A.C. Fundamentals, Circuits and Circuit Theory Multiple Choice Questions and Answers

TEAM DSR

A sine wave has a frequency of 50 Hz. Its angular frequency is _____ radian/second.
(a) 100
(b) 50
(c) 25
(d) 5
Ans: a

1. The reactance offered by a capacitor to alternating current of frequency 50 Hz is 20 Q. If frequency is increased to 100 Hz, reactance becomes_____ohms.
(a) 2.5
(b) 5
(c) 10
(d) 15
Ans: c

2. The period of a wave is
(a) the same as frequency
(6) time required to complete one cycle
(c) expressed in amperes
(d) none of the above
Ans: b

3. The form factor is the ratio of
(a) peak value to r.m.s. value
(6) r.m.s. value to average value
(c) average value to r.m.s. value
(d) none of the above
Ans: b

4. The period of a sine wave is_____seconds. Its frequency is
(a) 20 Hz
(b) 30 Hz
(c) 40 Hz
(d) 50 Hz
Ans: d

5. A heater is rated as 230 V, 10 kW, A.C. The value 230 V refers to
(a) average voltage
(b) r.m.s. voltage
(c) peak voltage
(d) none of the above
Ans: b

6. The peak value of a sine wave is 200 V. Its average value is
(a) 127.4 V
(b) 141.4 V
(c) 282.8 V
(d)200V
Ans: a

7. If two sine waves of the same frequency have a phase difference of JT radians, then
(a) both will reach their minimum values at the same instant
(b) both will reach their maximum values at the same instant
(c) when one wave reaches its maxi¬mum value, the other will reach its minimum value
(d) none of the above
Ans: c

8. The voltage of domestic supply is 220V. This figure represents
(a) mean value
(b) r.m.s. value
(c) peak value
(d) average value
Ans: a

9. Two waves of the same frequency have opposite phase when the phase angle between them is
(a) 360°
(b) 180°
(c) 90°
(d) 0°
Ans: b

10. The power consumed in a circuit element will be least when the phase difference between the current and
voltage is
(a) 180″
(b) 90°
(c) 60°
(d) 0°
Ans: b

11. The r.m.s. value and mean value is the same in the case of
(a) triangular wave
(6) sine wave
(c) square wave

(d) half wave rectified sine wave
Ans: c

12. For the same peak value which of the following wave will ‘have the highest r.m.s. value ?
(a) square wave
(b) half wave rectified sine wave
(c) triangular wave
(d) sine wave
Ans: a

13. For the same peak value, which of the following wave has the least mean value ?
(a) half wave rectified sine wave
(b) triangular wave
(c) sine wave
(d) square wave
Ans: a

14. For a sine wave with peak value Imax the r.m.s. value is
(a) 0.5 Imax
(b) 0.707
(c) 0.9
(d) 1.414 Lmax
Ans: b

15. Form Factor is the ratio of
(a) average value/r.m.s. value
(b) average value/peak value
(e) r.m.s. value/average value
(d) r.m.s. value/peak value
Ans: c

16. Form factor for a sine wave is
(a) 1.414
(b) 0.707
(c) 1.11
(d) 0.637
Ans: c

17. For a sine wave with peak value Emax_____8.30. the average value is
(a) 0.636 Emax
(b) 0.707 Emax
(c) 0.434 EWc
(d) lAUEmax
Ans: a

18. 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

19. The phase difference between voltage and current wave through a circuit element is given as 30°. The essential condition is that
(a) both waves must have same frequency
(b) both waves must have identical peak values
(c) both waves must have zero value at the same time
(d) none of the above
Ans: a

20. The r.m.s. value of a sinusoidal A.C. current is equal to its value at an angle of_degrees.
(a) 90
(b) 60
(c) 45
(d) 30
Ans: c

21. 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

22. In a series resonant circuit, the impedance of the circuit is
(a) minimum
(b) maximum
(c) zero
(d) none of the above
Ans: a

23. Power factor of an electrical circuit is equal to
(a) R/Z
(b) cosine of phase angle difference be-tween current and voltage
(c) kW/kVA
(d) ratio of useful current to total cur¬rent Iw/I
(e) all above
Ans: e

24. The best place to install a capacitor is
(a) very near to inductive load

(b) across the terminals of the inductive load
(c) far away from the inductive load
(d) any where
Ans: b

25. Poor power factor
(a) reduces load handling capability of electrical system
(b) results in more power losses in the electrical system
(c) overloads alternators, transformers and distribution lines
(d) results in more voltage drop in the line
(e) results in all above
Ans: e

26. Capacitors for power factor correction are rated in
(a) kW
(b) kVA
(c) kV
(d) kVAR
Ans: d

27. In series resonant circuit, increasing inductance to its twice value and reducing capacitance to its half value
(a) will change the maximum value of current at resonance
(6) will change the resonance frequency
(c) will change the impedance at resonance frequency
(d) will increase the selectivity of the circuit
Ans: d

28. Pure inductive circuit
(a) consumes some power on average
(b) does not take power at all from a line
(c) takes power from the line during some part of the cycle and then returns back to it during other part of the cycle
(d) none of the above
Ans: c

29. Inductance affects the direct current flow
(a) only at the time of turning off
(b) only at the time of turning on
(c) at the time of turning on and off
(d) at all the time of operation
Ans: c

30. Inductance of a coil Varies
(a) directly as the cross-sectional area of magnetic core
(b) directly as square of number of turns
(c) directly as the permeability of the core

(d) inversely as the length of the iron path
(e) as (a) to (d)
Ans: e

31. All the rules and laws of D.C. circuit also apply to A.C. circuit containing
(a) capacitance only
(b) inductance only
(c) resistance only
(d) all above
Ans: c

32. Time constant of an inductive circuit
(a) increases with increase of inductance and decrease of resistance
(b) increases with the increase of inductance and the increase of resistance
(c) increases with decrease of inductance and decrease of resistance
(d) increases with decrease of inductance and increase of resistance
Ans: a

33. Power factor of an inductive circuit is usually improved by connecting capacitor to it in
(a) parallel
(b) series
(c) either (a) or (b)
(d) none of the above
Ans: a

34. In a highly capacitive circuit the
(a) apparent power is equal to the actual power
(b) reactive power is more than the apparent power
(c) reactive power is more than the actual power
(d) actual power is more than its reactive power
Ans: c

35. Power factor of the following circuit will be zero
(a) resistance
(b) inductance
(c) capacitance
(d) both (b) and (c)
Ans: d

36. Power factor of the following circuit will be unity
(a) inductance
(b) capacitance
(c) resistance
(d) both (a) and (b)
Ans: c

37. Power factor of the system is kept high
(a) to reduce line losses
(b) to maximise the utilization of the capacities of generators, lines and transformers
(c) to reduce voltage regulation of the line
(d) due to all above reasons
Ans: d

38. The time constant of the capacitance circuit is defined as the time during which voltage
(a) falls to 36.8% of its final steady value
(b) rises to 38.6% of its final steady value
(c) rises to 63.2% of its final steady value
(d) none of the above
Ans: c

39. In a loss-free R-L-C circuit the transient current is
(a) oscillating
(b) square wave
(c) sinusoidal
(d) non-oscillating
Ans: c

40. The r.m.s. value of alternating current is given by steady (D.C.) current which when flowing through a given circuit for a given time produces
(a) the more heat than produced by A.C. when flowing through the same circuit
(b) the same heat as produced by A.C. when flowing through the same circuit
(c) the less heat than produced by A.C. flowing through the same circuit
(d) none of the above
Ans: b

41. The square waveform of current has following relation between r.m.s. value and average value.
(a) r.m.s. value is equal to average value
(b) r.m.s. value of current is greater than average value
(c) r.m.s. value of current is less than average value
(d) none of the above
Ans: a

42. The double energy transient occur in the
(a) purely inductive circuit
(b) R-L circuit
(c) R-C circuit
(d) R-L-C circuit
Ans: d

43. The transient currents are associated with the
(a) changes in the stored energy in the inductors and capacitors
(b) impedance of the circuit
(c) applied voltage to the circuit
(d) resistance of the circuit
Ans: a

44. The power factor at resonance in R-L- C parallel circuit is
(a) zero
(b) 0.08 lagging
(c) 0.8 leading
(d) unity
Ans: d

45. In the case of an unsymmetrical alternating current the average value must always be taken over
(a) unsymmetrical part of the wave form
(b) the quarter cycle
(c) the half cycle
(d) the whole cycle
Ans: d

46. In a pure resistive circuit
(a) current lags behind the voltage by 90°
(b) current leads the voltage by 90°
(c) current can lead or lag the voltage by 90°
(d) current is in phase with the voltage
Ans: d

47. In a pure inductive circuit
(a) the current is in phase with the voltage
(b) the current lags behind the voltage by 90°
(c) the current leads the voltage by 90°
(d) the current can lead or lag by 90°
Ans: b

48. 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
Ans: c

49. Inductance of coil
(a) is unaffected by the supply frequency
(b) decreases with the increase in supply frequency
(c) increases with the increase in supply frequency

(d) becomes zero with the increase in supply frequency
Ans: c

50. In any A.C. circuit always
(a) apparent power is more than actual power
(b) reactive power is more than apparent power
(c) actual power is more than reactive power
(d) reactive power is more than actual power
Ans: a

51. Which of the following circuit component opposes the change in the circuit voltage ?
(a) Inductance
(b) Capacitance
(c) Conductance
(d) Resistance
Ans:

52. In a purely inductive circuit
(a) actual power is zero
(b) reactive power is zero
(c) apparent power is zero
(d) none of above is zero
Ans: a

53. Power factor of electric bulb is
(a) zero
(b) lagging
(c) leading
(d) unity
Ans: d

54. Pure inductive circuit takes power from the A.C. line when
(a) applied voltage decreases but current increases
(b) applied voltage increases but current decreases
(c) both applied voltage and current increase
(d) both applied voltage and current decrease
Ans: a

55. Time constant of a circuit is the time in seconds taken after the application of voltage to each
(a) 25% of maximum value
(b) 50% of maximum value
(c) 63% of maximum value
(d) 90% of the maximum value
Ans: c

56. Time constant of an inductive circuit
(a) increases with increase of inductance and decrease of resistance
(b) increases with the increase of inductance and the increase of resistance
(c) increases with the decrease of inductance and decrease of resistance
(d) increases with decrease of inductance and increase of resistance
Ans: a

57. Time constant of a capacitive circuit
(a) increases with the decrease of capacitance and decrease of resistance
(b) increases with the decrease of capacitance and increase of resistance
(c) increases with the increase of capacitance and decrease of resistance
(d) increase with increase of capacitance and increase of resistance
Ans: d

58. Magnitude of current at resonance in R-L-C circuit
(a) depends upon the magnitude of R
(b) depends upon the magnitude of L
(c) depends upon the magnitude of C
(d) depends upon the magnitude of R, Land C
Ans: a

59. In a R-L-C circuit
(a) power is consumed in resistance and is equal to I R
(b) exchange of power takes place between inductor and supply line
(c) exchange of power takes place between capacitor and supply line
(d) exchange of power does not take place between resistance and the supply line
(e) all above are correct
Ans: e

60. In R-L-C series resonant circuit magnitude of resonance frequency can be changed by changing the value of
(a) R only
(b) L only
(c)C only
(d)LorC
(e) R,LorC
Ans: d

61. In a series L-C circuit at the resonant frequency the
(a) current is maximum
(b) current is minimum
(c) impedance is maximum
(d) voltage across C is minimum
Ans: a

62. The time constant of a series R-C circuit is given by
(a) R/C

(b) RC2
(c) RC
(d) R2C
Ans: c

63. If resistance is 20 Q. and inductance is 27 in a R-L series circuit, then time constant of this circuit will be
(a) 0.001 s
(b) 0.1 s
(c) 10 s
(d) 100 s
Ans: b

64. Which of the following coil will have large resonant frequency ?
(a) A coil with large resistance
(b) A coil with low resistance
(c) A coil with large distributed capacitance
(d) A coil with low distributed capacitance
Ans: c

65. If a sinusoidal wave has frequency of 50 Hz with 30 A r.m.s. current which of the following equation represents this wave ?
(a) 42.42 sin 3141
(b) 60 sin 25 t
(c) 30 sin 50 t
(d) 84.84 sin 25 t
Ans: a

66. The safest value of current the human body can carry for more than 3 second is
(a) 4 mA
(b) 9 mA
(c) 15 mA
(d) 25 mA
Ans: b

67. A pure inductance connected across 250 V, 50 Hz supply consumes 100 W. This consumption can be attributed 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

68. The input of an A.C. circuit having power factor of 0.8 lagging is 40 kVA The power drawn by the circuit is
(a) 12 kW

(b) 22 kW
(c) 32 kW
(d) 64 kW
Ans: c

69. The effective resistance of an iron-cored choke working on ordinary supply frequency is more than its true resistance because of
(a) iron loss in core
(b) skin effect
(c) increase in temperature
(d) capacitive effect between adjacent coil turns
Ans: a

70. 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
Ans: b

71. In AC. circuits, laminated iron is invariably used in order to
(a) reduce eddy current loss
(b) increase heat radiation
(c) make assembly cheap and easier
(d) reduce circuit permeability
Ans: a

72. The ratio of active power to apparent power is known as factor.
(a) demand
(b) load
(c) power
(d) form
Ans: c

73. All definitions of power factor of a series R-L-C circuit are correct except
(a) ratio of net reactance and impedance
(b) ratio of kW and kVA
(c) ratio of J and Z
(d) ratio of W and VA
Ans: a

74. 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
Ans: b

75. What will be the phase angle between two alternating waves of equal frequency, when one wave attains maximum value the other is at zero value ?
(a) 0°
(b) 45°
(c) 90°
(d) 180°
Ans: c

76. The purpose of a parallel circuit resonance is to magnify
(a) current
(b) voltage
(c) power
(d) frequency
Ans: b

77. In an A.C. circuit power is dissipated in
(a) resistance only
(b) inductance only
(c) capacitance only
(d) none of the above
Ans: a

78. In a parallel R-C circuit, the current always_____the applied voltage
(a) lags
(b) leads
(c) remains in phase with
(d) none of the above
Ans: b

79. At very low frequencies a series R-C circuit behaves as almost purely
(a) resistive
(b) inductive
(c) capacitive
(d) none of the above
Ans: c

80. Skin effect occurs when a conductor carries current at_____frequencies.
(a) very low
(b) low
(c) medium
(d) high
Ans: d

81. At_____frequencies the parallel R-L circuit behaves as purely resistive.
(a) low
(b) very low
(c) high
(d) very high
Ans: d

82. In a sine wave the slope is constant
(a) between 0° and 90°
(b) between 90° and 180°
(c) between 180° and 270°
(d) no where
Ans: d

83. The power is measured in terms of decibles in case of
(a) electronic equipment
(b) transformers
(c) current transformers
(d) auto transformers
Ans: a

84. Capacitive susceptance is a measure of
(a) reactive power in a circuit
(b) the extent of neutralisation of reactive power in a circuit
(c) a purely capacitive circuit's ability to pass current
(d) a purely capacitive circuit's ability to resist the flow of current
Ans: c

85. Which of the following statements pertains to resistors only ?
(a) can dissipate considerable amount of power
(6) can act as energy storage devices
(c) connecting them in parallel in¬creases the total value
(d) oppose sudden changes in voltage
Ans: a

86. 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
Ans: d

87. Aphasoris
(a) a line which represents the magnitude and phase of an alternating quantity
(b) a line representing the magnitude and direction of an alternating quantity
(c) a coloured 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: a

89. A parallel AC. circuit in resonance will
(a) have a high voltage developed across each inductive and capacitive section
(b) have a high impedance
(c) act like a resistor of low value
(d) have current in each section equal to the line current
Ans: b

90. Wire-wound resistors are unsuitable for use at high frequencies because they
(a) create more electrical noise
(b) are likely to melt under excessive eddy current heat
(c) consume more power
(d) exhibit unwanted inductive and capacitive effects
Ans: d

91. The inductance of a coil can be increased by
(a) increasing core length
(b) decreasing the number of turns
(c) decreasing the diameter of the former
(d) choosing core material having high relative permeability
Ans: d

92. In a three-phase supply floating neutral is undesirable because it way give rise to
(a) high voltage across the load
(b) low voltage across the load
(c) unequal line voltages across the load
Ans: c

93. 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

94. The frequency of domestic power supply in India is
(a) 200 Hz
(b) 100 Hz
(c) 60 Hz
(d) 50 Hz
Ans: d

95. The r.m.s. value of half wave rectified sine wave is 200 V. The r.m.s. value of full wave rectified AC. will be

(a) 282.8 V
(b) 141.4 V
(c) 111 V
(d) 100 V
Ans: a

96. The r.m.s. 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

97. Ohm is unit of all of the following except
(a) inductive reactance
(b) capacitive reactance
(c) resistance
(d) capacitance
Ans: d

98. The series and parallel resonance on L-C circuit' differs in that
(a) series resistance needs a low-resistance source for sharp rise in current
(b) series resonance needs a high-resistance source for sharp increase in current
(c) parallel resonance needs a low-resistance source for a sharp in¬crease in impedance
(d) parallel resonance needs a low-resistance source for a sharp rise in line current
Ans: a

99. The phosphors for which of the following pair are 180° out of phase for VL, VC and VR?
(a) Vc and VR
(b) VL and VR
(c) Vc and VL
(d) none of the above
Ans: c

100. 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

101. A pure capacitor connected across an A.C. voltage consumed 50 W. This is due to
(a) the capacitive reactance in ohms

(b) the current flowing in capacitor
(c) the size of the capacitor being quite big
(d) the statement is incorrect
Ans: d

102. The power factor of a D.C. circuit is always
(a) less than unity
(b) unity
(c) greater than unity
(d) zero
Ans: b

103. 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
Ans: a

104. The equation of 50 Hz current sine wave having r.m.s. value of 60 A is
(a) 60 sin 25 t
(b) 60 sin 50 t
(c) 84.84 sin 3141
(d) 42.42 sin 314 t
Ans: c

105. An A.C. voltage is impressed across a pure resistance of 3.5 ohms in parallel with a pure inductance of impedance of 3.5 ohms,
(a) the current through the resistance is more
(b) the current through the resistance is less
(c) both resistance and inductance carry equal currents
(d) none of the above
Ans: c

106. In a pure inductive circuit if the supply frequency is reduced to 1/2, the current will
(a) be reduced by half
(b) be doubled
(c) be four times as high
(d) be reduced to one fourth
Ans: b

118. In a pure capacitive circuit if the supply frequency is reduced to 1/2, the current will
(a) be reduced by half
(b) be doubled

(c) be four times at high
(d) be reduced to one fourth
Ans: a

119. When an alternating current passes through an ohmic resistance the electrical power converted into heat is
(a) apparent power
(b) true power
(c) reactive power
(d) none of the above
Ans: b

120. In each of the three coils of a three phase generator, an alternating voltage having an r.m.s. value of 220 V is induced. Which of the following values is indicated by the voltmeters ?
(a) 220 V
(b) 220V3V
(c) 220/V3 V
(d) none of the above
Ans: a

TestDaf

NETWORK THEOREMS

Electrical Engineering Multiple choice Questions and Answers

BY:- TEAM DSR

ALL THE BEST FOR SEMESTER EXAM

Team DSR

1. Kirchhoff s current law states that
(a) net current flow at the junction is positive
(b) Hebraic 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

2. According to Kirchhoffs voltage law, the algebraic sum 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.fs.
(d) zero
Ans: d

3. Kirchhoffs 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

4. Kirchhoffs voltage law is related to
(a) junction currents
(b) battery e.m.fs.
(c) IR drops
(d) both (b) and (c)
(e) none of the above
Ans: d

5. Superposition theorem can be applied only to circuits having
(a) resistive elements
(b) passive elements
(c) non-linear elements
(d) linear bilateral elements
Ans: d

6. The concept on which Superposition theorem is based is
(a) reciprocity
(b) duality
(c) non-linearity
(d) linearity
Ans: d

7. Thevenin resistance Rth is found
(a) by removing voltage sources along with their internal resistances
(b) by short-circuiting the given two terminals
(c) between any two 'open' terminals
(d) between same open terminals as for Etk
Ans: d

8. An ideal voltage source should have
(a) large value of e.m.f.
(b) small value of e.m.f.
(c) zero source resistance
(d) infinite source resistance
Ans: c

9. For a voltage source
(a) terminal voltage is always lower than source e.m.f.
(b) terminal voltage cannot be higher than source e.m.f.
(c) the source e.m.f. and terminal voltage are equal
Ans: b

10. To determine the polarity of the voltage drop across a resistor, it is necessary to know
(a) value of current through the resistor
(b) direction of current through the resistor
(c) value of resistor
(d) e.m.fs. in the circuit
Ans: b

11. "Maximum power output is obtained from a network when the load resistance is equal to the output resistance of the network as seen from the terminals of the load". The above statement is associated with
(a) Millman's theorem
(b) Thevenin's theorem
(c) Superposition theorem
(d) Maximum power transfer theorem
Ans: d

12. "Any number of current sources in parallel may be replaced by a single current source whose current is the algebraic sum of individual source currents and source resistance is the parallel combination of individual source resistances".
The above statement is associated with
(a) Thevenin's theorem
(b) Millman's theorem
(c) Maximum power transfer theorem
(d) None of the above
Ans: b

13. “In any linear bilateral network, if a source of e.m.f. E in any branch produces a current I in any other
branch, then same e.m.f. acting in the second branch would produce the same current / in the first branch”.
The above statement is associated with
(a) compensation theorem
(b) superposition theorem
(c) reciprocity theorem
(d) none of the above
Ans: c

14. Which of the following is non-linear circuit parameter ?
(a) Inductance
(b) Condenser
(c) Wire wound resistor
(d) Transistor
Ans: a

15. A capacitor is generally a
(a) bilateral and active component
(b) active, passive, linear and nonlinear component
(c) linear and bilateral component
(d) non-linear and active component
Ans: c

16. “In any network containing more than one sources of e.m.f. the current in any branch is the algebraic sum of a number of individual fictitious currents (the number being equal to the number of sources of e.m.f.), each of which is due to separate action of each source of e.m.f., taken in order, when the remaining sources of e.m.f. are replaced by conductors, the resistances of which are equal to the internal resistances of the respective sources”.
The above statement is associated with

(a) Thevenin’s theorem
(b) Norton’s theorem
(c) Superposition theorem
(d) None of the above
Ans: c

17. Kirchhoff s law is applicable to
(a) passive networks only
(b) a.c. circuits only
(c) d.c. circuits only
(d) both a.c. as well d.c. circuits
Ans: d

18. Kirchhoff s law is not applicable to circuits with
(a) lumped parameters
(b) passive elements
(c) distributed parameters
(d) non-linear resistances
Ans: c

19. Kirchhoff s voltage law applies to circuits with
(a) nonlinear elements only
(b) linear elements only
(c) linear, non-linear, active and passive elements
(d) linear, non-linear, active, passive, time varying as wells as time-in-variant elements
Ans: d

20. The resistance LM will be
(a) 6.66 Q
(b) 12 Q
(c) 18Q
(d) 20Q
Ans: a

21. For high efficiency of transfer of power, internal resistance of the source should be
(a) equal to the load resistance
(b) less than the load resistance
(c) more than the load resistance
(d) none of the above
Ans: b

22. Efficiency of power transfer when maximum transfer of power c xerosis
(a) 100%
(b) 80%
(c) 75%
(d) 50%
Ans: d

23. If resistance across LM in Fig. 2.30 is 15 ohms, the value of R is
(a) 10 Q
(6) 20 Q
(c) 30 Q
(d) 40 Q
Ans: c

24. For maximum transfer of power, internal resistance of the source should be
(a) equal to load resistance
(b) less than the load resistance
(c) greater than the load resistance
(d) none of the above
Ans: a

25. If the energy is supplied from a source, whose resistance is 1 ohm, to a load of 100 ohms the source will be
(a) a voltage source
(b) a current source
(c) both of above
(d) none of the above
Ans: a

26. The circuit whose properties are same in either direction is known as
(a) unilateral circuit
(b) bilateral circuit
(c) irreversible circuit
(d) reversible circuit
Ans: b

27. In a series parallel circuit, any two resistances in the same current path must be in
(a) series with each other
(b) parallel with each other
(c) series with the voltage source.'
(d) parallel with the voltage source
Ans: a

28. The circuit has resistors, capacitors and semi-conductor diodes. The circuit will be known as
(a) non-linear circuit
(b) linear circuit
(c) bilateral circuit

(d) none of the above
Ans: a

29. A non-linear network does not satisfy
(a) superposition condition
(b) homogeneity condition
(c) both homogeneity as well as superposition condition
(d) homogeneity, superposition and associative condition
Ans: c

30. An ideal voltage source has
(a) zero internal resistance
(b) open circuit voltage equal to the voltage on full load
(c) terminal voltage in proportion to current
(d) terminal voltage in proportion to load
Ans: a

31. 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: c

32. The superposition theorem is applicable to
(a) linear, non-linear and time variant responses
(b) linear and non-linear resistors only
(c) linear responses only
(d) none of the above
Ans: c

33. Which of the following is not a nonlinear element ?
(a) Gas diode
(b) Heater coil
(c) Tunnel diode
(d) Electric arc
Ans:

34. Application of Norton's theorem to a circuit yields
(a) equivalent current source and impedance in series
(6) equivalent current source and impedance in parallel
(c) equivalent impedance
(d) equivalent current source
Ans: a

35. The superposition theorem is applicable to
(a) voltage only
(b) current “only
(c) both current and voltage
(d) current voltage and power
Ans: d

36. Between the branch voltages of a loop the Kirchhoff s voltage law imposes
(a) non-linear constraints
(b) linear constraints
(c) no constraints
(d) none of the above
Ans: b

37. A passive network is one which contains
(a) only variable resistances
(b) only some sources of e.m.f. in it
(c) only two sources of e.m.f. in it
(d) no source of e.m.f. in it
Ans: d

38. A terminal where three on more branches meet is known as
(a) node
(b) terminus
(c) combination
(d) anode
Ans: a

39. 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

40. Which of the following is a bilateral element ?
(a) Constant current source
(b) Constant voltage source
(c) Capacitance
(d) None of the above
Ans: c

41. A closed path made by several branches of the network is known as
(a) branch

(b) loop
(c) circuit
(d) junction
Ans: b

42. A linear resistor having 0 < R < °o is a
(a) current controlled resistor
(6) voltage controlled resistor
(c) both current controlled and voltage controlled resistor
(d) none of the above
Ans: c

43. A star circuit has element of resistance R/2. The equivalent delta elements will be
(a) R/6
(b) fi?
(c) 2R
(d) 4R
Ans: b

44. A delta circuit has each element of value R/2. The equivalent elements of star circuit with be
(a) RIG
(b) R/3
(c) 2R
(d) 3R
Ans: a

56. In Thevenin's theorem, to find Z
(a) all independent current sources are short circuited and independent voltage sources are open circuited
(b) all independent voltage sources are open circuited and all independent current sources are short circuited
(c) all independent voltage and current sources are short circuited
(d) all independent voltage sources are short circuited and all independent current sources are open circuited
Ans: d

57. While calculating Rth in Thevenin's theorem and Norton equivalent
(a) all independent sources are made dead
(b) only current sources are made dead
(c) only voltage sources are made dead
(d) all voltage and current sources are made dead
Ans: a

58. The number of independent equations to solve a network is equal to
(a) the number of chords

(b) the number of branches
(c) sum of the number of branches and chords
(d) sum of number of branches, chords and nodes
Ans: a

59. The superposition theorem requires as many circuits to be solved as there are
(a) sources, nodes and meshes
(b) sources and nodes
(c) sources
(d) nodes
Ans: c

60. Choose the incorrect statement.
(a) A branch formed by the parallel connection of any resistor R and open circuit has the characteristic of an open circuit.
(b) A branch formed by the parallel connection of any resistor R and a short circuit has the characteristic of a short circuit.
(c) A branch formed by the series connection of any resistor R and an open circuit has the characteristic of an open circuit.
(d) A branch formed by the series connection of any resistor R and a short circuit has the characteristic of resistor R.
Ans: a

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