in the discharging capacitor grows linearly
b. The current in the discharging capacitor grows exponentially
c. The current in the discharging capacitor decays exponentially
d. The current in the discharging capacitor decreases constantly
ans:c

24. In a capacitor the electric charge is deposited on
a. metal plates
b. dielectric
c. both (a) and (b)
d. none of the above
ans:a

25. Which of the following materials has the highest value of dielectric constant?
a. Glass
b. Vaccum
c. Ceramics
d. Oil
ans: c

26. Capacitance of air capacitor increases with
a. increase in plate area and decrease in distance between the plates
b. increase in plate area and distance between the plates
c. decrease in plate area and value of applied voltage
d. reduction in plate area and distance between the plates
ans: a

27. A capacitor consists of
a. two insulators separated by a conductor
b. two conductor separated by a dielectric
c. two insulators only
d. two conductors only
ans:b

28. A paper capacitor is usually available in the form of
a. tubes
b. rolled foil
c. disc
d. meshed plates
ans:b

29. Air capacitors are generally available in the range
a. 10 to 400 pF
b. 1 to 20 pF
c. 100 to 900 pF
d. 20 to 100 pF
ans:a

30. The unit of capacitance is
a. Henry
b. Ohm
c. Farad
d. Farad/m
ans:c

31. A capacitor charged to 200V has 2000 μC of charge. The value of capacitance will be
a. 10 F
b. 10 μF
c. 100 μF
d. 1000 μF
ans:b

32. Voltage across capacitor at any time't' during charging from a D.C. source of voltage V is given by
a. $v = Ve^{-t/\lambda}$
b. $v = V(1-e^{-t/\lambda})$
c. $v = V^2e^{-t/\lambda}$
d. $v = V^2(1-e^{-t/\lambda})$
ans:b

33. The ratio of electric flux density to electric field intensity is called ……. of the medium
a. permeability
b. permittivity
c. reluctance
d. capacitance
ans:b

34. Energy stored in the electrical field of a capacitor C when charged from a D.C, source of voltage V is equal to …….. Joule
a. ½ CV^2
b. ½ C^2V
c. CV^2
d. C^2V
ans:a

35. The absolute permittivity of free space is given by
a. 8.854×10^{-9} F/m
b. 8.854×10^{-10} F/m
c. 8.854×10^{-11} F/m
d. 8.854×10^{-12} F/m
ans:d

36. The relative permittivity of free space is given by
a. 1
b. 10
c. 100
d. 1000
ans:a

37. When 4 Volt e.m.f. is applied across a 1 Farad capacitor, it will store energy of
a. 2 Joule
b. 4 Joule
c. 6 Joule
d. 8 Joule
ans:d

38. The capacitor preferred for high frequency circuits is
a. air capacitor
b. mica capacitor
c. electrolytic capacitor
d. paper capacitor
ans:b

39. If a 6μF capacitor is charged to 200 V the charge in Coulomb will be_____
a. 800 μC
b. 900 μC
c. 1200 μC
d. 1600 μC
ans:c

40. Which of the following capacitors is marked for polarity_____?
a. air
b. paper
c. mica
d. electrolyte
ans: d

41. Which of the following capacitor are usually used for radio frequency tuning_____
a. air
b. paper
c. mica
d. electrolyte
ans: b

42. The time constant of an R-C circuit is defined as the time during which capacitor charging voltage actually rises to ---------- percent of its ---------- value
a.37, initial
b.63.2, initial
c.63.2, final
d.37, final
ans: c

43. The time constant of an R-C circuit is defined as the time during which capacitor charging current actually falls to ---------- percent of its initial maximum value
a.37
b.63
c.42
d.73
ans: a

44. Permittivity is expressed in_____
a. Farad/sq-m
b. weber/metre
c. Farad/meter
d. weber/ square metre
ans:c

45. Dielectric strength of a material depends on_____
a. moisture content
b. temperature
c. thickness
d. all of the above
ans: d

46. 1 Volt /metre is same as
a. 1 metre/coulomb
b. 1 Newton metre
c. 1 Newton /Coulomb
d. 1 Joule /Coulomb
ans: c

47. The relative permittivity of air is_____
a.0
b.1.0006
c. 8.854×10^{-12}
d. none of the above
ans:b

48. The relative permittivity of a material is 10. Its absolute permittivity will be
a. $8.854 \times 10^{-11} F/M$
b. $9 \times 10^{8} F/M$
c. $5 \times 10^{-5} F/M$
d. $9 \times 10^{5} F/M$
ans: a

49. The capacitance of a capacitor is …… relative permittivity

a. directly proportional to
b. inversely proportional to
c. independent of
d. directly proportional to square of
ans: a

50. An air capacitor has the same dimensions that of a mica capacitor. If the capacitance of mica capacitor is 6 times that of air capacitor, then relative permittivity of mica is
a. 36
b. 12
c. 3
d. 6
ans: d

51. 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
ans: a

52. Two capacitors of capacitance C_1 and C_2 are connected in parallel. A charge Q given to them is shared. The ratio of charges Q_1/Q_2 is
a. C_2/ C_1
b. C_1/ C_2
c. $C_1 C_2$
d. $1/ C_1 C_2$
ans: b

53. Two capacitors have capacitance 25 µF when in parallel and 6 µF when in series. Their individual capacitances are
a. 12 µF and 13 µF
b. 15 µF and 10 µF
c. 10 µF and 8 µF
d. none of the above
ans:b

54. If the dielectric of a capacitor is replaced by a conducting material the
a. capacitor will get heated up owing to eddy currents
b. plates will get short-circuited
c. capacitor can store infinite charge
d. capacitance will become very high
ans:b

55. The total capacitance of two condensers is .03µF when joined in series and 0.16µF when connected in parallel. The products of two capacitance will be_____
a.5.33
b.2
c.3
d.0.48
ans:d

56. Joule / Coulomb is the unit of
a. Electric field potential
b. Potential
c. charge
d. none of the above.
ans:b

57 .A 10µF capacitor in series with an 1 M Ohm resistor is connected across a100 V d. c. supply. Determine the time constant of the circuit
a. 10 sec.
b. 0.1 sec
c. 10mSec
d. 100 Sec
ans:a

58. A 10µF capacitor in series with an 1 M Ohm resistor is connected across a100 V d. c. supply. Determine the initial value of charging current.
a. 1mA
b. 0.1 mA
c. 0.01mA
d. 1.00A

ans:b

59. A 10µF capacitor in series with an 1 M Ohm resistor is connected across a100 V d. c. supply. Determine the initial rate of rise of voltage across the capacitor.
a. 0.1V/s
b. 10V/s
c. 0.01V/s
d. 1V/s
ans:b

60. A 10µF capacitor in series with an 1 M Ohm resistor is connected across a100 V d. c. supply. Determine the capacitor voltage after a time equal to the time constant.
a.36V
b.36.6V
c.63.2V
d.63 V
ans:c

61. A 10µF capacitor in series with an 1 M Ohm resistor is connected across a100 V d. c. supply. Determine the voltage across the capacitor 3sec. after switch on.
a.25.92V
b.259.2V
c.2.592V
d.25V
ans:a

62. A fully charged capacitor of 10µF has a potential difference of 100V across its terminals. It is discharged through 1 KΩ resistor. Find Initial discharging current.
a.1A
b.10A
c.0.01A
d.0.1A
ans:d

63. A fully charged capacitor of 10µF has a potential difference of 100V across its terminals. It is discharged through 1 K Ohm resistor. Find discharging current at 2m Sec.
a. - 0.0818A
b. - 0.01A
c. - 0.00818A
d. - 1A
ans:a

64. A fully charged capacitor of 10µF has a potential difference of 100V across its terminals. It is discharged through 1 K Ohm resistor. Find initial rate of fall in voltage across capacitor.
a. 10^4 V/s
b. -10^4 V/s
c. -1^4 V/s
d. 10A
ans:b

65. A fully charged capacitor of 10µF has a potential difference of 100V across its terminals. It is discharged through 1 K Ohm resistor. Find time constant of the circuit.
a. 0.1sec
b. 1sec
c. 0.01sec
d. 0.001sec
ans:c

66. A capacitor consists of two similar plates each 10cm x 10cm mounted parallel and opposite to each other. What is the value of capacitance when distance between them is 1cm and dielectric used is air.
a. 8.854 pF
b. 8.854 µF
c. 8.854 mF
d. 8.854 F
ans: a

67. The capacitance of capacitor formed by two parallel plates each 200 cm^2 in area separated by dielectric of 4mm thick is 0.0004μF. If voltage of 20000 V is applied then the total charge on the plate is
a. 8μC
b. 8mC
c. 8nC
d. 8pC
ans: a

68. A parallel plate capacitor has plate area of $2m^2$ spaced by three slabs of dielectric materials. The relative permittivity's are 2,3 and 6 respectively and thickness are 0.4mm, 0.6mm and 0.12 mm respectively. Find the combined capacitance.
a. 0.000295 x 10-6 F
b. 0.00295 x 10-6 F
c. 0.0295 x 10-6 F
d. 0. 295 x 10-6 F
ans: b

69. What is the unit of charge?
a. Volt-Amp
b. Henery
c. Farad
d. Coulomb
ans: d

70. What will be the capacitance of four capacitors of equal capacitance 'C' when connected in parallel
a. 4C
b. C/4
c. 3C/4
d. C
ans: a

71. A region around a stationary electric charge has
a. magnetic field
b. electric field
c. magnetic field and electric field
d. neither magnetic field nor electric field
ans: b

72. One Farad is the same as
a. One Coulomb/Volt
b. One Joule/Coulomb
c. One Joule/Volt
d. One Coulomb /Joule
ans: a

73 . If Q be the charge and C be the capacitance then the energy stored in the capacitor is
a. 1/2QC
b. 1/QC
c. $Q^2/2C$
d. Q/2C
ans: c

74.What capacitance must be placed in series with a 15μF capacitor to give a total capacitance of 5μF
a. 4μF
b. 7.5μF
c. 10μF
d. 25μF
ans: b

75. One Coulomb charge equals the charge on
a. 6.42×10^{18} electrons
b. 6.24×10^{18} atoms
c 6.24×10^{12}electrons
d. none of these
ans: a

76. The capacitance of parallel plate capacitor is given as
a. $C = \epsilon_0 A / d$
b. $C = \epsilon_0 d / A$

c. $C = \frac{\epsilon_o \epsilon_r A}{d}$

d. $C = \epsilon_r A / d$

ans: c

77. Two capacitors of 2 μF and 4 μF are connected in parallel across 100 V D.C. supply. Determine (i) Energy stored on each capacitor

a. 0. 1 J and 0. 2 J

b. 0.01 J and 0.02 J

c 1 J and 2 J

d. 0.001 J and 0.002 J

ans: b

78. The capacitance composit capacitor is given as

a. $C = \frac{\epsilon_o A}{\frac{d_1}{\epsilon_{r_1}} + \frac{d_2}{\epsilon_{r_2}} + \frac{d_3}{\epsilon_{r_3}}}$

b. $C = \epsilon_0 d / A$

c. $C = \frac{\epsilon_o \epsilon_r A}{d}$

d. $C = \epsilon_r A / d$

ans: a

79. The plate area of a parallel-plate capacitor is 0.01 sq. m. The distance between the plates is 2.5 cm. The insulating medium is air. Find its capacitance.

a 3.54×10^{-12} F

b. 35.4×10^{-12} F

c 3.54×10^{-10} F

d. 3.54×10^{-11} F

ans: a

80. The plate area of a parallel-plate capacitor is 0.01 sq. m. The distance between the plates is 2.5 cm. What would be its capacitance, if the space between the plates is filled with an insulating material of relative permittivity 5?

a 177.1×10^{-12} F

b. 1.771×10^{-12} F

c . 17.71×10^{-10} F

d. 17.71×10^{-12} F

ans: d

81.A parallel-plate capacitor has two plates each of area 2.5 m2 separated by three dielectric materials of thickness 1, 2 and 3 mm and relative permittivity's of 2, 4 and 8 respectively. Calculate (i) the capacitance of the capacitor

a. 1.60 x 10-8 F

b. 1.60 x 10-10 F

c. 1.60 x 10-12 F

d. 1.60 x 10-9 F

ans: a

Unit II

Part (b) AC FUNDAMENTALS

1. A standard sinusoidal voltage wave changes its polarity at_____
a. maximum value
b. minimum value
c. zero value
d. none of the above
ans:c

2. The period of a certain sine wave is 10 milliseconds. Its frequency is_____
a.10 MHz
b.10 KHz
c.10 Hz
d.100 Hz
ans:d

3. Two sine waves are said to be in phase with each other if they achieve their_____
a. zero value at the same time
b. maximum value at the time
c. minimum value at the same time
d. all of the above
ans:d

4. The distance occupied by one complete cycle of the wave is called its_____
a. time period
b. wavelength
c. velocity
d. frequency
ans:a

5. The rms value of a sine wave of peak value I_m is given by_____
a. $I_m/\sqrt{2}$
b. I_m
c. $I_m/2$
d. I_m/π
ans:a

6.The average value of a sine wave of maximum value I_m over one cycle is_____
a. I_m/π
b. $2I_m/\pi$
c. zero
d. $I_m/2$
ans:c

7. The rms value of a sine wave of maximum value 10A equals a dc current of _____ampere.
a.7.07
b.6.37
c.5
d.5.77
ans:a

8.The rms value of a sinusoidal voltage with peak-to-peak value of 240 V is_____V.
a.84.84
b.77.82
c.94.68
d.89.15
ans:a

9. The time period of a sinusoidal waveform with 200 Hz frequency is_____second.
a.0.05
b.0.005
c.0.0005
d.0.5
ans:b

10. The peak value of a sine wave is 400 V. Its average value is_____
a.254.6 V

b.282.6 V
c.400 V
d.565.5 V
ans:a

11. The form factor of a sine wave is_____
a.1.01
b.1.11
c.1.21
d. none of the above
ans:b

12. A current is said to be alternating when it changes in_____
a. magnitude only
b. direction only
c. both magnitude and direction
d. neither magnitude nor direction
ans:c

13. An alternating current of 50 Hz frequency and 100 A maximum value is given by_____
a.$i = 200\ sin628t$
b.$i = 100\ sin314t$
c.$i = 100\sqrt{2}\ sin314t$
d.$i = 100\sqrt{2}\ sin157t$
ans:b

14. An alternating current of 50 Hz frequency has a maximum value of 100 A. Its value 1/600 second after the instant current is zero will be_____
a. 25 A
b. 12.5 A
c. 50 A
d. 75 A
ans:c

15.A sinusoidal voltage varies from zero to a maximum of 250 V. The voltage at the instant of 60° of the cycle will be_____
a. 150 V
b. 216.5 V
c. 125 V
d.108.25 V
ans:b

16. An alternating current is given by the expression $i = 200\sin(314t + \frac{\pi}{3})$ amperes. The maximum value and frequency of the current are_____
a. 200 A, 50 Hz
b. 100√2, 50 Hz
c. 200 A, 100 Hz
d. 200 A, 25 Hz
ans:a

17.The average value of the current $i = 200\sin t$ from $t = 0$ to $t = \frac{\pi}{2}$ is _____
a. 400 π
b. $\frac{400}{\pi}$
c.$\frac{1}{400}$
d.$\frac{\pi}{400}$
ans:b

18. When two quantities are in quadrature, the phase angles between them will be_____
a.45°
b.90°
c.135°
d.60°
ans:b

19.The alternating voltage $e = 200\sin 314t$ is applied to a device which offers an ohmic resistance of 20 Ω to the flow of current in one direction while entirely preventing the flow in the opposite direction. The average value of the current will be_____
a.5 A
b.3.18 A

c.1.57 A
d.1.10 A
ans:b

20. The ac system is preferred to dc system because_____
a. ac voltages can be easily changed in magnitude
b. dc motors do not have fine speed control
c. high voltage ac transmission is less efficient
d. dc voltage can not be used for domestic appliances
ans:a

21.In ac system, we generate sine waveform because_____
a. it can be easily drawn
b. it produces least disturbance in electrical circuits
c. it is nature's standard
d. other waves can not be produced easily
ans:b

22._____will work only on dc supply.
a. electric lamp
b. refrigerator
c. electroplating
d. heater
ans:c

23.An alternating voltage is given by $v = 20 \sin 157t$. The frequency of the alternating voltage is_____
a.50 Hz
b.25 Hz
c.100 Hz
d.75 Hz
ans:b

24. An alternating current is given by $i = 10 \sin 314t$. The time taken to generate two cycles of current is____
a. 0.02 second
b. 0.01 second
c. 0.04 second
d. 0.05 second
ans:c

25. A sine wave has a maximum value of 20 V. Its value at 135° is_____
a. 10 V
b. 14.14 V
c. 15 V
d. 5 V
ans:b

26. An alternating voltage is given by $v = 30\ sin314t$ .The time taken by the voltage to reach 30 V for the first time is_____
a. 0.02 second
b. 0.1 second
c. 0.03 second
d. 0.005 second
ans:d

27. A sinusoidal current has a magnitude of 3 A at 120°. Its maximum value will be_____
a.√3 A
b.$\frac{\sqrt{3}}{2}$ A
c.2√3 A
d. 6 A
ans:c

28. An alternating current is given by $i = 10\ sin314t$. Measuring time from $t = 0$, the time taken by the current to reach +10 V for the second time is_____
a. 0.05 second
b. 0.1 second
c. 0.025 second
d. 0.02 second
ans:c

29. An alternating voltage is given by $v = 100\,sin314t$ volts. Its average value will be_____
a. 70.7 V
b. 50 V
c. 63.7 V
d. 100 V
ans:c

30. An alternating current whose average value is 1 A will produce_____1 A dc under similar conditions.
a. less heat than
b. more heat than
c. the same heat as
d. none of the above
ans:b

31. A sinusoidal alternating current has a maximum value of I_m. Its average value will be_____
a.$\frac{Im}{\pi}$
b. $\frac{Im}{2\pi}$
c. $2\frac{Im}{\pi}$
d.none of the above
ans:c

32. The area of a sinusoidal wave over a half-cycle is_____
a.$max.value \div 2$
b.$2 \times max.value$
c.$max.value \div \pi$
d. $.max.value \div 2\pi$
ans:b

33. An alternating voltage is given by $v = 200\,sin314t$. Its rms value will be_____
a. 100 V
b. 282.8 V
c. 141.4 V
d. 121.4 V
ans:c

34. A sinusoidal voltage is represented as $v = 141.4\sin(314.18t - \frac{\pi}{2})$. Its rms value of voltage, frequency and phase angle are respectively_____
a. 141.42 V, 314.16 Hz, 90°
b. 100 V, 100 Hz, -90°
c. 87.92 V, 56 Hz, 90°
d. 100 V,50 Hz, -90°
ans:d

35. When two sinusoidal waves are 90° out of phase, then_____
a. both have their peak values at the same instant
b. both have their minimum values at the same instant
c. one has its peak value; while the other has zero value
d. none of these
ans:c

36. The direction of current in an ac circuit is_____
a. always in one direction
b. varying from time to time
c. unpredictable
d. from positive to negative
ans:b

37. Consider the sinusoidal waves: $A\sin(\omega t + 30°)$ and $B\sin(\omega t - 60°)$. The phase angle relationship between the two waves_____
a. B-wave lags A-wave by 90°
b. B-wave lags A-wave by 60°
c. B-wave lags A-wave by 30°
d. B-wave and A-wave are in phase
ans:a

38. A sinusoidal voltage is expressed as $v = 20\sin(314.16t + \frac{\pi}{3})$ V. Its frequency and phase angle respectively are_____
a. 314.16 Hz, 60°
b. 60Hz, 60°
c. 50 Hz, 60°
d. 50 Hz, -60°
ans:c

39. A sinusoidal voltage v_1 leads another sinusoidal voltage v_2 by 180°. Then_____
a. voltage v_2 leads voltage v_1 by 180°
b. both voltage have their zero values at the same time
c. both voltages have their peak values at the same time
d. all of the above
ans:d

40.The rms value of an ac sinusoidal current is 10 A. Its peak value is_____
a. 7.07 A
b. 14.14 A
c. 10 A
d. 28.28 A
ans:b

41. If A=10∠45° and B=5∠15°, then the value of A/B will be_____
a. 50∠60°
b. 2∠60°
c. 2∠-30°
d. 2∠30°
ans:d

42. When a phasor is multiplied by –j, it gets rotated through in the counterclockwise direction.
a.90°
b.180°
c.270°
d. none of the above
ans:c

43. The rms value of sinusoidally varying current is_____that of its average value.
a. more than
b. less than
c. same as
d. none of the above
ans:a

44. Alternating voltages and currents are expressed in rms values because_____
a. they can be easily determined
b. calculations become very simple
c. they give comparison with dc
d. none of the above
ans:c

45.The average value of $\sin^2\theta$ over a complete cycle is_____
a. +1
b. -1
c. $\frac{1}{2}$
d. zero
ans:c

46.The average value of sinθ over a complete cycle is_____
a. zero
b. +1
c. -1
d. $\frac{1}{2}$
ans:a

47. An alternating current is given by $i = Im\ sin\theta$. The average value of squared wave of this current over a complete cycle is_____
a. $I^2_m/2$
b. I_m/π
c. $2I_m/\pi$

d. $2I_m$
ans:a

48. The form factor of a sinusoidal wave is_____
a.1.414
b.1.11
c.2
d.1.5
ans:b

49. The filament of a vacuum tube requires 0.4A dc to heat it. The rms value of ac required is_____
a.$0.4 \times \sqrt{2}$ A
b.$0.4 \div 2$ A
c.$0.8 \div \sqrt{2}$ A
d. 0.4 A
ans:d

50. A100 V peak ac is as effective as_____dc.
a. 100 V
b. 50 V
c. 70.7 V
d. none of the above
ans:c

51. The form factor of a _____wave is 1.
a. sinusoidal
b. square
c. triangular
d. sawtooth
ans:b

52. Out of the following _____wave is the peakiest.
a. sinusoidal
b. square
c. rectangualr
d. triangular
ans:d

53. The peak factor of a sine waveform is_____
a.1.11
b.1.414
c.2
d.1.5
ans:b

54.When a 15V square wave is connected across a 50V ac voltmeter, it will read_____
a.15V
b.$15 \times \sqrt{2}$ V
c.$15/\sqrt{2}$ V
d.none of the above
ans:a

55.A sine wave has a frequency of 50 Hz. Its angular frequency is_____radian/second.
a.100π
b.50π
c.25π
d.5π
ans:a

56. The period of a wave is_____
a. the same as frequency
b. time required to complete one cycle
c. expressed in amperes
d. none of the above
ans:b

57. The form factor is the ratio of _____
a. peak value to rms value
b. rms value to average value
c. average value to rms value
d. none of the above
ans:b

58. The period of a sine wave is 1/50 seconds. Its frequency is_____
a. 20 Hz

b. 30 Hz
c. 40 Hz
d. 50 HZ
ans:d

59. An ac current is given by $i = 200\ sin100\pi t$. It will achieve a value of 100A after_____second.
a.$\frac{1}{900}$
b.$\frac{1}{800}$
c.$\frac{1}{700}$
d.$\frac{1}{600}$
ans:d

60. A heater is rated as 230V, 10KW, AC. The value of 230V refers to_____
a. average voltage
b. rms voltage
c. peak voltage
d. none of the above
ans:b

61. The peak value of a sine wave is 200V. Its average value is_____
a.127.4V
b.141.4V
c.282.8V
d.200V
ans:a

62. The rms value of a sine wave is 100A. Its peak value is _____
a.70.7A
b.141.4A
c.150A
d.282.8A
ans:b

63. The voltage of domestic supply is 220V. This figure represents_____
a. mean value
b. rms value
c. peak value
d. average value
ans:b

64. The rms value and mean value is the same in the case of_____
a. traingular wave
b. sine wave
c. square wave
d. half wave rectified sine wave
ans:c

65. For the same peak value which of the following wave will have the highest rms value?
a.square wave
b.half wave rectified sine wave
c.triangular wave
d.sine wave
ans:a

66. For the same peak value which of the following wave will have the least mean value?
a. half wave rectified sine wave
b. triangular wave
c. sine wave
d. square wave
ans:a

67. For a sine wave with peak value I_{max}, the rms value is_____
a. $0.5I_{max}$
b. $0.707I_{max}$
c. $0.9I_{max}$
d. $1.414I_{max}$
ans:b

68. Form factor is the ratio of_____
a. average value/rms value
b. average value/peak value
c. rms value/average value

d. rms value/peak value
ans:c

68. For a sine wave with peak value E_{max}, the average value is_____
a. 0.636 E_{max}
b. 0.707E_{max}
c. 0.434 E_{max}
d. 1.414E_{max}
ans:a

69. The current in a circuit is given by: $i = 100 \sin 314t$ amperes. The maximum value and frequency of current are_____
a.50√2 A, 100 Hz
b.100√2 A, 100 Hz
c. 100 A, 50 Hz
d. 70.7 A, 50 Hz
ans:c

70. For a frequency of 200 Hz, the time period will be_____
a. 0.05 S
b. 0.005 S
c. 0.0005 S
d. 0.5 S
ans:b

71. An ac voltage of 50 Hz has a maximum value of 50 V. Its value after 1/600 second after the instant the current is zero will be_____
a.5V
b.12.5V
c.25V
d.43.8V
ans:c

72. For 200V rms value triangular wave, the peak voltage will be_____
a.200V
b.222V
c.282V
d.346V
ans:d

73. A sine wave of voltage varies from zero to maximum of 200V. How much is the voltage at the instant of 30° of the cycle?
a.50V
b.82.8V
c.100V
d.173.2V
ans:c

74. How much rms current does a 300W, 200V bulb take from the 200V, 50 Hz power line?
a.0.5 A
b.1.5 A
c.2 A
d. 3 A
ans:b

75. The rms value of a half-wave rectified current is 100 A. Its value for full-wave rectification would be_____amperes.
a.141.4
b.200
c. 200/π
d. 40/π
ans:a

76. The rms value of a sinusoidal ac current is equal to its value at an angle of _____degrees.
a.90
b.60
c.45
d.30
ans:c

77. The rms value of alternating current is given by steady (dc) current which when flowing through a given circuit for a given time produces_____

a. the more heat than produced by ac when flowing through the same circuit
b. the same heat as produced by ac when flowing through the same circuit
c. the less heat than produced by ac flowing through the same circuit
d. none of the above
ans:b

78. The square waveform of current has following relation between rms value and average value:
a. rms value is equal to average value
b. rms value of current is greater than average value
c. rms value of current is less than average value
d. none of the above
ans:a

79. If a sinusoidal wave has frequency of 50 Hz with 30A rms current, which of the following equation represents the wave?
a.$42.42 \sin 314t$
b.$60\ sin25t$
c.$30 \sin 50t$
d.$84.84\ sin25t$
ans:a

80. Which of the following waves has the highest value of peak factor?
a. square wave
b. sine wave
c. half wave rectified sine wave
d. triangular wave
ans:c

81.The frequency of domestic power supply in India is_____
a. 200 Hz
b. 100 Hz
c. 60 Hz
d. 50 Hz
ans:d

82. The rms value of half wave rectified sine wave is 200V. The rms value of full wave rectified ac will be_____
a.282.8V
b.141.4V
c.111V
d. 100V
ans:a

83. The voltage in a circuit follows the law: $v = 100\ sin\omega t$. If the frequency is 25 Hz, how long will
it take for the voltage to rise to 50V?
a.$\frac{1}{50}$ S
b.$\frac{1}{100}$S
c.$\frac{1}{300}$S
d. $\frac{1}{600}$S
ans:c

84. The negative maximum of a cosine wave occurs at_____
a.30°
b.45°
c.90°
d.180°
ans:d

85. The rms value of pure cosine function is_____
a. 0.5 of peak value
b. 0.707 of peak value
c. same as peak value
d. zero
ans:b

86. An alternating voltage is given in volts by expression $v = 326\ sin314t$. Its rms value and frequency are____
a.230V,50 Hz
b. 230V,100 Hz
c. 326V,50 Hz
d. 326V,100 Hz
ans:a

87. According to which of the alternating current values in the cross sectional area of a conductor with regard to the heating effect is selected?
a. peak value
b. half peak value
c. average value
d. rms value
ans:d

88. The frequency of an alternating current is_____
a. the speed with which the alternator runs
b. the number of cycles generated in one minute
c. the number of waves passing through a point in one second
d. the number of electrons passing through a point in one second
ans:c

89. The equation of 50 Hz current sine wave having rms value of 60 A is_____
a.$60 \sin 25t$
b.$60 \sin 50t$
c.$84.84\ sin314t$
d$42.42\ sin314t$.
ans:c

90. An electric iron designed for 110 V AC supply was rated at 500 W. It was put across a 220 V supply. Assuming that at 110 V, it supplied 500 W output (i.e. no losses) at the new voltage it will supply_____
a. 2500 W
b. 2000 W
c. 500 W
d. 250 W
ans:b

91. The direction of current in an ac circuit_____
a. is from positive to negative
b. is always in one direction
c. varies from instant to instant
d. can not be determined
ans:c

92. The angular frequency of an alternating quantity is a mathematical quantity obtained by multiplying the frequency "f" of the alternating quantity by a factor_____
a.$\frac{\pi}{2}$
b.π
c.2π
d.4π
ans:c

93. The average value of an unsymmetrical alternating quantity is calculated over the_____
a. whole cycle
b. half cycle
c. unsymmetrical part of the waveform
d. first two cycles
ans:a

94. The mean value of the current $i = 20\ sin\theta$ from θ=0 to θ=$\frac{\pi}{2}$ is_____
a.40π
b.$\frac{40}{\pi}$
c.$\frac{1}{40}$

d.$\frac{\pi}{40}$
ans:b

95. A constant current of 2.8A exists in a resistor. The rms value of current is_____
a. 2.8 A
b. about 2 A
c. 1.4 A
d. undefined
ans:a

96. An alternating current is represented as $i = 70.7\sin(520t + \frac{\pi}{6})$. The frequency and rms value of the current are_____
a. 82.76 Hz, 50 A
b. 41.38 Hz, 25 A
c. 41.38 Hz, 50 A
d. 82.76 Hz, 25 A
ans:a

97. The time period or periodic time T of an alternating quantity is the time taken in seconds to complete_____
a. one cycle
b. alternation
c. none of the above
d. Half cycle
ans: a

98. The time period of an alternating quantity is 0.02 second. Its frequency will be_____
a. 25 Hz
b. 50 Hz
c. 100 Hz
d. 0.02 Hz
ans: b

99. An ac current is given as i = 10 + 10 sin 314 t, the average and rms values of the current are____
a. 16.36 A, 17.07 A
b. 10 A, 17.07 A
c. 10 A, 12.25 A
d. 16.36 A, 12.2 A
ans:c

100. The size (cross-sectional area) of a conductor, with regard to the heating effect, is determined on the basis of …….. value of current to be carried by it
a. average value
b. peak value
c. rms value
d. peak to peak value
ans:c

101. The form factor for dc supply voltage is always
a. zero
b. unity
c. infinity
d. any value between 0 and 1
ans:b

102. The _____ varying alternating quantity can be represented as phasor.
a) circular
b) sinusoidally
c) rectangular
d) triagular
ans:b

103. The phasors are assumed to be rotated in _____ direction.
a) clockwise
b) anticlockwise
c) circular
d) all above
ans:b

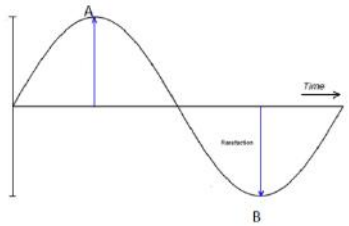
104. In practice, alternating quantities are represented by their _____ values
a. rms

b. average
c. rectangular
d. polar
ans:a

105. Alternating quantities of ____ frequencies can be represented on same phasor diagram.
a. Same
b. Different
c. multiple
d. all above
ans: a

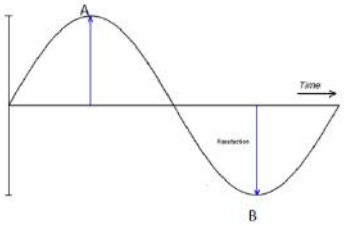
106. The phase of alternating quantity at any particular instant is the fraction of _____
a. phase
b. time
c. time period
d. all above
ans:c

107.



In the above figure, the phase quantity at A is _____
a. T
b. T/2
c. T/3
d. T/4
ans:d

108.



In the above figure, the phase quantity at B is _____
a. T
b.T/2
c.3T/4
d. T/4
ans:c

109. When phase of an alternating quantity is positive it means that quantity has some _____ instantaneous value at t=0
a. zero
b. positive
c. negative
d. none of the above
ans:b

110. When phase of an alternating quantity is negative it means that quantity has some _____ instantaneous value at t=0
a. zero
b. positive
c. negative
d. none of the above
ans:c

111. The difference between the _____ of two alternating quantities is called the phase difference.
a. time
b. phase angle
c. Lengths
d. both a and b
ans:b

112. The difference between the phase of two alternating quantities is called the_____.
a. phase difference
b. sine difference
c. length difference
d. none of the above
ans:a

113. When phase difference between the two alternating quantities is zero, the two quantities are said to be in _____
a. tandom
b. length
c. phase
d. time
ans:c

114. When _____ between the two alternating quantities is zero, the two quantities are said to be in phase.
a. time difference
b. length difference
c. phase difference
d. none of the above
ans:c

115. When phase difference between the two alternating quantities is _____, the two quantities are said to be in phase.
a. one
b. unity
c. zero
d. π/2
ans:c

116. If v = Vm Sin ωt and i = Im Sin (ωt-Φ), the 'i' is said to be _____ 'v' by angle Φ
a. in phase
b. lagging
c. leading
d. all above
ans:b

117. If v = Vm Sin ωt and i = Im Sin (ωt-Φ), the 'v' is said to _____ 'i' by angle Φ
a. in phase
b. lagging
c. leading
d. all above
ans:c

118. If v = Vm Sin ωt and i = Im Sin (ωt+Φ), the 'i' is said to _____ 'v' by angle Φ
a. in phase
b. lagging
c. leading
d. all above
ans:c

119. If v = Vm Sin ωt and i = Im Sin (ωt+Φ), the 'v' is said to _____ 'i' by angle Φ
a. in phase
b. lag
c. lead
d. all above
ans:b

120. If v = Vm Sin ωt and i = Im Sin ωt, the 'i' is said to _____ 'v' by angle Φ
a. in phase
b. lag
c. lead
d. all above
ans:a

121. With respect to reference, plus sign of angle indicates _____
a. leading
b. lagging
c. in phase
d. none of the above
ans:a

122. With respect to reference, minus sign of angle indicates _____

a. leading
b. lagging
c. in phase
d. none of the above
ans:b

123. With respect to reference, _____ sign of angle indicates lead.
a. division
b. plus
c. minus
d.dot
ans:b

124. With respect to reference, _____ sign of angle indicates lag.
a. division
b. plus
c. minus
d.dot
ans:c

125. The diagram in which different sinusoidal alternating quantities of the same frequency, are represented by individual phasors indicating exact phase relationship is called _____
a. graph
b. still diagram
c. phasor diagram
d. picture
ans:c

126. The diagram in which different sinusoidal alternating quantities of the same _____, are represented by individual phasors indicating exact phase relationship is called phasor diagram.
a. time
b. frequency
c. sign
d. shape
ans:b

127. The lagging and leading word is relative to the _____
a. base
b. range
c. reference
d. angle
ans:c

128. Polar form of v = 100 sin(100πt+π/6) Volt is _____
a.61.2371+j35.3553
b.70.7106∟30
c. 61.2371∟35.3553
d. 70.710+ j30
ans:b

129. Rectangular form of V= 100 sin(100πt+π/6) Volt is _____
a.61.2371+j35.3553
b.70.7106∟30
c. 61.2371∟35.3553
d. 70.710+ j30
ans:a

130. RMS value of current I = 25 + j40 Amp is _____
a.57.99
b.47.1699
c.60
d.30
ans:b

131. Two currents $I_1 = 10\angle 50$ and $I_2 = 5\angle -100$ A flow in single phase AC circuit. Then I_1+I_2 = _____
a. 5.5596+ j4.924 A
b. 5.5596∠4.924 A
c. 7.296+ j12.58 A
d. None of the above
ans:a

132. Two currents $I_1 = 10\angle 50$ and $I_2 = 5\angle -100$ A flow in single phase AC circuit. Then I_1-I_2 =_____
a. 5.5596+ j4.924 A
b. 5.5596∟4.924 A
c. 7.296+ j12.58 A
d. None of the above
ans:c

133. Two currents $I_1 = 10\angle 50$ and $I_2 = 5\angle -100$ A flow in single phase AC circuit. Then I_1/I_2 =_____
a. 5.5596+ j4.924 A
b. $2\angle 150$ A
c. 7.296+ j12.58 A
d. None of the above
ans:b

134. The square of a j operator _____
a. can never be negative
b. can never be positive
c. could be either positive or negative
d. is equal to j
ans:b

135. A complex number_____
a. is the same as imaginary number
b. has real and imaginary part
c. is negative number
d. is merely a technical term
ans:b

136. The sum of (3+j6) and (-3-j6) is ____
a.0+j0
b.6+j12
c. -6-j12
d. 0-j12
ans:a

137. The product of (-4-j7) and (6-j2) is_____
a. -24+j14
b. 24-j14
c. -38-j34
d. -24-j14
ans:c

138. A sinusoidal voltage is represented as: v = 141.4 sin(314.18t-π/2). Its rms value of voltage, frequency and phase angle are respectively____
a.141.42V, 314.16 Hz, 90 degrees
b. 100V, 50 Hz, -90 degrees
c. 87.92V, 56 Hz, 90 degrees
d. 200V, 50 Hz, -90 degrees
ans:b

139. When two sinusoidal waves are 90 degrees out of phase, then ____
a. both have their peak values at the same time
b. both have their minimum values at the same time
c. one has its peak value, other has zero value
d. none of these
ans:c

140. The direction of current in an AC circuit is _____
a. always in one direction
b. varying time to time periodically
c. unpredictable
d. from positive to negative
ans:b

141. Consider the sinusoidal waves: A sin (ωt+30) and B cos(ωt-60). The phase angle relationship between two waves is:
a. B wave lags A wave by 90 degrees
b. B wave lags A wave by 60 degrees
c. B wave lags A wave by 30 degrees
d. B wave and A wave are in phase
ans:d

142.When a phasor is multiplied by j and –j, it is rotated through _____ degrees in the anticlockwise direction respectively.
a.90, 270
b.90, 90
c.90, 180
d.270, 90
ans:a

143. If e_1 = 100 sin2πf and e_2 = 100 sin(2πf-Φ), then _____
a. e_1 lags e_2 by Φ
b. e_1 leads e_2 by Φ
c. e_2 lags e_1 by Φ
d. none of the above
ans:c

144.The phase difference between two waveforms can be compared when they _____
a. have the same frequency
b. have the same peak value
c. have the same effective value
d. are sinusoidal
ans:a

145. If two sinusoids of the same frequency but of different amplitude and phase difference are added, the resultant is a _____
a. sinusoid of same frequency
b. sinusoid of double the original frequency
c. sinusoid of half the original frequency
d. non-sinusoid
ans:a

146. If the phasor is multiplied by j, then ____
a. only its magnitude changes
b. only its direction changes
c. both magnitude and direction change
d. none of the above
ans:b

147. In the complex number 4+j7, 7 is called the _____ component
a. real
b. imaginary
c. in-phase
d. none of the above`
ans:d

148. The reciprocal of a complex number is a_____
a. complex number
b. real component only
c. quadrature component only
d. none of above
ans:a

149. If two complex numbers are equal, then_____
a. only their magnitudes will be equal
b. only their angles will be equal
c. their in phase and quadrature components will be separately equal
d.none of above
ans:c

150. A phasor 2∟180 can be expressed as____
a.j2
b.-j2
c.-2
d.2
ans:c

151. A current of (3+j4) A is flowing through a circuit. The magnitude of current is _____
a. 7 A
b. 5 A
c. 1 A
d. 1.33 A
ans:b

152. The voltage applied in a circuit is given by 100∟60 volts. It can be written as ____

a. 100∟-60
b.100∟240
c. 100∟-300
d. none of the above
ans:c

153. The conjugate of -4+j3 is _____
a. 4-j3
b. -4-j3
c.4+j3
d. none of the above
ans:b

154. The difference of two conjugate number results in _____
a. a complex number
b. in-phase component only
c. quadrature component only
d. none of the above
ans:c

155. The reciprocal of j is ____
a.j
b.-j
c.jxj
d.none of the above
ans:b

156. Two waves of same frequency have opposite phase when the phase angle between them is ___ degrees
a.360
b.180
c.90
d.0
ans: b

157. Two sinusoidal currents are given by i_1 = 100sin (ωt+π/3) and i_2 = 150sin(ωt-π/4). The phase difference between them is _____ degrees
a.15
b.50
c.60
d.105
ans:d

158. A phasor is _____
a. a line which represents the magnitude and phase of an alternating quantity
b. a line which represents the magnitude and direction of an alternating quantity
c. a colored tag or band for distinction between different phases of a 3 phase supply
d. an instrument used for measuring phases of an unbalanced 3 phase load
ans:b

159. A sinusoidal voltage v_1 leads another sinusoidal voltagev_2 by 180 degrees. Then ____
a. voltage v_2 leads voltage v_1 by 180 degrees
b. both voltage have their zero values at the same time
c. both voltage have their peak values at the same time
d. all of above
ans:d

160. If A = 10∟45 and B = 5∟15, then the value of A/B will be___
a.50∟60
b.2∟60
c. 2∟-30
d.2∟30
ans:d

161. The length of a phasor in a phasor diagram normally represents the …… value of the alternating quantity
a. rms or effective
b. average
c. peak
d. none of these
ans:a

162. The two quantities are said to be in phase with each other when
a. the phase difference between two quantities is zero degree or radian
b. each of them pass through zero values at the same instant and rise in the same direction
c. each of them pass through zero values at the same instant but rises in the opposite directions
d. either (a) or (b)
ans:d

163. The phase difference between the two waveforms can be compared only when they
a. have the same frequency
b. have the same peak value
c. have the same effective value
d. are sinusoidal
ans:a

164. The phasor diagram for alternating quantities can be drawn if they have …… waves
a. rectangular
b. sinusoidal
c. triangular
d. any of these
ans:b

UNIT NO: 3 SINGLE PHASE AC CIRCUIT (PART A)

1. The power factor at resonance in R-L-C series circuit is
a. Zero
b. 0.08 lagging
c. 0.8 leading
d. Unity
Answer: d

2. In a R-L-C circuit
a. Power is consumed in resistance and is equal to IR
b. Exchange of power takes place between inductor and supply line
c. Exchange of power takes place between capacitor and supply line
d. All above are correct

Answer: d

3. In an AC. circuit, a low value of kVAR compared with kW indicates
a. Low efficiency
b. High power factor
c. Unity power factor
d. Maximum load current

Answer: b

4. The power factor of a D.C. circuit is always
a. Less than unity
b. Unity
c. Greater than unity
d. Zero

Answer: b

5. Which triangles are used in series ac circuit?
a. Voltage triangle
b. Impedance triangle
c. power triangle
d. all of the above

Answer: d

6. The product of apparent power and cosine of the phase angle between circuit voltage and current is a. True power
b. Reactive power
c. Volt-amperes
d. Instantaneous power

Answer: a

7. In a series resonant circuit, the impedance of the circuit is
a. Minimum
b. Maximum

c. Zero
d. None of the above

Answer: a

8. In a circuit containing R, L and C, power loss can take place in
a. C only
b. L only
c. R only
d. All above

Answer: c

9. Which of the following refers to a parallel circuit?
a. The current through each element is same
b. The voltage across element is in proportion to it's resistance value
c. The equivalent resistance is greater than any one of the resistors
d. The current through any one element is less than the source current

Answer: d

10. A sine wave has a frequency of 50 Hz. Its angular frequency is _____ radian/second. a. 100 π
b. 50 jt
c. 25 JT
d. 5 π

Answer: a

11. The apparent power drawn by an A.C. circuit is 10 kVA and active power is 8 kW. The reactive power in the circuit is
a. 4 kVAR
b. 6 kVAR
c. 8 kVAR
d. 16 kVAR

Answer: b

12. The net power in a series R-C circuit is
a. Zero
b. Positive
c. Negative
d. None of these

Answer: b

13. The two alternating quantities could be added by constructing
a. Squares
b. Parallelograms
c. Rhombus
d. Trapeziums

Answer: b

14. The power factor of a series RL ac circuit is given by
a. X_L/R
b. R/X_L
c. R/Z
d. Z/R

Answer: c

15. The low power factor of an ac circuit means that
a. it causes less voltage drop in the line
b. it draws more active power
c.it draws less line current
d. it draws more reactive power

Answer: d

16. The impedance of circuit is given by 15.5∠-30 Ω. It means that the circuit is
a. capacitive
b. inductive
c. purely resistive
d. none of the above

Answer: c

17. In RLC series circuit, the inductive reactance is 10 Ω and capacitive reactance is 15 Ω. The total reactance of the circuit is
a. 25 Ω
b. 18.03 Ω
c. 5 Ω
d. 1.5 Ω

Answer: c

18. In series RL circuit, R = 5 Ω, X_L = 10 Ω and X_C = 15 Ω. If this circuit is connected to a voltage source v = 100 sin (314t + 30) V, the rms value of the current will be
a. 14.14 A
b. 10 A
c. 5 A
d. 3.33 A

Answer : b

19. An alternating voltage of 80+j60 V is applied to a circuit and the current flowing is 4-j2 A. Find impedance of circuit.
a. 22.37 Ω
b. 23.27 Ω
c. 21.88 Ω
d. 27.22 Ω

Answer: a

20. An alternating voltage of 80+j60 V is applied to a circuit and the current flowing is 4-j2 A. Find power factor of circuit.
a. 0.5 lag
b. 0.447 lead
c. 0.447 lag
d. none of the above
Answer: c

21. The voltage applied to a circuit is e =100 sin (ωt+30) and the current flowing in the circuit is i = 15 sin (ωt+60). Determine impedance of the circuit.
a. 6.67 Ω
b. 5.57 Ω
c. 7.67 Ω
d. 1.67 Ω

Answer: a

22. The voltage applied to a circuit is e =100 sin (ωt+30) and the current flowing in the circuit is i = 15 sin (ωt+60). Determine resistance of the circuit.
a. 6.67 Ω
b. 5.77 Ω
c. 7.67 Ω
d. 1.67 Ω

Answer: b

23. A resistor of 20 Ω, inductor of 0.005 H and capacitor of 50μF are connected in series. A supply voltage 230 V, 50 Hz is connected across the series combination. Calculate inductive reactance.
a. 16.67 Ω
b. 15.71 Ω
c. 17.67 Ω
d. 14.67 Ω

Answer: b

24. A resistor of 20 Ω, inductor of 0.005 H and capacitor of 50μF are connected in series. A supply voltage 230 V, 50 Hz is connected across the series combination. Calculate capacitive reactance.
a. 53.67 Ω
b. 55.71 Ω
c. 63.67 Ω
d. 57.67 Ω

Answer : c

25. Two impedances $Z_1 = 40\angle 30$ and $Z_2 = 30\angle 60$ are connected in series across a single phase 230 V, 50 Hz supply. Calculate the current drawn
a. 4.3 A
b. 2.3 A
c. 3.4 A
d. 5.0 A

Answer: c

26. A coil having a impedance of 50.39∠7.16 is connected in parallel with capacitor having impedance of 127.32∠-90. If supply voltage is 200 V, single phase, 50 Hz. Calculate current in the coil. a. 4.47∠7.16 A
b. 5.57∠8.16 A
c. 4.97∠90 A
d. 3.97∠-7.16 A

Answer: d

26. A coil having a impedance of 50.39∠7.16 is connected in parallel with capacitor having impedance of 127.32∠-90. If supply voltage is 200 V, single phase, 50 Hz. Calculate current in the capactor. a. 4.47∠90 A
b. 5.57∠8.17 A
c. 4.97∠90 A
d. 1.57∠90 A

Answer: d

27. An impedance of (7+j5) Ω is connected in parallel with another impedance of (10-j8) Ω across a 230 V, 50 Hz supply. Calculate admittance of the circuit.
a. 0.16∠-7.04 mho
b. 0.16∠7.04 mho
c. -0.16∠7.04 mho
d. none of the above

Answer: b

28. Resonance occurs in series RLC circuit if following condition is satisfied.
a. $X_L > X_C$
b. $X_L < X_C$
c. $X_L = X_C$
d. $X_L \neq X_C$

Answer: c

29. Current of circuit at resonance is
a. Maximum
b. Minimum
c. Unity
d. zero

Answer: a

30. A series RLC circuit has following parameter values: R = 10 Ω, L = 0.01 H and C = 100 μF. Calculate resonant frequency.
a. 159.15 Hz
b. 169.15 Hz
a. 179.15 Hz
a. 150.15 Hz

Answer: a

Unit IV

Part (a) :SINGLE PHASE TRANSFORMER

1. A transformer is used to_____
a. change ac voltage to dc voltage
b. change dc voltage to ac voltage
c. step up or step down dc voltages
d. step up or step down ac voltages
ans: d

2. The two windings of a transformer are_____
a. conductively linked
b. inductively linked
c. not linked at all
d. electrically linked
ans: b

3.The magnetically operated device that can change values of voltage, current, and impedance without changing frequency is the_____
a. Motor
b. Generator
c. Transformer
d. Transistor
ans:c

4. The transformer winding across which the supply voltage applied is called the _____ winding.
a. Primary
b. Secondary
c. Tertiary
d. Tapped
ans:a

5. The transformer winding which is connected to the load is called the_____ winding.
a. Primary
b. Secondary
c. Tertiary
d. Tapped
ans:b

6. If supply frequency of a transformer increases, the secondary output voltage of the transformer____
a. Decreases
b. increases
c. remains same
d. decreases slightly
ans:b

7. The horizontal and vertical portions of transformer magnetic core are called as_____
a. Limb, yoke
b. Yoke, limb
c. Winding, Yoke
d. Winding, Limb
ans:b

8. The principle of working of transformer is based on _____
a. Static induction
b. Mutual induction
c. Dynamic induction
d. Self induction
ans:b

9. Transformer is used to change values of_____
a. Frequency
b. Voltage
c. Power
d. Power factor
ans:b

10. The path of the magnetic flux in transformer should have _____

a. Low resistance
b. Low reluctance
c. High reluctance
d. High conductivity
ans:b

11. Electrical power is transformed from one coil to other coil in transformer_____
a. Physically
b. Electrically
c. Magnetically
d. Electromagnetically
ans:d

12. A transformer operates_____
a. Always at unity power factor
b. At power factor depending on load
c. Has its own power factor
d. At power factor below particular value
ans: b

13. The laminations of transformer core are made up from_____
a. Low carbon steel
b. Silicon sheet steel
c. Nickel alloy steel stamping
d. Chrome sheet steel
ans:b

14.The material used for construction of transformer core should have_____
a. Low permeability & high hysteresis loss
b. Low permeability & low hysteresis loss
c. High permeability & high hysteresis loss
d. high permeability & low hysteresis loss
ans:d

15. Most transformer cores are not made from a solid piece of metal. Instead, they are assembled from many thin sheets of metal. This type of construction is called_____
a. Laminated
b. Toroid
c. H core
d. tape wound
ans:a

16. The concentric cylindrical winding is used for_____
a. Core type transformer
b. Shell type transformer
c. Berry type transformer
d. None of these
ans:a

17.The sandwich type winding is used for_____
a. Core type transformer
b. Berry type transformer
c. Shell type transformer
d. None of these
ans:c

18. Silicon steel is used for transformer core_____
a. To reduce hysteresis loss
b. To reduce eddy current loss
c. To reduce both losses
d. None of these
ans:a

19. What is common in two windings of transformer?
a. Electric current
b. Magnetic circuit
c. Winding wire guage
d. None of these
ans:b

20. The main function of transformer iron core is to_____
a. Provide strength to the winding
b. To decrease hysteresis loss
c. Decrease the reluctance of magnetic path

d. Reduce eddy current loss
ans:c

21. The emf induced in the primary of a transformer_____
a. is in phase with the flux
b. lags behind the flux by 90 degree
c. leads the flux by 90 degree
d. is in phase opposition to that of flux
ans:b

22.The transformer turns ratio determines_____
a. the ratio of primary and secondary voltages
b. the ratio of primary and secondary currents
c. The resistance on other side
d. all of the above
ans:a

23. Turns ratio of single phase transformer is given as_____
a. N2/N1
b. N1/N2
c. (N1xN2)/N1
d. (N1xN2)/N2
ans:b

24. A transformer in which the secondary voltage is more than the primary voltage is called a _____ transformer
a. step-down
b. step-up
c. Isolation
d. Auto
ans:b

25. A transformer in which the primary voltage is more than the secondary voltage is called a _____ transformer.
a. step-down
b. step-up
c. Isolation
d. Auto
ans:a

26. Any transformer flux that does not follow the core and escapes into the surrounding air is called____
a. magnetizing flux
b. coupling flux
c. leakage flux
d. reactance flux
ans:c

27. A transformer that does not isolate the output from the input is called _____ transformer
a. Distribution
b. step-up
c. Auto
d. Control
ans:c

28. Ideal transformer assumptions do not include_____
a. Zero reactance of the winding
b. Zero resistance of the winding
c. No leakage flux
d. No saturation of the core
ans:a

29.The efficiency of the transformer is normally is normally in the range of_____
a. 50 to 70%
b. 60 to 75 %
c. 80 to 90 %
d. 90 to 98%
ans:d

30. The resistance of low voltage side of transformer_____
a. Is equal to resistance of its high voltage side
b. Is more than its resistance on high voltage side

c. Is less than its resistance on high voltage side
d.0
ans:c

31. Eddy current losses in transformer core are reduced by_____
a. Increasing the thickness of laminations
b. Decreasing the thickness of laminations
c. Decreasing the air gap in magnetic circuit
d. Using wire of higher guage for winding
ans:b

32. A good transformer oil should be absolutely free from_____
a. Sulpher
b. Alkalies
c. Moisture
d. All of the above
ans:c

33. Single phase core type transformer has_____
a. One magnetic path
b. Two magnetic paths
c. No magnetic path
d. None of these
ans: a

34. Single phase shell type transformer has_____
a. One magnetic path
b. Two magnetic paths
c. No magnetic path
d. None of these
ans:b

35. Natural cooling is better in_____
a. Core type transformer
b. Shell Type transformer
c. Both A& B
d. Berry type transformer
ans:a

36. EMF equation for single phase transformer is_____
a. $E= 4.44 \Phi_m A f N$
b. $E= 4.44 B_m A N$
c. $E= 4.44 B_m f N$
d. $E= 4.44 \Phi_m f N$
ans:d

37. Transformation ratio(K) of transformer is_____
a. N2/N1
b. E1/E2
c. I2/I1
d. V1/V2
ans:a

38. For Isolation transformer the transformation ratio(K) is_____
a.0
b. Greater than 1
c. Less than 1
d.1
ans:d

39. In step up transformer the transformation ratio (K) is_____
a. Greater than 1
b.1
c. Less than 1
d.0
ans: a

40. In step down transformer the transformation ratio (K) is_____
a. Greater than 1
b.1
c. Less than 1
d.0
ans:c

41. The primary and secondary voltages in transformer are_____
a. Always in Phase
b. 180^0 out of phase
c. 90^0 out of phase
d. 30^0 or 60^0 out of phase
ans:b

42. The induced emf in transformer secondary depends on_____
a. Maximum flux in core
b. Frequency
c. No of turns on secondary
d. all of the above
ans:d

43. Transformer rating usually expressed in_____
a.kW
b.kVA
c. kV
d. kWh
ans:b

44. In a transformer if secondary turns are doubled, at the same time primary voltage is reduced by half, the secondary voltage will_____
a. Be halved
b. Not change
c. Be four times
d. Be reduced to quarter
ans:b

45. The no load current in terms of full load current is usually_____
a. 1 to 3%
b. 3 to 9 %
c. 9 to 12%
d. 12 to 20%
ans:a

46. Transformer oil is used in transformer to provide_____
a. Cooling and insulation
b. Cooling and lubrication
c. Insulation and lubrication
d. Insulation, cooling and lubrication
ans:a

47. What is the typical use of autotransformer_____?
a. Toy transformer
b. Control transformer
c. Variable transformer
d. Isolating transformer
ans:c

48. In any transformer the voltage per turn in primary and secondary remains_____
a. Always different
b. Always the same
c. Always in ratio of K
d. Sometimes same
ans:b

49. Full load copper loss in a transformer is 400 Watt. At half load, copper losses will be_____
a. 400 Watt
b. 100 Watt
c. 200 Watt
d. 50 Watt
ans:b

50. A transformer is working with its maximum efficiency. If the iron losses are 500 W, the copper loss will_____
a. 300 W
b. 350 W
c. 250 W
d. 500 W
ans:d

51. If we increase the flux density in case transformer_____
a. The size of transformer will reduce
b. The distortion in transformer will reduce
c. Hysteresis and eddy current losses will reduce
d. None of these will be true
ans:a

52. The direct loading test is performed on transformer to find its_____
a. Regulation
b. Efficiency
c. Both
d. None of these
ans:c

53. The regulation of transformer is calculated as_____

a. $\frac{No\ load\ Voltage - Full\ \ load\ voltage}{No\ load\ voltage}$

b. $\frac{Full\ load\ Voltage - No\ \ load\ voltage}{No\ load\ voltage}$

c. $\frac{No\ load\ Voltage - Ful\ \ \ load\ volt}{Full\ load\ voltage}$

d. $\frac{Full\ load\ Voltage - No\ \ load\ voltage}{Full\ load\ voltage}$

ans:a

54. The efficiency of single phase transformer is calculated as_____

a. $\frac{V_2 I_2\ Cos\emptyset}{V_2 I_2\ Cos\emptyset + iro\ \ \ loss + coppe\ \ \ loss}$

b. $\frac{V_1 I_1\ Cos\emptyset}{V_2 I_2\ Cos\emptyset + iron\ loss + copper\ loss}$

c. $\frac{V_1 I_1 Cos\emptyset}{V_1 I_1 Cos\ \emptyset + iron\ loss + coppe\ \ \ loss}$

d. $\frac{V_2 I_2 Cos\emptyset}{V_1 I_1\ Cos\emptyset + iro\ \ \ loss + copper\ loss}$

ans:a

55. For 100 kVA, 11000V/110V single phase transformer, the primary full load current is_____
a. 909.09 Amp
b. 90.90 Amp
c. 9.09 Amp
d. 9090.9 Amp
ans:c

56. For 100 kVA, 11000V/110V single phase transformer, the secondary full load current is_____
a. 90.90 Amp
b. 9090.9 Amp
c. 909.0 Amp
d. 9.09 Amp
ans:c

57. The disadvantage of auto transformer is_____
a. No separation between primary & secondary
b. Size is more than normal transformer for same rating
c. More costlier than normal transformer
d. All
ans:d

58. In a transformer the voltage regulation will be near to zero when it operates at_____
a. unity p.f.
b. leading p.f.
c. lagging p.f.
d. full load.
ans:b

59. A transformer steps up voltage by a factor of 100. The ratio of current in the primary to that in secondary_____
a.1
b.100

c.0.01
d.0.1
ans:b

60. An ideal transformer does not change_____
a. Voltage
b. Power
c. current
d. None of these
ans:b

61. The flux in transformer core_____
a. increases with load
b. decreases with load
c. remains constant irrespective of load
d. none of these
ans:c

62. Efficiency of transformer is maximum when_____
a. transformer is unloaded
b. copper losses is equal to iron losses
c. eddy current losses are equal to hysteresis losses
d. it is maximally loaded
ans:b

63. If the supply frequency in transformer is doubled, then_____
a. hysteresis loss also doubles
b. eddy current loss also doubles
c. iron losses doubles
d. copper losses doubles
ans:a

64. Hysteresis loss in transformer depends on_____
a. both voltage and frequency
b. voltage alone
c. frequency alone
d. none of these
ans:a

65. Eddy current loss depends on_____
a. both current and frequency
b. current alone
c. frequency alone
d. none of these
ans:a

66.The flux involved in EMF equation of a transformer has_____
a. RMS Value
b. Average Value
c. Total Value
d. maximum Value
ans:d

67. A transformer has maximum efficiency at ¾ of full load. The ratio of its iron loss and full load copper loss is_____
a. 16/9
b. 4/3
c. 3/4
d. 9/16
ans:d

68. If primary of the transformer is connected to dc supply, then_____
a. Primary draws small current
b. primary leakage reactance is increased
c. core losses are increased
d. primary may burn out
ans:d

69. For an ideal transformer the windings should have_____
a. maximum resistance on primary side and least resistance on secondary side
b. least resistance on primary side ans maximum resistance on secondary side

c. equal resistance on primary and secondary side
d. no ohmic resistance on either side
ans:d

70. The full load copper and iron loss of a transformer are 6400 W and 5000 W respectively. The copper loss and iron loss at half load will be respectively_____
a. 3200 W and 2500 W
b. 3200 W and 5200 W
c. 1600 W and 1250 W
d. 1600 W and 5000 W
ans:d

71. A transformer does not raise or lower the voltage of DC supply because_____
a. there is no need to change the DC voltage
b. DC circuit has more losses
c. Faradays law of Electromagnetic Induction are not valid since the rate of change of flux is zero
d. none of these
ans:c

72. Primary winding of a transformer _____
a. is always low voltage winding
b. is always high voltage winding
c. could either be a low or high voltage winding
d. none of these
ans:c

73. Which winding of a transformer has more number of turns_____
a. Low voltage winding
b. High voltage winding
c. Primary winding
d. secondary winding
ans:b

74. In a given transformer for a given applied voltage, which losses remain constant irrespective of change in load_____
a. Friction and windage loss
b. copper loss
c. hysteresis and eddy current loss
d. none of these
ans:c

75. Main advantage to use autotransformer over two winding transformer_____
a. Hysteresis losses are reduced
b. savings in winding material
c. copper losses are negligible
d. Eddy current losses are totally eliminated
ans:b

76. An ideal transformer is one which has _____
a. no losses and magnetic leakage
b. interleaved primary and secondary winding
c. a common core for its primary and secondary
d. core of stainless steel and winding of pure copper material
ans:a

77. In a practical transformer core losses remains constant from no load to full load because_____
a. value of transformation ratio remains constant
b. permeability of transformer core remains constant
c. core flux remains practically constant
d. primary and secondary voltage remains constant
ans.c

78.The transformer laminations are insulated from each other by_____
a. mica strip
b. thin coat of varnish

c. paper
d. any one of these
ans:b

79. In transformer resistance between primary and secondary should be_____
a. zero
b. 10 ohm
c. 1000 ohm
d. infinity
ans:d

80. A good voltage regulation of transformer means_____
a. output voltage fluctuations from no load to full load is least
b. output voltage fluctuations with power factor is least
c. difference between primary and secondary voltage is least
d. difference between primary and secondary voltage is maximum
ans:a

81. Negative voltage regulation is indicative that the load is_____
a. Capacitive only
b. inductive only
c. inductive or resistive
d. none of these
ans:a

82. The size of the transformer core depend on_____
a. frequency
b. area of the core
c. flux density of the core material
d. (a) and (b) both
ans:d

83. A shell type transformer has _____
a. high eddy current losses
b. reduced magnetic leakage
c. negligible hysteresis loss
d.none of these
ans:b

84. Deduction in core losses and increase in permeability are obtained with transformer employing_____
a. core built up of laminations of cold rolled grain oriented steel
b. core built up of laminations of hot rolled steel
c. either a or b
d. none of these
ans: c

85. Losses which occur in rotating electric machine and do not occur in transformers are_____
a. friction and windage losses
b. magnetic losses
c. hysteresis and eddy current losses
d. copper losses
ans:a

86. Which of the following loss in a transformer is zero even at full load_____
a. core loss
b. friction loss
c. eddy current loss
d. Hysteresis loss
ans:b

87. The noise produced by transformer is termed as _____
a. zoom
b.hum
c. ringing
d. buzz
ans:b

88. Part of the transformer which is most subject to damage from overheating is_____
a. iron core
b. copper winding
c. insulation of the winding
d. transformer tank
ans:c

89.In a step down transformer, there is a change of 15A in the load current. This results in change of supply current of_____
a. less than 15 A
b. more than 15 A
c.15A
d. none of these
ans:a

90. As per the name plate of transformer, the secondary normal voltage is 220V. Which of the following statement about it is correct?_____
a. 220V is no load voltage
b. The no load voltage is more than 220V
c. The secondary voltage increases with increase in load
d. At a load which draws the rated current & the voltage becomes less than 220V.
ans:b

91.In which of the following transformer, part of the primary winding serves as the secondary winding__
a. Potential transformer
b. Auto transformer
c. Step up transformer
d. None of these
ans:b

92. The rating of the transformer is given in kVA instead of kW because_____
a. kVA is fixed whereas kW depends on load pf
b. load power factor is often not known
c. it has become customary
d. total transformer loss depends on VA
ans:b

93. Increase in secondary current of transformer brings about increase in primary current . This is possible because_____
a. primary and secondary windings are capacitively coupled.
b. primary and secondary windings are inductively coupled
c. primary and secondary windings are conductively coupled
d. none of these
ans:b

94. Transformer for constant voltage application is considered good if its voltage regulation is_____
a. low
b. high
c. zero
d. none of these
ans:c

95. Transformer action needs that the magnetic flux linking with the winding must be_____
a. constant
b. pulsating
c. alternating
d. none of these
ans:c

96. Low voltage windings are placed next to the core to reduce_____
a. Hysteresis loss
b. eddy current loss
c. insulation requirement
d. copper loss
ans:c

97. The relation between the primary and secondary ampere turns of transformer ----------

a. exactly equal
b. approximately equal
c. primary mmf larger than secondary mmf
d. primary mmf smaller than secondary mmf
ans:a

98. Positive voltage regulation occurs in case of transformer for_____
a. capacitive load
b. resistive load only
c. inductive load only
d. either inductive or resistive load
ans:d

99. Cooling of the transformer is required so as to_____
a. increase the efficiency
b. to reduce the losses
c. to reduce humming
d. to dissipate the heat generated in the winding
ans:d

100. The transformer efficiency will be maximum at a power factor of _____
a. 0.8pf lead
b. unity
c. 0.8 lag
d. 0.5 lag or lead
ans:b

101. The regulations of two transformers are (i) 3% and (ii) 97%. The one with better regulation is_____
a. second
b. first
c. both are same
d. depends on loading
ans:b

102. A transformer has 2600 V on primary side and 260 V on secondary side. The transformation ratio is_
a.10
b.5
c.0.1
d.9
ans:c

103. If the copper loss of a transformer at 70% of full load is 200 W. The full load copper loss is _____
a. 200 W
b. 285.71 W
c.408.16W
d. none of these
ans:c

104. A transformer having 1000 primary turns is connected 250 V ac supply. For a secondary voltage of 400 volt, the no of secondary turns should be_____
a.1600
b.250
c.400
d.1250
ans:a

105. If Copper loss of a transformer at $7/8^{th}$ of the full load is 4900W. Then its full load copper loss is____
a.5600
b.6400
c.375
d.429
ans:b

106. At relatively light loads, the transformer efficiency is low because_____
a. secondary output is low
b. transformer losses are high

c. fixed loss is high in proportion to the output
d. copper loss is small.
ans:c

107.A 3000 V/200 V, 50 Hz, single phase transformer is built on a core having an effective cross sectional area of 120 cm^2 and 60 turns on the secondary winding. The value of maximum flux density___
a.1.25 Tesla
b.1.52 Tesla
c.1.3 Tesla
d.none of the above
ans:a

108. A 3000 V/200 V, 50 Hz, single phase transformer is built on a core having an effective cross sectional area of 120 cm^2 and 60 turns on the secondary winding. The number of turns on the high voltage winding_____
a. 600 turns
b. 900 turns
c. 300 turns
d. 450 turns
ans:b

109. A 3300 V/250 V, 50 Hz, single phase transformer has to be worked at a maximum flux density of 1.1 wb/m^2 in the core. The effective cross sectional area of the core is 145 cm^2. The no of primary turns___
a. 930 turns
b. 950 turns
c. 932 turns
d. 923 turns
ans:c

110. A 3300 V/250 V, 50 Hz, single phase transformer has to be worked at a maximum flux density of 1.1 web/m^2 in the core. The effective cross sectional area of the core is 145 cm^2. The no of secondary turns___
a.71 turns
b.75 turns
c.932 turns
d.923 turns
ans:a

111. A 80 kVA, 6000 V/ 400 V, 50 Hz single phase transformer has 80 turns on the secondary winding. The value of maximum flux in the core_____
a.25.22mwb
b.22.52mwb
c.52.22mwb
d. none of these
ans:b

112. A 6600 V/220 V, 50 Hz, step down single phase transformer has 1500 turns on its primary side. If its maximum flux density is 1.2 Tesla, then the effective cross sectional area of core is _____
a.16.516×10^{-3} m^2
b.61.516×10^{-3} m^2
c.26.516×10^{-3} m^2
d.62.516×10^{-3} m^2
ans:a

113. A 10 kVA, 3300/240 V, single phase, 50 Hz transformer has a core area of 300 sq. cm. The flux density is 1.3 tesla. The primary full load current is _____
a. 3.03 amp
b. 33.03 amp
c. 30.3 amp
d. 0.303 amp
ans:a

114.A transformer is rated at 90 kVA, at full load its copper losses is 1100 W and its iron

losses is 950 W. The efficiency at full load for unity power factor is_____
a. 99%
b.96%
c.97.77%
d. none of these
ans:c

115. A transformer is rated at 90 kVA, at full load its copper losses is 1100 W and its iron losses is 950 W. The efficiency at 60% of full load for 0.8 lagging power factor is_____
a.96.97%
b.96%
c.98%
d. none of these
ans:a

116. A 500 kVA transformer has iron loss of 2 kW and full load copper losses of 5 kW. The efficiency at 75% of full load and unity power factor_____
a.98.13%
b.98.73%
c.99%
d. none of these
ans:b

117: The no load voltage at the secondary terminals of single phase transformer is observed as 230 volt. When the transformer is loaded, the voltage on secondary side has reduced to 224 volt. Then the % regulation of transformer for that loading is_____
a.2.6%
b.2.67%
c.0%
d. none of these
ans:a

Sinhgad College of Engineering
Basic Electrical Engineering
Unit: 05 DC Circuits

1. A passive network
a. Has no current source
b. Has no e.m.f. source.
c. Has neither of the above
d. Has either of the above
Ans: c

2. In any linear network, the elements like inductor, resistor and capacitor always…
a. Exhibit changes due to change in temperature
b. Exhibit changes due to change in voltage
c. Exhibit changes due to change in time
d. Remains constant irrespective of change in temperature, voltage and time
Ans: d

3. Which law plays a significant role in the loop analysis of the network?
a. KCL
b. KVL
c. Law of Superposition Theorem
d. None of the above
Ans: b

4. Which is the correct sequential order of steps to be undertaken while applying Thevenin's theorem?
A. Calculation of Thevenin's equivalent voltage
B. Removal of branch impedance through which required current is to be estimated
C. Estimation of equivalent impedance between two terminals of the branch
D. Estimation of branch current by schematic representation of Thevenin's equivalent circuit
a. A, C, B, D
b. B, A, C, D
c. D, A, C, B
d. B, C, D, A
Ans: b

5. A network which contains one or more than one source of e.m.f. is known as
a. Linear network
b. Non-linear network
c. Passive network
d. Active network
Ans: d

6. In non-linear network does not satisfy
a. Superposition condition
b. Homogeneity condition
c. Both homogeneity and superposition condition
d. Homogeneity, superposition and associative condition
Ans: d

7. A closed path made by several branches of the network is known as
a. Branch
b. Loop
c. Circuit
d. Junction
Ans: b

8. A network consists of linear resistors and ideal voltage source. If the value of the resistors are doubled then voltage across each resistor is
a. Halved
b. Doubled
c. Increased four lines
d. Not changed
Ans: d

9. Which of the following is an active element in a circuit?
a. Current source
b. Resistance
c. Inductance
d. Capacitance
Ans: a

10. Which of the following is not a bilateral element?
a. Constant current source
b. Resister
c. Inductor
d. capacitor
Ans: a

11. The elements which are not capable of delivering energy by its own are known as
a. Unilateral elements
b. Nonlinear elements
c. Passive elements
d. Active elements
Ans: c

12. To neglect a voltage source, the terminals across the source are
a.. Open-circuited
b. Short-circuited
c. Replaced by some resistance
d. Replaced by inductor
Ans: b

13. For determining the polarity of a voltage drop across a resistor, it is necessary to know the
a.. Value of resistor
b. Value of current
c. Direction of current flowing through the resistor
d. Value of e.m.f. in the circuit
Ans: c

14. Which of the following is the passive element?
a. Capacitance
b. Ideal current source
c. Ideal voltage source
d. All of the above
Ans: a

15. A terminal where three or more branches meet is known as
a.. Node
b. Terminus
c. Combination
d. Anode
Ans: a

16. Ideal voltage source have
a.. Zero internal resistance
b. Infinite internal resistance
c. Low value of current
d. Large value of e.m.f.
Ans: a

17. Ideal current source have
a.. Zero internal resistance
b. Infinite internal resistance
c. Low value of voltage
d. Large value of current
Ans: b

18. Star circuit has element of resistance R/2. The equivalent delta elements will be
a.. R/6
b. 3/2 R
c. 2R
d. 4R
Ans: b

19. A delta circuit has each element of value R/2.The equivalent elements of the star circuit will be
a.. R/6
b. R/3
c. 2R
d. 3R
Ans: a

20. A practical current source is represented by
a.. A resistance in series with an ideal current source
b. A resistance in parallel with an ideal current source
c. A resistance in parallel with an ideal voltage source
d None of the above
Ans: b

21. The terminals connected to the source are..... if a current source is to be neglected
a. Open-circuited
b. Short-circuited
c. Replaced by a capacitor
d. Replaced by a source resistance
Ans: a

22. Which of the following statements is incorrect?
a.. Resistance is a passive element
b. Inductor is a passive element
c. Current source is a passive element
d. Voltage source is an active element
Ans: c

23. Kirchhoff's current law is applicable to only
a. Junction in a network
b. Closed loops in a network
c. Electric circuits
d. Electronic circuits
Ans: a

24. Kirchhoff's current law states that
a. Net current flow at the junction is positive
b. Algebraic sum of the currents meeting at the junction is zero
c. No current can leave the junction without some current entering it
d. Total sum of currents meeting at the junction is zero
Ans: b

25. Kirchhoff's voltage law is related to
a.. Junction cards
b. Battery e.m.f's
c. IR drops
d. Both B and C
Ans: d

26. According to Kirchhoff's voltage law, the algebraic some of all IR drops and e.m.fs. in any closed loop of a network is always
a.. Negative
b. Positive
c. Determined by battery e. m. f's.
d. Zero
Ans: d

27. The circuit having same properties in either direction is known as ..... circuit
a. Bilateral
b. Unilateral
c. Irreversible
d. Reversible
Ans: a

28. The circuit having different properties in either direction is known as .....circuit
a. Bilateral
b. Unilateral
c. Irreversible
d. Reversible
Ans: d

29. Two ideal voltage sources of unequal output voltages cannot be placed in.....
a. Series
b. Parallel
c. Both series and parallel
d. None of the above
Ans: b

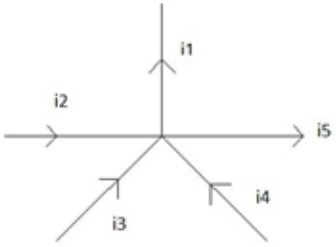
30. Which type of networks allow the physical separability of the network elements (resistors, inductors & capacitors) for analysis purpose?

a. Lumped Networks
b. Distributed Networks
c. Unilateral Networks
d. Bilateral Networks
Ans: a

31. Which type of networks don't allow the physical separability of the network elements (resistors, inductors & capacitors) for analysis purpose?
a. Lumped Networks
b. Distributed Networks
c. Unilateral Networks
d. Bilateral Networks
Ans: b

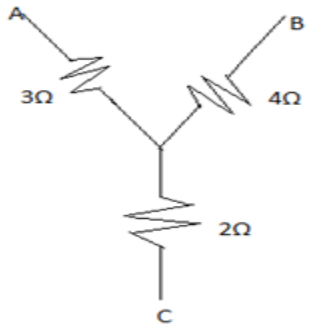
32. KCL is based on the fact that
a There is a possibility for a node to store energy.
b There cannot be an accumulation of charge at a node.
c Charge accumulation is possible at node
d Charge accumulation may or may not be possible.
Ans: b

33. Relation between currents according to KCL is



a $i_1=i_2=i_3=i_4=i_5$
b $i_1+i_4+i_3=i_5+i_2$
c $i_1-i_5=i_2-i_3-i_4$
d $i_1+i_5=i_2+i_3+i_4$
Ans: d

34. What will be the resistance between B and C when the network given below is converted into delta?



a 13Ω
b 8.66Ω
c 6.5Ω
d 7.33Ω
Ans: b

35. Thevenin's equivalent circuit consists of a ___
a. Voltage source in series with a resistor
b. Current source in parallel with a resistor
c. Voltage source in parallel with a resistor
d. Current source in series with a resistor
Ans: a

36. Thevenin's voltage is equal to ___
a Short circuit voltage
b Open circuit current
c Open circuit voltage
d Short circuit current
Ans: b

37. What is the expression for the thevenin's current if there is an external resistance of R ohm in series with the R_{Th}?
a V_{Th}/I_{Th}
b $V_{Th}/ (R_{Th}-R)$
c $V_{Th}/ (R_{Th}+R)$
d V_{Th}/R_{Th}
Ans: c

38. One can find the thevenin's resistance simply by replacing all voltage sources by …….and current sources by ……& calculating equivalent resistance.
a opening, opening
b Shorting, Shorting
c Opening, Shorting

d Shorting, Opening
Ans: d

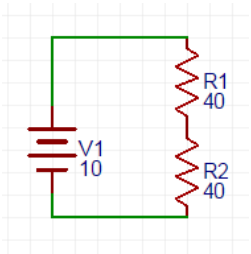
39. The Superposition principle is obeyed by _____
a Linear networks
b Non-linear networks
c Lateral networks
d Nine of the Above
Ans: a

40. According to Superposition principle response in one element is the ……..of responses by individual sources acting alone.
a Arithmetic Sum
b Algebraic Sum
c Product
d Division
Ans: b

41. Superposition principle states that at a time _____ source(S) acts.
a All the given sources
b Only voltage sources
c Only one source
d Only current sources
Ans: c

42. If the voltage-current characteristics is a straight line through the origin, then the element is said to be?
a Linear element
b Non-linear element
c Unilateral element
d Bilateral element
Ans: a

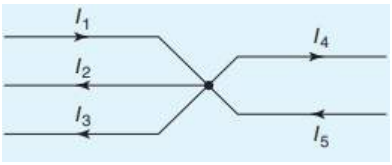
43. The voltage across R_1 resistor in the circuit shown below is?



a 10
b 5
c 2.5
d 1.25
Ans: b

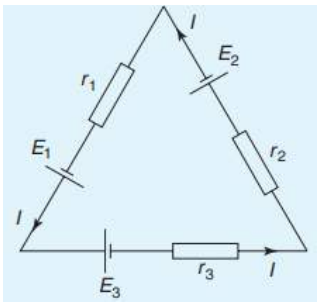
44. The current flowing in the branches of a d.c. circuit may be determined using:
a Kirchhoff's laws
b Lenz's law
c Faraday's laws
d Fleming's left-hand rule
Ans: a

45. Which of the following statements is true



a I5 − I4 = I3 − I2 + I1
b I1 + I2 + I3 = I4 + I5
c I2 + I3 + I5 = I1 + I4
d I1 − I2 − I3 − I4 + I5 = 0
Ans: d

46. Which of the following statements is true



a. E1 + E2 + E3 = Ir1 + Ir2 + Ir3
b. E2 + E3 − E1 − I(r1 + r2 + r3) = 0
c. I(r1 + r2 + r3) = E1 − E2 − E3
d. E2 + E3 − E1 = Ir1 + Ir2 + Ir3
Ans: c

47. Ra is resistance at A, Rb is resistance at B, Rc is resistance at C in star

connection. After transforming to delta, what is resistance between B and C?
a. Rc+Rb+Rc*Rb/Ra
b. Rc+Rb+Ra*Rb/Rc
c. Ra+Rb+Ra*Rc/Rb
d. Rc+Rb+Rc*Ra/Rb
Ans: a

48. Ra is resistance at A, Rb is resistance at B, Rc is resistance at C in star connection. After transforming to delta, what is resistance between A and C?
a. Ra+Rb+Ra*Rb/Rc
b. Ra+Rc+Ra*Rc/Rb
c. Ra+Rb+Ra*Rc/Ra
d. Ra+Rc+Ra*Rb/Rc
Ans: b

49. Ra is resistance at A, Rb is resistance at B, Rc is resistance at C in star connection. After transforming to delta, what is resistance between A and B?
a. Rc+Rb+Ra*Rb/Rc
b. Ra+Rb+Ra*Rc/Rb
c. Ra+Rb+Ra*Rb/Rc
d. Ra+Rc+Ra*Rc/Rb
Ans: c

50. In superposition theorem, when we consider the effect of one voltage source, all the other voltage sources are _____
a. Shorted
b. Opened
c. Removed
d. Undisturbed
Ans: a

51. In superposition theorem, when we consider the effect of one current source, all the other voltage sources are
_____
a Shorted
b Opened
c Removed
d Undisturbed
Ans: a

52. In superposition theorem, when we consider the effect of one voltage source, all the other current sources are _____
a Shorted
b Opened
c Removed
d Undisturbed
Ans: b

53. In superposition theorem, when we consider the effect of one current source, all the other current sources are _____
a Shorted
b Opened
c Removed
d Undisturbed
Ans: b

54. Superposition theorem is valid for __
a. Linear systems
b. Non-linear systems
c. Both linear and non-linear systems
d. Neither linear nor non-linear systems
Ans: a

55. Superposition theorem does not work for _____
a. Current
b. Voltage
c. Power
d. Works for all: current, voltage and power
Ans: c

56. Thevenin's resistance is found by _____
a Shorting all voltage sources
b Opening all current sources
c Shorting all voltage sources and opening all current sources
d Opening all voltage sources and shorting all current sources
Ans: c

57. In Thevenin's theorem Vth is _____
a. Sum of two voltage sources
b. A single voltage source

c. Infinite voltage sources
d. 0
Ans: b

58. An active element in a circuit is one which _____
Receives energy
Supplies energy
Both receives and supplies energy
None of the above
Ans: b

59. A passive element in a circuit is one which..
Receives energy
Supplies energy
Both receives and supplies energy
None of the above
Ans: a

60. A linear circuit is one whose parameter __
a. Changes with change in current
b. Changes with change in voltage
c. Changes with both voltage and current
d. Do not changes with voltage and current
Ans:d

61. The superposition theorem is used when the circuit contains _____
a. A single voltage sources
b. A number of voltage sources
c. Only passive elements
d. None of the above
Ans: b

62. Star/Delta or Delta/Star technique is applied to _____network
a. One terminal
b. Two terminal
c. Three terminal
d. None of the above
Ans: c

63. The resistor value in delta network that is equivalent to a wye containing three 120 Ω resistors is
a.360 Ω
b.240 Ω
c.180 Ω
d.120 Ω
Ans: a

64. The resistor values in wye network that is equivalent to a delta containing three 12 kΩ resistor is
a. 2 kΩ
b. 4 kΩ
c. 8 kΩ
d. 36 kΩ
Ans: b

65. The superposition theorem applies to
a. Current / Voltage calculations
b. Power calculations
c. Current and power calculations
d. Voltage and power calculations
Ans: a

66. Why does the Superposition theorem not applicable to power?
a. Because it is proportional to square of current and current is a non-linear function
b. Because it is proportional to square of voltage and voltage is a non-linear function
c. Both a and b
d. None of the above
Ans: a

UNIT-VI

Work, Power, Energy and Batteries

1. Which effect of electrical current is utilized in thermal systems?
a. Magnetic
b. chemical
c. heating
d. all above
ans: c

2. As per the Joule's law the amount of heat produced is proportional to
a. I.R
b. V.I
c. V.I.t
d. None of above
ans: c

3. Geyser is a example of which system
a. Mechanical
b. Electrical
c. Thermal
d. None of above
ans: b

4. Boiling temp. of water is
a.50
b.75
c.100
d.35
ans: c

5. The amount of heat energy required to change the temp. of a given substance without change in the form of the substance is called as
a. Sensible heat energy
b. Latent heat energy
c. Both of above
d. None of above
ans:a

6. Which statement is correct?
a.1cal=4.12 J
b.1cal=4.186 J
c.1cal=4.44 J
d.1cal=3.986 J
ans:b

7. The amount of heat energy required to change the state of the substance without change in the temperature is called as
a. Kinetic energy
b. Potential energy
c. Latent heat energy
d. All of above
ans:c

8. The amount of heat energy obtained by burning the unit mass of the fuel is called as
a. Molecular value
b. Calorific value
c. Atomic value
d. None of above
ans:b

9. The unit of "THERMAL ENERGY" is
a. Kilowatt-hour
b. Watt-sec
c. Joule
d. all of above
ans:c

10. Which effect of electric current is utilized in electric lamps?
a. Magnetic effect
b. Chemical effect
c. Heating effect
d. All of above
ans:c

11. The heat energy required to convert a body from solid state to liquid state is called as
a. Latent heat of fusion
b. Latent heat of vaporization
c. Calorific value
d. All of above
ans: a

12. The heat energy required to convert liquid state to gaseous state is called as
a. Latent heat of liquification.
b. Latent heat of vaporization
c. both of above
d. None of above
ans: b

13. The unit of specific heat capacity is
a. J/Kg
b. J/KgK
c. joules
d. none of above
ans: b

14. MOTOR-PUMP SET is the example of which system
a. Electro-mechanical system
b. Electro-chemical system
c. Only electrical system
d. All above
ans: a

15. The unit of force is
a. Newton
b. Joule
c. Newton-metre
d. none of above
ans: a

16. One metre cube holds a water of
a.1000Kg
b.1000gm
c.1000miligram
d. none of above
ans:a

17. Which relationship is correct
a. P=T.ω
b. P=T/ ω
c. P=T.v d.None of above
ans:a

18. Power is defined as
a. capacity to do the work
b. work done/time
c. work done. time
d. all above
ans:b

19. Energy is defined as
a. work done/time
b. capacity to do the work
c. energy=power x resistance
d. all above
ans:b

20. Effective water head of a Hydro-electric power plant means it's
a. loss
b. height
c. friction
d. none of above
ans:b

21. Efficiency is the ratio of
a. power and time
b. output and input
c. input and output
d. above all
ans:b

22. Wind-mill-Generator set is the example of
a. electro-chemical system
b. electro-thermal system
c. mechanical-electrical system

d. all above
ans: c

23. Which relationship is correct?
a. volume=mass. Density
b. volume=mass/density
c. volume=mass + density
d. none of above
ans: a

24. Potential energy is given as
a. E= m.g.h
b. E=m.g
c. E=m.g.t
d. above all
ans: a

25. Kinetic energy is given by
a. $E = \frac{1}{2}mV^2$
b. $E = \frac{1}{2}mV$
c. $E = \frac{1}{2}mt$
d. none of above
ans: a

26. A 100W electric light bulb is connected to a 250V supply. The current in the circuit is
a.0.3A
b. 0.4A
c. 1.4A
d. 0.6A
ans: b

27. A 100W electric light bulb is connected to a 250V supply. Its hot resistance is
a.625Ω
b.526Ω
c. 62.5Ω
d. 625mΩ
ans:a

28. 60 μs is equivalent to:
a.0.06s
b. 0.00006s
c. 1000 minutes
d. 0.6 s
ans: b

29. The current which flows when 0.1 coulomb is transferred in 10 ms is
a. 1A
b. 10A
c. 10mA
d. 100mA
ans: b

30. The p.d. applied to a 1 kΩ *resistance* in order that a current of 100 μA may flow is
a. 1V
b. 100V
c. 0.1V
d. 10V
ans:c

31. The power dissipated by a resistor of 4Ωwhen a current of 5A passes through it is
a. 6.25W
b. 20W
c. 80W
d. 100W
ans:d

32. Which of the following statements is true?
a. Electric current is measured in volts
b. 200 kΩ resistance is equivalent to 2MΩ
c. An ammeter has a low resistance and must be connected in parallel with a circuit
d. An electrical insulator has a high resistance
ans:d

33. A current of 3A flows for 50 hrs through a6Ωresistor. The energy consumed by the resistor is:
a.0.9 kWh

b.2.7 kWh
c.9 kWh
d.27 kWh
ans:b

34. What must be known in order to calculate the energy used by an electrical appliance?
a. voltage and current
b. current and time of operation
c. power and time of operation
d. current and resistance
ans: c

35. Voltage drop is the
a. maximum potential
b. difference in potential between two points
c. voltage produced by a source
d. voltage at the end of a circuit
ans: b

36. A 240V, 60Wlamp has a working resistance of
a. 1400 ohm
b. 60 ohm
c. 960 ohm
d. 325 ohm
ans:c

37. The energy used by a 1.5kW heater in 5 minutes is:
a. 5 J
b. 450 J
c. 7500 J
d. 450000 J
ans:d

38. If a current of 5A flows for 2 minutes, the quantity of charge transferred will
a. 600C
b. 100C
c. 0.6C
d. 60C
ans: a

39. In what time would a current of 1A transfer a charge of 30 Coulomb?
a. 45s
b. 30s
c. 65s
d.4s
ans: b

40. How long must a current of 0.1A flow so as to transfer a charge of 30 Coulomb?
a. 5 min
b. 5s
c. 50min
d. 50s
ans: a

41. A force of 4N moves an object 200 cm in the direction of the force. Work done is
a. 6 J
b. 8 J
c. 4 J
d. 10 J
ans:b

42. The amount of work done in lifting a mass of 500 kg to a height of 6min 30 sec ….
a. 2943J
b. 0.2943J
c. 29.43J
d. 29.43KJ
ans:d

43. The power required in lifting a mass of 500 kg to a height of 6m in 30 sec….
a.198J
b. 981W
c.198W d. 981J
ans: b

44. 0.32mA=. . . . . µA
a.0.0032

b.0.032
c.0.00032
d.320
ans: d

45. A portable machine requires a force of 200N to move it. If the machine is moved through 20m in 25s, power required is
a. 160kW
b. 1600W
c. 16kW
d.160W
ans: d

46. Energy provided by a source e.m.f. of 5V supplying a current of 3A for 10 minutes is
a.9kJ
b. 65J
c. 25kJ
d. 90kJ
ans: a

47. 450 J of energy are converted into heat in 1 minute. The power dissipated is
a.7.5kW
b.7.5W
c.750W
d. 600W
ans: b

48. The power rating of a d.c. electric motor consuming 36 MJ when connected to a 250V supply for 1 hour is
a. 100W
b.10W
c.500W
d. 10KW
ans: d

49. A current of 2A flows for 10 h through a100Ωresistor. The energy consumed by the resistor is
a. 0.5 kWh
b. 4 kWh
c. 2 kWh
d. 0.02 kWh
ans: b

50. Amount of heart energy required to raise the temperature of 10kg of water through 100°C is (S_w of water as 4200J/kgK)
a. 4.2kJ
b.4.2MJ
c. 42kJ
d. 420J
ans:b

51. The opposition to the flow of leakage current is called as
a. resistance
b. leakage coefficient
c. insulation resistance
d. all above
ans:c

52. The insulation resistance is generally measured in..
a. ohms
b. Mega ohms
c. milli ohms
d. none of above
ans:b

53. The insulation resistance of a cable is
a. directly proportional to length of cable
b. inversely proportional to length of cable
c. remains same with change in length
d. none of above
ans:b

54. Which is the expression for insulation resistance of a single core cable
a. R=ρ l/a

b. $R_i=\frac{\rho}{2\pi l} ln(R_2/R_1)$
c. $R_i=\frac{\rho}{2\pi l}(R_2/R_1)$
d. none of above
ans:b

55. As the thickness of insulation layer of a cable increases, it's insulation resistance will
a. increase
b. decrease
c. remain same
d. none of above
ans: a

56. As the Temperature of surrounding increases the insulation resistance will
a. increase
b. remain same
c. decrease
d. none of above
ans: c

57. Which is a good conductor of electricity?
a. normal tap water
b. pure water
c. glass
d. plastic
ans: b

58. As moisture content in the air increases, then the insulation resistance will
a. decrease
b. remain same
c. increase
d. none of above
ans: a

59. When the Humidity in the surrounding increases, the leakage current in the cable will
a. remain same
b. increase
c. decrease
d. all of above
ans: b

60. Factors affecting the insulation resistance of a cable are
a. length
b. thickness
c. resistivity of insulating material
d. all above
ans:d

61. If length of cable is doubled, then its insulation resistance will
a. reduce by 25%
b. reduce by 50%
c. increase by 50%
d. reduce by 55%
ans:b

62 .If two cables with their insulation resistances Ri_1 and Ri_2 are joined in series, then their equivalent resistance will be
a. $Ri_1 + Ri_2$
b. $Ri_1 - Ri_2$
c. Ri_1 / Ri_2
d. $(Ri_1.Ri_2) / (Ri_1 + Ri_2)$
ans:d

64. If the thickness of insulation layer of cable is doubled, then its insulation resistance will
a. reduce by 25%
b. increase by 50%
c. increase by 58.5%
d. reduce by 55%
ans:c

65. If two cables with their insulation resistances Ri_1 and Ri_2 with conductor resistances $R_1$and R_2 respectively are joined in parallel, then their conductor equivalent resistance will be
a. $R_1 + R_2$

b. $Ri_1 - Ri_2$
c. Ri_1 / Ri_2
d. $(R_1 R_2) / (R_1 + R_2)$
ans: d

66. What is current?
a. Flow of electrons.
b. Flow of protons
c. Flow of Neutrons.
d. None of above.
ans: a

67. What is Resistance?
a. to assist the flow of current.
b. opposition the flow of current.
c. opposition the flow of voltage.
d. to assist the flow of voltage.
ans:a

68. Unit of resistance is…
a. Volts.
b. Amperes.
c. Ohm.
d. Faraday.
ans:c

69. Resistance of material will decrease with increase of…..
a. Length of material.
b. Both Length and Cross-section area of material.
c. Cross-section area of material.
d. None of above.
ans:c

70. According to Ohm's law current in the conducting material is directly proportional to…
a. Resistance of material.
b. Voltage across.
c. Both Voltage and Resistance.
d. None of above.
ans:b

71. According to Ohm's law current in conducting material is inversely proportional to….
a. Voltage across it.
b. Both Voltage and Resistance.
c. Resistance of material.
d. None of above.
ans:c

72. What are the factors on which resistance of material depends?
a. Length and Cross-section area of material.
b. Temperature of material.
c. Specific resistivity of material.
d. All of above.
ans:d

73. Resistance of material will increase with increase of?
a. Cross-section area of material.
b. Length of material.
c. Both Length and Cross-section area of material.
d. None of above.
ans:b

74. What will be the effect on the resistance of conducting material if the temperature increases?
a. No effect on resistance.
b. Resistance will increase.
c. Resistance will decrease.
d. Resistance will remain same.
ans:b

75. What will be the effect on the resistance of conducting material if the temperature decreases?
a. Resistance will remain same.
b. No effect on resistance.
c. Resistance will increase.
d. Resistance will decrease.

ans:d

76. What will be the effect on the resistance of insulating material if the temperature increases?
a. No effect on resistance.
b. Resistance will increase.
c. Resistance will remain same.
d. Resistance will decrease.
ans:d

77. What will be the effect on the resistance of insulating material if the temperature decreases?
a. Resistance will remain same.
b. No effect on resistance.
c. Resistance will increase.
d. Resistance will decrease.
ans:c

78. What will be the resistance of semi-conductor at low temperature?
a. Resistance will be high.
b. Resistance will be low.
c. No effect on resistance
d. None of above.
ans:a

79. What will be the resistance of semi-conductor at high temperature?
a. Resistance will be high
b. No effect on resistance.
c. Resistance will be low.
d. None of above.
ans:c

80. At low temperature semi-conductor will behave as?
a. Insulator.
b. Conductor.
c. Semi-conductor.
d. None of above.
ans:a

81. At high temperature semi-conductor will behave as?
a. Insulator.
b. Conductor.
c. Semi-conductor.
d. None of above.
ans:b

82. The length of a conductor or a wire is doubled and its cross section is also doubled then the resistance will.
a. Increases four times.
b. Remains unchanged.
c. Decreases four times.
d. Change at random.
ans:b

83. The variation of resistance with temperature is governed by a property called.
a. Resistance access coefficient (RAC).
b. Resistance nature coefficient (RNC).
c. Resistance temperature coefficient (RTC).
d. None of above.
ans:c

84. Temperature co-efficient of resistance at 0^0C is defined as the change in resistance per ohm original resistance per ^{0}C change in temperature.
a. True.
b. False.
ans:a

85. Unit of Temperature co-efficient of resistance is.
a. /Ω/^{0}C.
b. /^{0}C.
c. ^{0}C.
d. Ω/^{0}C.
ans:b

86. Temperature co-efficient of resistance α_0 is given by.
a. $\alpha_0 = \frac{R_t - R_0}{R_0.t}$
b. $\alpha_0 = \frac{R_0 - R_t}{R_t.t}$
c. $\alpha_0 = \frac{R_1 - R_2}{R_1.t}$
d. $\alpha_0 = \frac{R_2 - R_1}{R_0.t}$
ans:a

87. At 0^0C a specimen of copper have a resistance of 4mΩ and its temperature co-efficient of resistance equal to 1/234.5 per 0^0C. Find the value of its temperature co-efficient at 70^0C.
a. 0.003248/^{0}C.
b. 0.003428/^{0}C.
c. 0.003284/^{0}C.
d. 0.003434/^{0}C.
ans:

88. At 0^0C a specimen of copper have a resistance of 4mΩ and its temperature co-efficient of resistance equal to 1/234.5 per 0^0C. Find the value of resistance at 70^0C.
a. 4.5mΩ.
b. 3.5mΩ.
c. 5.19mΩ.
d. 5.5mΩ.
ans:c

90. An aluminum conductor has resistance of 10Ω AT 20^0C and the RTC of 0.0039 per ^{0}C at 20^0C .Find the RTC at 0^0C.
a. 0.000124/^{0}C.
b. 0.00423/^{0}C.
c.0.00324/^{0}C.
d. 0.0000423/^{0}C.
ans:b

91. Find the resistance of filament of 60 watt in a 230 V supply lamp at its working temperature.
a. 990 Ω.
b. 881.667 Ω.
c. 981.667 Ω.
d. 1000 Ω.
ans:b

92. A single core cable has 1.5cm diameter conductor and thickness of insulation is 2.2 cm. The resistivity of insulating material is 9.2×10^{12} Ω-m. Determine the insulation resistance per km length of cable.
a. 2×10^{12} Ω.
b. 2.9×10^{13} Ω.
c. 2×10^{9} Ω.
d. 9.2×10^{12} Ω.
ans:c

93. A single core cable has 1.5cm diameter conductor and thickness of insulation is 2.2 cm. The resistivity of insulating material is 9.2×10^{12} Ω-m. Determine the insulation resistance per km length of cable. If the working voltage of conductor is 1100V, what is the leakage current per km of cable?
a. 0.55×10^{-6}A.
b. 1.55×10^{-6}A.
c. 0.55×10^{-12}A.
d. 0.55×10^{6}A.
ans:a

94. The armature winding of a D.C. machine when connected to D.C. supply of 240 V was drawing 1.6 A at 25^0C and 1.25 A when heated. Evaluate temperature of armature winding if α of its material at 25^0C is 0.0039/^{0}C.
a. 100^0C.
b. 110^0C.
c. 96.79^0C.
d. 98.79^0C.
ans:c

95. If the length of a wire of resistance R is uniformly stretched to n times its original value, its new resistance is
a.nR
b. R/n
c. n^2R
d.r/n^2
ans:c

96. Two wires A and B of same material and length L and 2L have radius r and 2r respectively. The ratio of their specific resistance will be
a.1:1
b.1:2
c.1:4
d.1:8
ans:a

97. Two wires A and B of same material and length L and 2L have radius r and 2r respectively. The ratio of their resistances will be
a.1:1
b.2:1
c.4: 1
d.1:8
ans:b

99. A length of wire having resistance of 1 ohm is cut into four equal parts and these four parts are bundled together side-by-side to form a wire. The new resistance will be
a.1/4 ohm
b.1/16 ohm
c.4 ohm
d.16 ohm
ans:b

100. The hot resistance of filament of a bulb is higher than the cold resistance because the temperature coefficient of filament is
a. negative
b. infite
c. zero
d. positive
ans: d

101. Insulation resistance of the insulating material should be
a. high
b. low
c. zero
d. none of these
ans:a

102. The flow of current in solids is due to
a. electrons
b. electrons and ions
c. atoms
d. nucleus
ans: a

103. The resistance of human body is around
a. 5 ohms
b. 25 ohms
c. 250 ohms
d. 1000 ohms
ans:d

104. One commercial unit of energy equals
a. 500 watt seconds
b. one watt hour
c. one kilowatt hour
d. ten kilowatt hour
ans:c

105. One coulomb charge equals the charge on
a. $6.24x10^{12}$ electrons
b. $6.24x10^{14}$ electrons
c. $6.24x10^{16}$ electrons
d. $6.24x10^{18}$ electrons
ans:d

106. Electric pressure is also called
a. resistance
b. power
c. voltage
d. energy
ans:c

107. With rise in temperature resistance of pure metals
a. increases
b. decreases
c. first increases then decreases
d. remains constant
ans:a

108. With rise in temperature resistance of semiconductors
a. increases
b. decreases
c. first increases then decreases
d. remains constant
ans:b

109. The resistance of copper wire 200 m long is 21 ohms. If its thickness is 0.44 mm, its specific resistance is around
a. $1.2x10^{-8}\Omega$-m
b. $1.4x10^{-8}\Omega$-m
c. $1.6x10^{-8}\Omega$-m
d. $1.8x10^{-8}\Omega$-m
ans:c

110. Which of the following material has nearly zero temperature coefficient of resistance
a. manganin
b. porcelain
c. carbon
d. copper
ans:a

111. Which of the following material has a negative temperature coefficient of resistance
a. copper
b. aluminum
c. carbon
d. brass
ans:c

112. Ohm's law is not applicable to
a. vaccum tubes
b. carbon resistor
c. high voltage circuits
d. circuits at low current densities
ans:a

113. Which one of the following does not have negative temperature coefficient
a. aluminum
b. paper
c. rubber
d. mica
ans:a

114. An electrical effort required to drift the free electrons in one particular direction, in a conductor is called
a.MMF
b.EMF
c. current
d. all above
ans:b

115. An _____ effort required to drift the free electrons in one particular direction, in a conductor is called EMF
a. chemical
b. mechanical
c. electrical
d. thermal
ans:c

116. I = ___ /t amp
a. R
b. L

c. Q
d. t
ans:c

117. The ability of a charged particle to do work is called
a. potential difference
b. electric potential
c. magnitude
d. magnetism
ans:b

118. The unit of electric potential is ___
a.amp
b. coulomb
c. volt
d. tesla
ans:c

119. 1 calorie = ___
a.4.186 joules
b.0.24 joules
c.41.86 joules
d. none of the above
ans:a

120. Unit of resistivity is ____
a. Ω
b. Ω-m
c. Ω/m
d. all above
ans:b

121. Unit of conductance is ___
a. ohms
b. siemens
c. newtons
d. none of above
ans:b

122. The material having highest value of ____ is best conductor
a. resistivity
b. conductivity
c. permittivity
d. all above
ans:b

123. The material having poorest value of ____ is best insulator.
a. resistivity
b. conductivity
c. permittivity
d. all above
ans:b

124. The resistance of copper wire 25 m long is found to be 50 Ω. If its diameter is 1mm, then resistivity of copper is ___
a.1.57 μΩ-m
b.1.57 Ω-m
c.15.7 Ω-m
d. none of the above
ans:a

125. Factors which affect the resistance _____
a. length of the material
b. cross sectional area
c. temperature
d. all above
ans:d

126. Effect of temperature on resistance depends on ____ of material
a. size
b. shape
c. nature
d. length
ans:c

127. Resistance of carbon _____ as the temperature increases
a. increases
b. remains same

c. decreases
d. none of above
ans:c

128. Semiconductors have _____ temperature coefficient
a. positive
b.negative
c.zero
d.all above
ans:b

129. Resistance temperature coefficient is denoted by ____
a. α
b. β
c. θ
d. Φ
ans:a

130. The RTC at $t^{O}C$ is ratio of _____
a. change in conductance per degree Celsius to the resistance at $t^{0}C$
b. change in resistance per degree Celsius to the resistance at $t^{0}C$
c. change in initial resistance per degree Celsius to the resistance at $t^{0}C$
d. all above
ans:b

131. Unit of RTC is ____
a. ^{O}C
b. $/^{O}C$
c. $\Omega/^{O}C$
d. all above
ans:b

132. Insulation resistance is defined as opposition to the flow of ____
a. current
b. voltage
c. leakage current
d. all above
ans:c

133. Insulation resistance $R_i = V/I_l$, in this V is ____
a. voltage between conductor and earth
b. voltage between insulation and earth
c. voltage between conductor and insulator
d. all above
ans:a

134. Insulation resistance $R_i = V/I_l$, in this I_l is ____
a. current
b. voltage
c. leakage current
d. line current
ans:c

135. Insulation resistance is _____ proportional to its length
a. directly
b. inversely
c. not
d. none of above
ans:b

136. Insulation resistance is inversely proportional to its _____
a. length
b. area
c. diameter
d. cross sectional area
ans: a

137. Which of the following substance, the resistance decreases with the increase of temperature?
a. carbon
b. constantan
c. copper
d. silver

ans:a

138. At 300K the temperature coefficient of resistance of a wire is 0.00125 /^{O}C and its resistance is one ohm. The resistance of wire will be 2 ohm at
a. 1154 K
b. 1100 K
c. 1400 K
d. 1127 K
ans: b

139. The conventional electric current is due to the flow of
a. positive charges only
b. negative charges only
c. neutral particles only
d. both positive and negative charges.
ans:b

140. Insulators have _____ temperature coefficient of resistance
a. positive
b. negative
c. zero
d. none of the above
ans:b

141. Two underground cables A and B, each has a conductor resistance of 0.6 Ω and 0.8 Ω resp. each has insulation resistance of 600 MΩ and 400 MΩ resp. if cables are connected in series, its conductor resistance is ___
a.1.2 MΩ
b.1.2 Ω
c.1.4 Ω
d. 1.6 Ω
ans:c

142.Two underground cables A and B, each has a conductor resistance of 0.6 Ω and 0.8 Ω resp. each has insulation resistance of 600 MΩ and 400 MΩ resp. if cables are connected in series, its insulation resistance is ___
a.120 MΩ
b.240 Ω
c.240 MΩ
d. 160 Ω
ans:c

143.Two underground cables A and B, each has a conductor resistance of 0.6 Ω and 0.8 Ω resp. each has insulation resistance of 600 MΩ and 400 MΩ resp. if cables are connected in parallel, its insulation resistance is ___
a.1200 MΩ
b.2400 Ω
c.1000 MΩ
d. 1600 Ω
ans:c

144. Two underground cables A and B, each has a conductor resistance of 0.6 Ω and 0.8 Ω resp. each has insulation resistance of 600 MΩ and 400 MΩ resp. if cables are connected in parallel, its conductor resistance is ___
a.0.3428Ω
b.0.240 Ω
c.0.240 MΩ
d. 0.160 Ω
ans:a

145. Match the pair

1. Resistance	a. /^{0}C
2. Insulation resistance	b.siemens
3. RTC	c.ohm
4. Conductance	d.MΩ

a. 1a,2-b,3-c,4-d
b.1-c,2-d,3-a,4-b
c.1-d,2-c,3-b,4-a
d.all above
ans:b

UNIT IVA

Que. The distance occupied by one complete cycle of the wave is called its_____

A. time period
B. wavelength
C. velocity
D. frequency
Ans. A

Que. The rms value of a sine wave of peak value $I_m$is given by_____
A. $I_m/\sqrt{2}$
B. I_m
C. $I_m/2$
D. I_m/π
Ans. A

Que. The average value of a sine wave of maximum value I_m over one cycle is_____
A. I_m/π
B. $2I_m/\pi$
C. zero
D. $I_m/2$
Ans. C

Que. The time period of a sinusoidal waveform with 200 Hz frequency is_____second.
A. 0.05
B. 0.005
C. 0.0005
D. 0.5
Ans. B

Que. The form factor of a sine wave is_____
A. 1.01
B. 1.11
C. 1.21
D. none of the above
Ans. B

Que. A current is said to be alternating when it changes in_____
A. magnitude only
B. direction only
C. both magnitude and direction
D. neither magnitude nor direction
Ans. C

Que. An alternating current of 50 Hz frequency and 100 A maximum value is given by_____
A. $i = 200\ sin628t$
B. $i = 100\ sin314t$
C. $i = 100\sqrt{2}\ sin314t$
D. $i = 100\sqrt{2}sin157t$
Ans. B

Que. An alternating current is given by the expression $i = 200\sin(314t + \frac{\pi}{3})$ amperes. The maximum value and frequency of the current are_____
A. 200 A, 50 Hz
B. $100\sqrt{2}$, 50 Hz
C. 200 A, 100 Hz
D. 200 A, 25 Hz
Ans. A

Que. When two quantities are in quadrature, the phase angle between them will be_____
A. 45°
B. 90°
C. 135°
D. 60°
Ans. B

Que. The ac system is preferred to dc system because_____
A. ac voltages can be easily changed in magnitude
B. dc motors do not have fine speed control
C. high voltage ac transmission is less efficient
D. dc voltage can not be used for domestic appliances
Ans. A

Que. In ac system, we generate sine waveform because_____
A. it can be easily drawn

B. it produces least disturbance in electrical circuits
C. it is nature's standard
D. other waves can not be produced easily
Ans. B

Que. _____will work only on dc supply.
A. electric lamp
B. refrigerator
C. electroplating
D. heater
Ans. C

Que. _____will produce ac voltage.
A. friction
B. photoelectric effect
C. thermal energy
D. crystal
Ans. D

Que. A coil is rotating in the uniform field of an 8-pole generator. In one revolution of the coil, the number of cycles generated by the voltage is_____
A. one
B. two
C. four
D. eight
Ans. C

Que. An alternating voltage is given by $v = 20 \sin 157t$. The frequency of the alternating voltage is_____
A. 50 Hz
B. 25 Hz
C. 100 Hz
D. 75 Hz
Ans. B

Que. A sine wave has a maximum value of 20 V. Its value at 135° is_____
A. 10 V
B. 14.14 V
C. 15 V
D. 5 V
Ans. B

Que. An alternating voltage is given by $v = 30\, sin314t$ .The time taken by the voltage to reach 30 V for the first time is_____
A. 0.02 second
B. 0.1 second
C. 0.03 second
D. 0.005 second
Ans. D

Que. A sinusoidal current has a magnitude of 3 A at 120°. Its maximum value will be_____
A. √3 A
B. $\frac{\sqrt{3}}{2}$ A
C. 2√3 A
D. 6 A
Ans. C

Que. We have assigned a frequency of 50Hz to power system because it_____
A. can be easily obtained
B. gives best result when used for operating both lights and machinery
C. leads to easy calculations
D. none of the above
Ans. B

Que. An alternating voltage is given by $v = 100\, sin314t$ volts. Its average value will be_____
A. 70.7 V
B. 50 V
C. 63.7 V
D. 100 V
Ans. C

Que. An alternating current whose average value is 1 A will produce_____1 A dc under similar conditions.
A. less heat than
B. more heat than
C. the same heat as
D. none of the above
Ans. B

Que. A sinusoidal alternating current has a maximum value of I_m. Its average value will be_____
A. $\frac{Im}{\pi}$
B. $\frac{Im}{2\pi}$
C. $2\frac{Im}{\pi}$
D. none of the above
Ans. C

Que. The area of a sinusoidal wave over a half-cycle is_____
A. $max.value \div 2$
B. $2 \times max.value$
C. $max.value \div \pi$
D. $max.value \div 2\pi$
Ans. B

Que. An alternating voltage is given by $v = 200\ sin314t$. Its rms value will be_____
A. 100 V
B. 282.8 V
C. 141.4 V
D. 121.4 V
Ans. C

Que. A sinusoidal voltage is represented as $v = 141.4\sin(314.18t - \frac{\pi}{2})$. Its rms value of voltage, frequency and phase angle are respectively_____
A. 141.42 V, 314.16 Hz, 90°
B. 100 V, 100 Hz, -90°
C. 87.92 V, 56 Hz, 90°
D. 100 V,50 Hz, -90°
Ans. D

Que. When two sinusoidal waves are 90° out of phase, then_____
A. both have their peak values at the same instant
B. both have their minimum values at the same instant
C. one has its peak value; while the other has zero value
D. none of these
Ans. C

Que. The direction of current in an ac circuit is_____
A. always in one direction
B. varying from time to time
C. unpredictable
D. from positive to negative
Ans. B

Que. Consider the sinusoidal waves: $A\sin(\omega t + 30°)$ and $B\sin(\omega t - 60°)$. The phase angle relationship between the two waves_____
A. B-wave lags A-wave by 90°
B. B-wave lags A-wave by 60°
C. B-wave lags A-wave by 30°
D. B-wave and A-wave are in phase
Ans. A

Que. A sinusoidal voltage is expressed as $v = 20\sin(314.16t + \frac{\pi}{3})$ V. Its frequency and phase angle respectively are_____
A. 314.16 Hz, 60°
B. 60Hz, 60°
C. 50 Hz, 60°
D. 50 Hz, -60°
Ans. C

Que. A sinusoidal voltageV_1 leads another sinusoidal voltage V_2 by 180°. Then_____
A. voltageV_2 leads voltage $V_1$by 180°
B. both voltage have their zero values at the same time
C. both voltages have their peak values at the same time
D. all of the above
Ans. D

Que. The rms value of an ac sinusoidal current is 10 A. Its peak value is_____
A. 7.07 A
B. 14.14 A
C. 10 A
D. 28.28 A
Ans. B

Que. If A=10∠45° and B=5∠15°, then the value of A/B will be_____
A. 50∠60°
B. 2∠60°
C. 2∠-30°
D. 2∠30°
Ans. D

Que. When a phasor is multiplied by –j, it gets rotated through_____in the counterclockwise direction.
A. 90°
B. 180°
C. 270°
D. none of the above
Ans. C

Que. The rms value of sinusoidally varying current is_____that of its average value.
A. more than
B. less than
C. same as
D. none of the above
Ans. A

Que. Alternating voltages and currents are expressed in rms values because_____
A. they can be easily determined
B. calculations become very simple
C. they give comparison with dc
D. none of the above
Ans. C

Que. The average value of $\sin^2\theta$ over a complete cycle is_____
A. +1
B. -1
C. $\frac{1}{2}$
D. zero
Ans. C

Que. The average value of sinθ over a complete cycle is_____
A. zero
B. +1
C. -1
D. $\frac{1}{2}$
Ans. A

Que. An alternating current is given by $i = Im\ sin\theta$. The average value of squared wave of this current over a complete cycle is_____
A. $I^2_m/2$
B. I_m/π
C. $2I_m/\pi$
D. $2I_m$
Ans. A

Que. The form factor of a sinusoidal wave is_____
A. 1.414
B. 1.11
C. 2
D. 1.5
Ans. B

Que. The filament of a vacuum tube requires 0.4A dc to heat it. The rms value of ac required is_____
A. $0.4 \times \sqrt{2}$ A
B. $0.4 \div 2$ A
C. $0.8 \div \sqrt{2}$ A
D. 0.4 A
Ans. D

Que. A100 V peak ac is as effective as_____dc
A. 100 V
B. 50 V
C. 70.7 V
D. none of the above
Ans. C

Que. The form factor of a _____wave is 1.
A. sinusoidal
B. square
C. triangular
D. sawtooth
Ans. B

Que. Out of the following _____wave is the peakiest.
A. sinusoidal
B. square
C. rectangualr
D. triangular
Ans. D

Que. The peak factor of a sine waveform is_____
A. 1.11
B. 1.414
C. 2
D. 1.5
Ans. B

Que. When a 15V square wave is connected across a 50V ac voltmeter, it will read_____
A. 15V
B. $15 \times \sqrt{2}$ V
C. $15/\sqrt{2}$ V
D. none of the above
Ans. A

Que. The period of a wave is_____
A. the same as frequency
B. time required to complete one cycle
C. expressed in amperes
D. none of the above
Ans. B

Que. The form factor is the ratio of _____
A. peak value to rms value
B. rms value to average value
C. average value to rms value
D. none of the above
Ans. B

Que. The period of a sine wave is 1/50 seconds. Its frequency is_____
A. 20 Hz
B. 30 Hz
C. 40 Hz
D. 50 HZ
Ans. D

Que. A heater is rated as 230V, 10KW, AC. The value of 230V refers to_____
A. average voltage
B. rms voltage
C. peak voltage
D. none of the above
Ans. B

Que. The peak value of a sine wave is 200V. Its average value is_____
A. 127.4V
B. 141.4V
C. 282.8V
D. 200V
Ans. A

Que. The rms value of a sine wave is 100A. Its peak value is _____
A. 70.7A
B. 141.4A
C. 150A
D. 282.8A
Ans. B

Que. The voltage of domestic supply is 220V. This figure represents_____
A. mean value
B. rms value
C. peak value
D. average value
Ans. B

Que. The rms value and mean value is the same in the case of_____
A. traingular wave
B. sine wave
C. square wave
D. half wave rectified sine wave
Ans. C

Que. For the same peak value which of the following wave will have the highest rms value?
A. square wave
B. half wave rectified sine wave
C. triangular wave

D. sine wave
Ans. A

Que. For the same peak value which of the following wave will have the least mean value?
A. half wave rectified sine wave
B. triangular wave
C. sine wave
D. square wave
Ans. A

Que. For a sine wave with peak value I_{max}, the rms value is_____
A. $0.5I_{max}$
B. $0.707I_{max}$
C. $0.9I_{max}$
D. $1.414I_{max}$
Ans. B

Que. Form factor is the ratio of_____
A. average value/rms value
B. average value/peak value
C. rms value/average value
D. rms value/peak value
Ans. C

Que. For a sine wave with peak value E_{max}, the average value is_____
A. $0.636E_{max}$
B. $0.707E_{max}$
C. $0.434E_{max}$
D. $1.414E_{max}$
Ans. A

Que. The current in a circuit is given by: $i = 100 \sin 314t$ amperes. The maximum value and frequency of current are_____
A. $50\sqrt{2}$ A, 100 Hz
B. $100\sqrt{2}$ A, 100 Hz
C. 100 A, 50 Hz
D. 70.7 A, 50 Hz
Ans. C

Que. For a frequency of 200 Hz, the time period will be_____
A. 0.05 S
B. 0.005 S
C. 0.0005 S
D. 0.5 S
Ans. B

Que. An ac voltage of 50 Hz has a maximum value of 50 V. Its value after 1/600 second after the instant the current is zero will be_____
A. 5V
B. 12.5V
C. 25V
D. 43.8V
Ans. C

Que. For 200V rms value triangular wave, the peak voltage will be_____
A. 200V
B. 222V
C. 282V
D. 346V
Ans. D

Que. The rms value of a half-wave rectified current is 100 A. Its value for full-wave rectification would be_____amperes.
A. 141.4
B. 200
C. $200/\pi$
D. $40/\pi$
Ans. A

Que. The rms value of a sinusoidal ac current is equal to its value at an angle of _____degrees.
A. 90
B. 60
C. 45
D. 30
Ans. C

Que. The rms value of alternating current is given by steady dc current which when flowing through a given circuit for a given time produces_____
A. the more heat than produced by ac when flowing through the same circuit
B. the same heat as produced by ac when flowing through the same circuit
C. the less heat than produced by ac flowing through the same circuit
D. none of the above
Ans. B

Que. The square waveform of current has following relation between rms value and average value:
A. rms value is equal to average value
B. rms value of current is greater than average value
C. rms value of current is less than average value
D. none of the above
Ans. A

Que. If a sinusoidal wave has frequency of 50 Hz with 30A rms current, which of the following equation represents the wave?
A. $42.42 \sin 314t$
B. $60\ sin25t$
C. $30 \sin 50t$
D. $84.84\ sin25t$
Ans. A

Que. Which of the following waves has the highest value of peak factor?
A. square wave
B. sine wave
C. half wave rectified sine wave
D. triangular wave
Ans. C

Que. The frequency of domestic power supply in India is_____
A. 200 Hz
B. 100 Hz
C. 60 Hz
D. 50 Hz
Ans. D

Que. The rms value of half wave rectified sine wave is 200V. The rms value of full wave rectified ac will be_____
A. 282.8V
B. 141.4V
C. 111V
D. 100V
Ans. A

Que. The negative maximum of a cosine wave occurs at_____
A. 30°
B. 45°
C. 90°
D. 180°
Ans. D

Que. The rms value of pure cosine function is_____
A. 0.5 of peak value
B. 0.707 of peak value
C. same as peak value
D. zero
Ans. B

Que. An alternating voltage is given in volts by expression $v = 326\ sin314t$. Its rms value and frequency are____
A. 230V,50 Hz
B. 230V,100 Hz
C. 326V,50 Hz
D. 326V,100 Hz
Ans. A

Que. According to which of the alternating current values in the cross sectional area of a conductor with regard to the heating effect is selected?
A. peak value
B. half peak value
C. average value

D. rms value
Ans. D

Que. The frequency of an alternating current is_____
A. the speed with which the alternator runs
B. the number of cycles generated in one minute
C. the number of waves passing through a point in one second
D. the number of electrons passing through a point in one second
Ans. C

Que. The equation of 50 Hz current sine wave having rms value of 60 A is_____
A. $60 \sin 25t$
B. $60 \sin 50t$
C. $84.84\ sin314t$
D. $42.42\ sin314t$.
Ans. C

Que. The direction of current in an ac circuit_____
A. is from positive to negative
B. is always in one direction
C. varies from instant to instant
D. can not be determined
Ans. C

Que. The angular frequency of an alternating quantity is a mathematical quantity obtained by multiplying the frequency "f" of the alternating quantity by a factor_____
A. $\frac{\pi}{2}$
B. π
C. 2π
D. 4π
Ans. C

Que. The average value of an unsymmetrical alternating quantity is calculated over the_____
A. whole cycle
B. half cycle
C. unsymmetrical part of the waveform
D. first two cycles
Ans. A

Que. A constant current of 2.8A exists in a resistor. The rms value of current is_____
A. 2.8 A
B. about 2 A
C. 1.4 A
D. undefined
Ans. A

Que. An alternating current is represented as $i = 70.7 \sin(520t + \frac{\pi}{6})$. The frequency and rms value of the current are_____
A. 82.76 Hz, 50 A
B. 41.38 Hz, 25 A
C. 41.38 Hz, 50 A
D. 82.76 Hz, 25 A
Ans. A

Que. The time period or periodic time T of an alternating quantity is the time taken in seconds to complete_____
A. one cycle
B. alternation
C. none of the above
D. Half cycle
Ans. A

Que. The time period of an alternating quantity is 0.02 second.Its frequency will be_____
A. 25 Hz
B. 50 Hz
C. 100 Hz
D. 0.02 Hz
Ans. B

Que. The size (cross-sectional area) of a conductor, with regard to the heating effect, is determined on the basis of …….. value of current to be carried by it
A. average value
B. peak value
C. rms value
D. peak to peak value

Ans. C

Que. The form factor for dc supply voltage is always
A. zero
B. unity
C. infinity
D. any value between 0 and 1
Ans. B

Que. The _____ varying alternating quantity can be represented as phasor.
A. circular
B. sinusoidally
C. rectangular
D. triagular
Ans. B

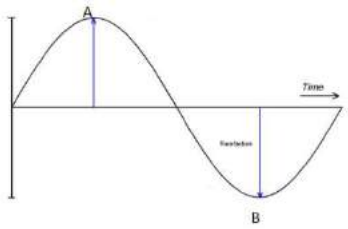
Que. The phasors are assumed to be rotated in _____ direction.
A. clockwise
B. anticlockwise
C. circular
D. all above
Ans. B

Que. In practice, alternating quantities are represented by their _____ values
A. rms
B. average
C. rectangular
D. polar
Ans. A

Que. Alternating quantities of ____ frequencies can be represented on same phasor diagram.
A. Same
B. Different
C. multiple
D. all above
Ans. A

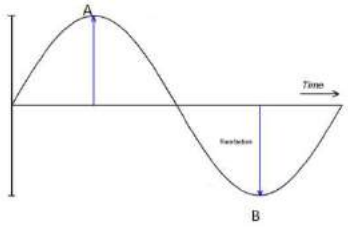
Que. The phase of alternating quantity at any particular instant is the fraction of _____
A. phase
B. time
C. time period
D. all above
Ans. C

Que.



In the above figure, the phase quantity at A is _____
A. T
B. T/2
C. T/3
D. T/4
Ans. D

Que.



In the above figure, the phase quantity at B is _____
A. T
B. T/2
C. 3T/4
D. T/4
Ans. C

Que. When phase of an alternating quantity is positive it means that quantity has some _____ instantaneous value at t=0
A. zero
B. positive
C. negative
D. none of the above

Ans. B

Que. When phase of an alternating quantity is negative it means that quantity has some _____ instantaneous value at t=0
A. zero
B. positive
C. negative
D. none of the above
Ans. C

Que. The difference between the _____ of two alternating quantities is called the phase difference.
A. time
B. phase angle
C. Lengths
D. both a and b
Ans. B

Que. The difference between the phase of two alternating quantities is called the_____.
A. phase difference
B. sinedifference
C. length difference
D. none of the above
Ans. A

Que. When phase difference between the two alternating quantities is zero, the two quantities are said to be in _____
A. tandom
B. length
C. phase
D. time
Ans. C

Que. When _____ between the two alternating quantities is zero, the two quantities are said to be in phase.
A. time difference
B. length difference
C. phase difference
D. none of the above
Ans. C

Que. When phase difference between the two alternating quantities is _____, the two quantities are said to be in phase.
A. one
B. unity
C. zero
D. $\pi/2$
Ans. C

Que. If v = Vm Sin ωtand i = Im Sin (ωt-Φ), the 'v' is said to _____ 'i' by angle Φ
A. in phase
B. lagging
C. leading
D. all above
Ans. C

Que. If v = Vm Sin ωt and i = Im Sin (ωt+Φ), the 'i' is said to _____ 'v' by angle Φ
A. in phase
B. lagging
C. leading
D. all above
Ans. C

Que. If v = Vm Sin ωtand i = Im Sin (ωt+Φ), the 'v' is said to _____ 'i' by angle Φ
A. in phase
B. lag
C. lead
D. all above
Ans. B

Que. If v = Vm Sin ωtand i = Im Sin ωt, the 'i' is said to _____ 'v' by angle Φ
A. in phase
B. lag
C. lead
D. all above
Ans. A

Que. With respect to reference, plus sign of angle indicates _____
A. leading

B. lagging
C. inphase
D. none of the above
Ans. A

Que. With respect to reference, minus sign of angle indicates _____
A. leading
B. lagging
C. inphase
D. none of the above
Ans. B

Que. With respect to reference, _____ sign of angle indicates lead
A. division
B. plus
C. minus
D. dot
Ans. B

Que. With respect to reference, _____ sign of angle indicates lag.
A. division
B. plus
C. minus
D. dot
Ans. C

Que. The diagram in which different sinusoidal alternating quantities of the same frequency, are represented by individual phasors indicating exact phase relationship is called _____
A. graph
B. still diagram
C. phasor diagram
D. picture
Ans. C

Que. The diagram in which different sinusoidal alternating quantities of the same _____, are represented by individual phasors indicating exact phase relationship is called phasor diagram.
A. time
B. frequency
C. sign
D. shape
Ans. B

Que. The lagging and leading word is relative to the _____
A. base
B. range
C. reference
D. angle
Ans. C

Que. In purely _____ circuit, the current flowing and voltage applied are in phase with each other.
A. resistive
B. inductive
C. capacitive
D. none of the above
Ans. A

Que. In purely resistive circuit, the current and voltage applied are in _____ with each other.
A. opposition
B. phase
C. direction
D. line
Ans. B

Que. In purely _____ circuit, current lags voltage by 90 degrees.
A. resistive
B. inductive
C. capacitive
D. none of the above
Ans. B

Que. In purely Inductive circuit, current _____ voltage by 90 degrees.
A. leads
B. lags
C. in phase
D. all above
Ans. B

Que. In purely Inductive circuit, current lags voltage by _____ degrees.
A. 30
B. 60
C. 90
D. 120
Ans. C

Que. The inductance offers _____ reactance to DC
A. high
B. low
C. zero
D. none of the above
Ans. C

Que. The _____ offers zero reactance to DC
A. resistance
B. inductance
C. permeance
D. none of the above
Ans. B

Que. The inductance offers zero _____ to DC
A. resistance
B. capacitance
C. reactance
D. permeance
Ans. C

Que. Pure _____ never consumes power
A. resistor
B. inductor
C. starter
D. circuit
Ans. B

Que. Inductive reactance is given by_____
A. $X_L=\omega L$
B. $X_L=2\pi L$
C. $X_L=\Phi L$
D. $X_L=\omega C$
Ans. A

Que. Inductive reactance is measured in _____
A. Farad
B. Henry
C. Ohm
D. Joule
Ans. C

Que. Inductive reactance depends on _____ of applied voltage
A. phase
B. sign
C. frequency
D. speed
Ans. C

Que. Inductive reactance is _____ frequency.
A. inversely proportional to
B. directly proportional to
C. indepedent of
C. none of above
Ans. B

Que. Inductive reactance is directly proportional to _____.
A. time
B. phase
C. frequency
D. phase difference
Ans. C

Que. In purely capacitive circuit, current _____ voltage by 90 degrees.
A. lags
B. leads
C. in phase
D. all above
Ans. B

Que. In purely capacitive circuit, current leads voltageby _____ degrees.
A. 30
B. 60
C. 90

D. 120
Ans. C

Que. The capacitor offers _____ reactance to DC.
A. high
B. low
C. zero
D. none of the above
Ans. A

Que. The _____ offers infinite reactance to DC
A. resistance
B. permeance
C. capacitance
D. none of the above
Ans. C

Que. The capacitance offers infinite _____ to DC
A. resistance
B. capacitance
C. reactance
D. permeance
Ans. C

Que. The power curve of pure capacitor is _____ curve of frequency double than that of applied voltage
A. sine
B. square
C. tringular
D. sawtooth
Ans. A

Que. Pure _____ never consumes power
A. resistor
B. capacitor
C. starter
D. circuit
Ans. B

Que. Inductive reactance is given by_____
A. $X_C=1/\omega C$
B. $X_C=1/2\pi C$
C. $X_C=1/\Phi C$
D. $X_C=2\pi fL$
Ans. A

Que. _____is given by $X_C=1/\omega L$
A. resistance
B. inductance
C. inductive reactance
D. capacitive reactance
Ans. D

Que. Capacitive reactance is measured in _____
A. farads
B. henrys
C. ohms
D. joules
Ans. C

Que. Capacitive reactance is _____ to frequency.
A. inversely proportional
B. directly proportional
C. both
C. none of above
Ans. A

Que. Capacitive reactance is inversly proportional to _____.
A. time
B. phase
C. frequency
D. phase difference
Ans. C

Que. A certain inductor has reactance of 4kΩ at 5kHz. Its reactance at 15 kHz is _____ kΩ.
A. 8
B. 10
C. 12
D. 20
Ans. C

Que. The square of aj operator _____
A. can never be negative
B. can never be positive

C. could be either positive or negative
D. is equal to j
Ans. B

Que. A complex number_____
A. is the same as imaginary number
B. has real and imaginary part
C. is negative number
D. is merely a technical term
Ans. B

Que. The sum of (3+j6) and (-3-j6) is ____
A. 0+j0
B. 6+j12
C. -6-j12
D. 0-j12
Ans. A

Que. A sinusoidal voltageis represented as: v = 141.4 sin(314.18t-π/2). Its rms value of voltage, frequency and phase angle are respectively____
A. 141.42V, 314.16 Hz, 90 degrees
B. 100V, 50 Hz, -90 degrees
C. 87.92V, 56 Hz, 90 degrees
D. 200V, 50 Hz, -90 degrees
Ans. B

Que. When two sinusoidal waves are 90 degrees out of phase, then ____
A. both have their peak values at the same time
B. both have their minimum values at the same time
C. one has its peak value, other has zero value
D. none of these
Ans. C

Que. The direction of current in an AC circuit is _____
A. always in one direction
B. varyingtime to time periodically
C. unpredictable
D. from positive to negative
Ans. B

Que. Consider the sinusoidal waves: A sin (ωt+30) and B cos(ωt-60). The phase angle relationship between two waves is:
A. B wave lags A wave by 90 degrees
B. B wave lags A wave by 60 degrees
C. B wave lags A wave by 30 degrees
D. B wave and A wave are in phase
Ans. D

Que. Thereactance of L Henryinductance connected to an AC source of frequency f is _____ ohm.
A. fL
B. πfL
C. 2 πfL
D. all above
Ans. C

Que. When pure inductance is connected to an AC sources, the voltage____ to the current by ____
A. lags, 90 degrees
B. leads, 90 degrees
C. lags, 45 degrees
D. leads, 45 degrees
Ans. B

Que. When a phasor is multiplied by j and –j, it is rotated through _____ degrees in the anticlockwise direction respectively.
A. 90,270
B. 90,90
C. 90,180
D. 270,90
Ans. A

Que. The p. f. of purely resistive circuit is ____
A. zero
B. unity
C. lagging
D. leading
Ans. B

Que. If $e_1 = 100 \sin(2\pi f)$ and $e_2 = 100 \sin(2\pi f - \Phi)$, then _____

A. e_1 lags e_2 by Φ
B. e_1 leads e_2 by Φ
C. e_2 lags e_1 by Φ
D. none of the above
Ans. C

Que. The average power in a purely inductive or capacitive circuit over a cycle____
A. depends on $X_L$or X_C
B. is negative
C. is zero
D. is positive
Ans. C

Que. Inductive reactance of an AC circuit increases with ____
A. increase in frequency
B. increase in resistance
C. decrease in resistance
D. decrease in frequency
Ans. A

Que. When the two quantities are in quadrature, the phase angle between them will be ____ degrees.
A. 45
B. 90
C. 135
D. 60
Ans. B

Que. The phase difference between two waveforms can be compared when they _____
A. have the same frequency
B. have the same peak value
C. have the same effective value
D. are sinusoidal
Ans. A

Que. If two sinusoids of the same frequency but of different amplitude and phase difference are added, the resultant is a _____
A. sinusoid of same frequency
B. sinusoid of double the original frequency
C. sinusoid of half the original frequency
D. non-sinusoid
Ans. A

Que. A constant current of 2.8 A exists in a resistor. The rms value of current is ____
A. 2.8 A
B. 2 A
C. 1.4 A
D. undefined
Ans. A

Que. The power factor of an ordinary bulb is _____
A. zero
B. unity
C. more than unity
D. less than unity
Ans. B

Que. When aphasor is multiplied by –j, it is rotated through ____ in counter-clockwise direction
A. 90
B. 180
C. 270
D. none of the above
Ans. C

Que. If the phasor is multiplied by j, then ____
A. only its magnitude changes
B. only its direction changes
C. both magnitude and direction change
D. none of the above
Ans. B

Que. In the complex number 4+j7, 7 is called the _____ component
A. real
B. imaginary
C. in-phase
D. none of the above
Ans. D

Que. The reciprocal of a complex number is a_____
A. complex number
B. real component only

C. quadrature component only
D. none of above
Ans. A

Que. If two complex numbers are equal, then_____
A. only their magnitudes will be equal
B. only their angles will be equal
C. their in phase and quadrature components will be separately equal
D. none of above
Ans. C

Que. A phasor $2\angle 180$ can be expressed as____
A. j2
B. -j2
C. -2
D. 2
Ans. C

Que. A current of (3+j4) A is flowing through a circuit. The magnitude of current is _____
A. 7 A
B. 5 A
C. 1 A
D. 1.33 A
Ans. B

Que. The voltage applied in a circuit is given by $100\angle 60$ volts. It can be written as ____
A. $100\angle -60$
B. $100\angle 240$
C. $100\angle -300$
D. none of the above
Ans. C

Que. The conjugate of -4+j3 is _____
A. 4-j3
B. -4-j3
C. 4+j3
D. none of the above
Ans. B

Que. The difference of two conjugate number results in _____
A. a complex number
B. in-phase component only
C. quadrature component only
D. none of the above
Ans. C

Que. The reciprocal of j is ____
A. j
B. -j
C. jxj
D. none of the above
Ans. B

Que. Two waves of same frequency have opposite phase when the phase angle between them is ___ degrees
A. 360
B. 180
C. 90
D. 0
Ans. B

Que. The power consumed in a circuit element will be least when the phase difference between the current and voltageis ____ degrees.
A. approx.180
B. approx. 90
C. approx. 60
D. approx. 0
Ans. B

Que. Two sinusoidal currents are given by $i_1 = 100\sin(\omega t+\pi/3)$ and $i_2 = 150\sin(\omega t-\pi/4)$. The phase difference between them is _____ degrees
A. 15
B. 50
C. 60
D. 105
Ans. D

Que. Capacitive reactance is more when____
A. capacitance is less and frequency of supply is less

B. capacitance is less and frequency of supply is more
C. capacitance is more and frequency of supply is less
D. capacitance is more and frequency of supply is more
Ans. A

Que. Pure inductive circuit _____
A. consumes some power on average
B. does not take power at all from lines
C. takes power from the line during some part of cycle and returns back during other part of cycle
D. none of the above
Ans. C

Que. Power factor of the following circuit will be zero
A. resistive
B. pureinductive
C. pure capacitive
D. both (B) and (C)
Ans. D

Que. Power factor of the following circuit will be unity
A. resistive
B. pureinductive
C. pure capacitive
D. both (B) and (C)
Ans. A

Que. In pure resistive circuit _____
A. current lags the voltageby 90 degrees
B. current leads the voltageby 90 degrees
C. current can lead or lagthe voltageby 90 degrees
D. current is in phase with the voltage
Ans. D

Que. In pure inductive circuit _____
A. current lags the voltageby 90 degrees
B. current leads the voltageby 90 degrees
C. current can lead or lagthe voltageby 90 degrees
D. current is in phase with the voltage
Ans. B

Que. A phasor is _____
A. a line which represents the magnitude and phase of an alternatingquantity
B. a line which represents the magnitude and direction of an alternatingquantity
C. acoloured tag or band for distinction between different phases of a 3 phase supply
D. an instrument used for measuring phases of an unbalanced 3 phase load
Ans. B

Que. Ohm is the unit of all the following except
A. inductive reactance
B. capacitive reactance
C. resistance
D. capacitance
Ans. D

Que. For a purely resistive circuit the following statement is correct
A. work done is zero
B. power consumed is zero
C. heat produced is zero
D. power factor is unity
Ans. D

Que. For purely inductive circuit if $v = Vm \sin(\omega t)$ then equation of current is _____
A. $i = Im \sin(\omega t - \pi/2)$
B. $i = Im \sin(\omega t + \pi/2)$
C. $i = Im \sin(\omega t - \pi)$
D. $i = Im \sin(\omega t + \pi)$
Ans. A

Que. For purely capacitive circuit if $v = Vm \sin(\omega t)$ then equation of current is _____
A. $i = Im \sin(\omega t - \pi/2)$
B. $i = Im \sin(\omega t + \pi/2)$
C. $i = Im \sin(\omega t - \pi)$
D. $i = Im \sin(\omega t + \pi)$
Ans. B

Que. For purely resistive circuit if v = Vm sin (ωt) then equation of current is _____
A. i = Im sin (ωt-π/2)
B. i = Im sin (ωt+π/2)
C. i = Im sin (ωt)
D. i = Im sin (ωt+π)
Ans. C

Que. A sinusoidal voltageV_1 leads another sinusoidal voltage V_2 by 180 degrees. Then ____
A. voltageV_2 leads voltageV_1 by 180 degrees
B. both voltagehave their zero values at the same time
C. both voltagehave their peak values at the same time
D. all of above
Ans. D

Que. If A = 10∠45 and B = 5∠15, then the value of A/B will be___
A. 50∠60
B. 2∠60
C. 2∠-30
D. 2∠30
Ans. D

Que. The active power of AC circuit is given by ___
A. VI sin Φ
B. I^2X_L
C. I^2R
D. I^2Z
Ans. C

Que. Inductance of coil____
A. is unaffected by the supply frequency
B. decreses with the increase in supply frequency
C. increases with the increase in supply frequency
D. becomes zero with the increase in supply frequency
Ans. A

Que. Which of the following statements pertains to resistor only
A. can dissipate considerable amount of power
B. can act as energy storage device
C. connecting them in parallel increases the total value
D. opposes sudden change in voltage
Ans. A

Que. The length of a phasor in a phasor diagram normally represents the …… value of the alternating quantity
A. rms or effective
B. average
C. peak
D. none of these
Ans. A

Que. The two quantities are said to be in phase with each other when
A. the phase difference between two quantities is zero degree or radian
B. each of them pass through zero values at the same instant and rise in the same direction
C. each of them pass through zero values at the same instant but rises in the opposite directions
D. either (a) or (b)
Ans. D

Que. The phase difference between the two waveforms can be compared only when they
A. have the same frequency
B. have the same peak value
C. have the same effective value
D. are sinusoidal
Ans. A

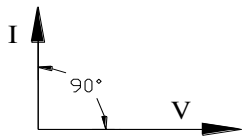
Que. The phasor diagram for alternating quantities can be drawn if they have …… waves
A. rectangular
B. sinusoidal
C. triangular
D. any of these
Ans. B

Que. Which of the following statements associated with purely resistive circuits is correct?
A. PF is unity
B. Power consumed is zero
C. Heat produced is zero
D. PF is zero
Ans. A

Que. Average power in a pure resistive circuit is equal to
A. zero
B. product of average values of current and voltage
C. product of peak values of current and voltage
D. product of rms or effective values of current and voltage
Ans. D

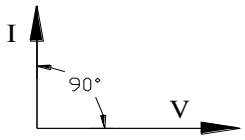
Que. The power factor of an ac circuit is equal to
A. tangent of the phase angle
B. sine of phase angle
C. unity for a resistive circuit
D. unity for a reactive circuit
Ans. C

Que. The phasor diagram of voltage and current considering phasors are rotates anticlockwise direction is of



A. pure resistance
B. pure inductance
C. pure capacitance
D. pure capacitance and pure inductance
Ans. C

Que. The phasor diagram of voltage and current considering phasors are rotates clockwise direction is of



A. Pure resistance
B. pure inductance
C. pure capacitance
D. pure capacitance and pure inductance
Ans. B

Que. The power factor of an ac circuit lies between
A. 0 and 1
B. -1 and 1
C. 0 and -1
D. none of these
Ans. A

UNIT IVB

Que. The period of a certain sine wave is 10 milliseconds. Its frequency is_____
A. 10 MHz
B. 10 KHz
C. 10 Hz
D. 100 Hz
Ans. D

Que. The rms value of a sine wave of maximum value 10A equals a dc current of _____ampere.
A. 7.07
B. 6.37
C. 5
D. 5.77
Ans. A

Que. The rms value of a sinusoidal voltage with peak-to-peak value of 240 V is_____V.

A. 84.84
B. 77.82
C. 94.68
D. 89.15
Ans. A

Que. The peak value of a sine wave is 400 V. Its average value is_____V.
A. 254.6
B. 282.6
C. 400
D. 565.5
Ans. A

Que. The average value of the current $i = 200 \sin t$ from $t = 0$ to $t = \frac{\pi}{2}$ is _____
A. 400 π
B. $\frac{400}{\pi}$
C. $\frac{1}{400}$
D. $\frac{\pi}{400}$
Ans. B

Que. An alternating current is given by $i = 10 \sin 314t$. The time taken to generate two cycles of current is____
A. 0.02 second
B. 0.01 second
C. 0.04 second
D. 0.05 second
Ans. C

Que. A sine wave has a frequency of 50 Hz. Its angular frequency is_____radian/second
A. 100π
B. 50π
C. 25π
D. 5π
Ans. A

Que. A sine wave of voltage varies from zero to maximum of 200V. How much is the voltage at theinstant of 30° of the cycle?
A. 50V
B. 82.8V
C. 100V
D. 173.2V
Ans. C

Que. How much rms current does a 300W, 200V bulb take from the 200V, 50Hz power line?
A. 0.5 A
B. 1.5 A
C. 2 A
D. 3 A
Ans. B

Que. Polar form of v = 100 sin(100πt+π/6) Volt is _____
A. 61.2371+j35.3553
B. 70.7106∠30
C. 61.2371∠35.3553
D. 70.710+ j30
Ans. B

Que. Rectangular form of V= 100 sin(100πt+π/6) Volt is _____
A. 61.2371+j35.3553
B. 70.7106∠30
C. 61.2371∠35.3553
D. 70.710+ j30
Ans. A

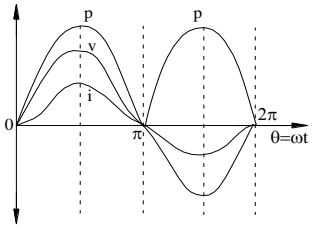
Que. RMS value of current I = 25 + j40 Amp is _____
A. 57.99
B. 47.1699
C. 60
D. 30
Ans. B

Que. Two currents $I_1 = 10\angle 50$ and $I_2 = 5\angle -100$ A flow in single phase AC circuit. Then I_1/I_2 =_____
A. 5.5596+ j4.924 A
B. 2∠150 A
C. 7.296+ j12.58 A
D. None of the above
Ans. B

Que. A 10 mH inductor carries a sinusoidal current of 1 A at frequency of 50 Hz. The average power dissipated by the inductor is ____

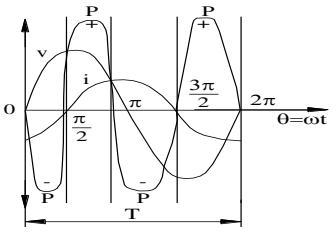
A. 0
B. 3.14 W
C. 0.5 W
D. 1 W
Ans. A

Que. The curve for the instantaneous power with respect to the waveforms of voltage & current is shown in figure is of



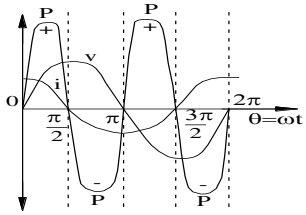
A. pure resistance
B. pure inductance
C. resistance and capacitance
D. pure capacitance
Ans. A

Que. The curve for the instantaneous power with respect to the waveforms of voltage & current is shown in figure is of



A. pure resistance
B. pure inductance
C. pure capacitance
D. purecapaciatance and pure inductance
Ans. B

Que. The curve for the instantaneous power with respect to the waveforms of voltage & current is shown in figure is of



A. pure resistance
B. pure inductance
C. pure capacitance
D. pure capacitance and pure inductance
Ans. C

UNIT IVC

Que. An electric iron designed for 110 V AC supply was rated at 500 W. It was put across a 220 V
supply. Assuming that at 110 V, it supplied 500 W output (i.e. no losses) at the new voltage it will
supply_____
A. 2500 W
B. 2000 W
C. 500 W
D. 250 W
Ans. B

Que. The mean value of the current $i = 20\ sin\theta$ from θ=0 to θ=$\frac{\pi}{2}$ is_____
A. 40π
B. $\frac{40}{\pi}$
C. $\frac{1}{40}$
D. $\frac{\pi}{40}$
Ans. B

Que. An ac current is given as i = 10 + 10 sin 314 t, the average and rms values of the current are____

A. 16.36 A, 17.07 A
B. 10 A, 17.07 A
C. 10 A, 12.25 A
D. 16.36 A, 12.2 A
Ans. C

Que. Two currents $I_1 = 10\angle 50$ and $I_2 = 5\angle -100$ A flow in single phase AC circuit. Then I_1+I_2 =_____
A. 5.5596+ j4.924 A
B. 5.5596∠4.924 A
C. 7.296+ j12.58 A
D. None of the above
Ans. A

Que. Two currents $I_1 = 10\angle 50$ and $I_2 = 5\angle -100$ A flow in single phase AC circuit. Then I_1-I_2 =_____
A. 5.5596+ j4.924 A
B. 5.5596∠4.924 A
C. 7.296+ j12.58 A
D. None of the above
Ans. C

Que. In purely inductive circuit, if the frequency is doubled and applied voltage is halved, the resulting current becomes____
A. one-fourth
B. one-fifth
C. one-half
D. one-third
Ans. A

Que. The product of (-4-j7) and (6-j2) is_____
A. -24+j14
B. 24-j14
C. -38-j34
D. -24-j14
Ans. C

Que. Inductive reactance of a coil of inductance 0.2 H at 50 Hz is ____ ohms.
A. 62.8
B. 628
C. 0.2
D. 10
Ans. A

Que. If 10 ohm resistor is connected across an AC voltagev = 100 $\sin(314t+30^0)$, the power dissipated through resistor is _____
A. 500 W
B. 1000 W
C. 250 W
D. 100 W
Ans. A

Que. For a frequency of 50 Hz, the reactance offered by capacitor is 10 ohms, If the frequency is increased to 100 Hz, the reactance becomes____
A. 40 ohms
B. 20 ohms
C. 5 ohms
D. 2.5 ohms
Ans. C

Que. Which value of inductance will give the same reactance as a capacitor of 2 µF when both are at 50 Hz?
A. 5 H
B. 10 H
C. 15 H
D. 20 H
Ans. A

Que. If a 10 ohm resistance is connected to an AC supply v = 100 $\sin(314t+37^0)$ V, the power dissipated by the resistance is
A. 10 kW
B. 1 kW
C. 500 W
D. 250 W
Ans. C

Que. A coil has X_L = 1000 ohm. If both its inductance and frequency are doubled, its reactance will become ___ ohm
A. 2000
B. 500
C. 250

D. 4000
Ans. D

Que. A pure inductance connected across 250 V, 50 Hz supply consumes 100 W. This consumption is due to_____
A. the big size of the inductor
B. the reactance of the inductor
C. the current flowing in the inductor
D. the statement given is false
Ans. D

Que. A pure capacitor connected across an AC voltage consumed 50 W. This
A. is due to the capacitive reactance in ohms
B. is due to the current flowing in capacitor
C. is due to the size of capacitor
D. statement is incorrect
Ans. D

Que. An alternating current of 50 Hz frequency has a maximum value of 100 A. Its value 1/600 second after the instant current is zero will be_____
A. 25 A
B. 12.5 A
C. 50 A
D. 75 A
Ans. C

Que. A sinusoidal voltage varies from zero to a maximum of 250 V. The voltage at the instant of 60° of the cycle will be_____
A. 150 V
B. 216.5 V
C. 125 V
D. 108.25 V
Ans. B

Que. The alternating voltage $e = 200 \sin 314t$ is applied to a device which offers an ohmic resistance of 20 Ω to the flow of current in one direction while entirely preventing the flow in the opposite direction. The average value of the current will be_____
A. 5 A
B. 3.18 A
C. 1.57 A
D. 1.10 A
Ans. B

Que. An alternating current is given by $i = 10\ sin314t$. Measuring time from $t = 0$, the time taken by the current to reach +10 V for the second time is_____
A. 0.05 second
B. 0.1 second
C. 0.025 second
D. 0.02 second
Ans. C

Que. An ac current is given by $i = 200\ sin100\pi t$. It will achieve a value of 100A after_____second.
A. $\frac{1}{900}$
B. $\frac{1}{800}$
C. $\frac{1}{700}$
D. $\frac{1}{600}$
Ans. D

Que. The voltage in a circuit follows the law: $v = 100\ sin\omega t$. If the frequency is 25 Hz, how long willit take for the voltage to rise to 50V?
A. $\frac{1}{50}$ S
B. $\frac{1}{100}$S
C. $\frac{1}{300}$S
D. $\frac{1}{600}$S
Ans. C