Q1. 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

Q2. The time constant of a series R-C circuit is given by

(a) R/C
(b) RC2
(c) RC
(d) R2C

Q3. 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

Q4. 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

Q5. 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

Q6. 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

Q7. 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

Q8. 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

Q9. 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

Q10. 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

Q11. 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

Q12. The ratio of active power to apparent power is known as factor.

(a) demand
(b) load
(c) power
(d) form

Q13. 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

Q14. 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

Q15. 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°

Q16. The purpose of a parallel circuit resonance is to magnify

(a) current
(b) voltage
(c) power
(d) frequency

Q17. In an A.C. circuit power is dissipated in

(a) resistance only
(b) inductance only
(c) capacitance only
(d) none of the above

Q18. 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

Q19. At very low frequencies a series R-C circuit behaves as almost purely

(a) resistive
(b) inductive
(c) capacitive
(d) none of the above

Q20. Skin effect occurs when a conductor carries current at_____ frequencies.

(a) very low
(b) low
(c) medium
(d) high

Q21. At _____ frequencies the parallel R-L circuit behaves as purely resistive.

(a) low
(b) very low
(c) high
(d) very high

Q22. 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

Q23. The power is measured in terms of decibles in case of

(a) electronic equipment
(b) transformers
(c) current transformers
(d) auto transformers

Q24. 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

Q25. 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 increases the total value
(d) oppose sudden changes in voltage

Q26. 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

Q27. 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

Q28. 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

Q29. 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

Q30. 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

Q31. 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

Q32. The frequency of domestic power supply in India is
(a) 200 Hz (b) 100 Hz
(c) 60 Hz (d) 50 Hz

Q33. 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

Q34. 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

Q35. Ohm is unit of all of the following except
(a) inductive reactance (b) capacitive reactance
(c) resistance (d) capacitance

Q36. 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

Q37. 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

Q38. 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

Q39. 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

Q40. The power factor of a D.C. circuit is always
(a) less than unity
(b) unity
(c) greater than unity
(d) zero

Q41. 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

Q42. 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

Q43. 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

Q44. 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

Q45. 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

Q46. 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

Q47. 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

Q48. A 8-bit serial in / parallel out shift register contains the value "8", _____ clock signal(s) will be required to shift the value completely out of the register.

(a) 1
(b) 2
(c) 4
(d) 8

Q49. In a sequential circuit the next state is determined by _____ and _____.

(a) State variable, current state
(b) Current state, flip-flop output
(c) Current state and external input
(d) Input and clock signal applied

Q50. The divide-by-60 counter in digital clock is implemented by using two cascading counters:

(a) Mod-6, Mod-10
(b) Mod-50, Mod-10
(c) Mod-10, Mod-50
(d) Mod-50, Mod-6

Q51. The sensitivity of human eyes is maximum at

(a) white portion of spectrum
(b) green portion of spectrum
(c) red portion of spectrum
(d) violet portion of spectrum

Q52. In a bipolar transistor, the base collector junction has

(a) forward bias
(b) reverse bias
(c) zero bias
(d) zero or forward bias

Q53. An intrinsic silicon sample has 1 million free electrons at room temperature. As the temperature is increased

(a) the number of free electrons increases
(b) the number of free electrons increases but the number of holes decreases
(c) the number of free electrons and holes increase by the same amount
(d) the number of free electrons and holes increase but not by the same amount

Q54. What is the necessary a.c. input power from the transformer secondary used in a half wave rectifier to deliver 500 W of d.c. power to the load?

(a) 1232 W
(b) 848 W
(c) 616 W
(d) 308 W

Q55. In a semi-conductor diode, the barrier offers opposition to

(a) holes in P-region only
(b) free electrons in N-region only
(c) majority carriers in both regions
(d) majority as well as minority carriers in both regions

Q56. In a half wave rectifier, the load current flows
(a) only for the positive half cycle of the input signal
(b) only for the negative half cycle of the input signal
(c) for full cycle
(d) for less than fourth cycle

Q57. For a NPN bipolar transistor, what is the main stream of current in the base region?
(a) Drift of holes
(b) Diffusion of holes
(c) Drift of electrons
(d) Diffusion of electrons

Q58. Assertion (A): A VMOS can handle much larger current than other field effect transistors.
Reason (R): In a VMOS the conducting channel is very narrow.
(a) Both A and R are true and R is correct explanation of A
(b) Both A and R are true but R is not a correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

Q59. In monolithic ICs, all the components are fabricated by
(a) diffusion process
(b) oxidation
(c) evaporation
(d) none

Q60. Which one of the following is not a characteristic of a ferroelectric material?
(a) High dielectric constant
(b) No hysteresis
(c) Ferroelectric characteristic only above the curie point
(d) Electric dipole moment

Q61. In the sale of diamonds the unit of weight is carat. One carat is equal to
(a) 100 mg
(b) 150 mg
(c) 200 mg
(d) 500 mg

Q62. Assertion (A): A JFET can be used as a current source.
Reason (R): In beyond pinch off region the current in JFET is nearly constant.
(a) Both A and R are true and R is correct explanation of A
(b) Both A and R are true but R is not a correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

Q63. Permalloy is
(a) a variety of stainless steel
(b) a polymer
(c) a conon-ferrous alloy used in aircraft industry
(d) a nickel an iron alloy having high permeability

Q64. Which of the following could be the maximum current rating of junction diode by 126?
(a) 1 A
(b) 10 A
(c) 20 A
(d) 100 A

Q65. Each cell of a static Random Access memory contains
(a) 6 MOS transistor
(b) 4 MOS transistor, 2 capacitor
(c) 2 MOS transistor, 4 capacitor
(d) 1 MOS transistor and 1 capacitor

Q66. An electron in the conduction band
(a) has higher energy than the electron in the valence band
(b) has lower energy than the electron in the valence band
(c) loses its charge easily
(d) jumps to the top of the crystal

Q67. The dynamic resistance of a forward biased p-n diode
(a) varies inversely with current
(b) varies directly with current
(c) is constant
(d) is either constant or varies directly with current

Q68. A thermistor is a
(a) thermocouple
(b) thermometer
(c) miniature resistance
(d) heat sensitive explosive

Q69. When diodes are connected in series to increase voltage rating the peak inverse voltage per junction
(a) should not exceed half the breakdown voltage
(b) should not exceed the breakdown voltage
(c) should not exceed one third the breakdown voltage
(d) may be equal to or less than breakdown voltage

Q70. Hall effect is observed in a specimen when it is carrying current and is placed in a magnetic field. The resultant electric field inside the specimen is
(a) normal to both current and magnetic field
(b) in the direction of current
(c) antiparallel to magnetic field
(d) in arbitrary direction

Q71. In an ideal diode there is no breakdown, no _____ current, and no forward _____ drop.
(a) reverse, voltage
(b) forward, current
(c) forward, voltage
(d) reverse, current

Q72. Silicon is not suitable for fabrication of light emitting diodes because it is
(a) an indirect band gap semiconductor
(b) direct band gap semiconductor
(c) wideband gap semiconductor
(d) narrowband gap semiconductor

Q73. MOSFET can be used as a
(a) current controlled capacitor
(b) voltage controlled capacitor
(c) current controlled inductor
(d) voltage controlled inductor

Q74. Power diodes are generally
(a) silicon diodes
(b) germanium diodes
(c) either of the above
(d) none of the above

Q75. The depletion layer width of Junction
(a) decreases with light doping
(b) is independent of applied voltage
(c) is increased under reverse bias
(d) increases with heavy doping

Q76. Forbidden energy gap in germanium at 0 K is about
(a) 10 eV
(b) 5 eV
(c) 2 eV
(d) 0.78 eV

Q77. Light dependent resistors are
(a) highly doped semiconductor
(b) intrinsic semiconductor
(c) lightly doped semiconductor
(d) either (a) or (c)

Q78. Fermi level is the amount of energy in which
(a) a hole can have at room temperature
(b) an electron can have at room temperature
(c) must be given to an electron move to conduction band
(d) none of the above

Q79. An ideal Op-amp is an ideal
(a) voltage controlled current source
(b) voltage controlled voltage source
(c) current controlled current source
(d) current controlled voltage source

Q80. Free electrons exist in
(a) first band
(b) second band
(c) third band
(d) conduction band

Q81. In an ideal diode there is no _____ current, and no forward _____ drop.
(a) reverse, voltage
(b) forward, current
(c) forward, voltage
(d) reverse, current

Q82. Silicon is not suitable for fabrication of light emitting diodes because it is
(a) an indirect band gap semiconductor
(b) direct band gap semiconductor
(c) wideband gap semiconductor
(d) narrowband gap semiconductor

Q83. MOSFET can be used as a
(a) current controlled capacitor
(b) voltage controlled capacitor
(c) current controlled inductor
(d) voltage controlled inductor

Q84. Power diodes are generally

(a) silicon diodes
(b) germanium diodes
(c) either of the above
(d) none of the above

Q85. The depletion layer width of Junction

(a) decreases with light doping
(b) is independent of applied voltage
(c) is increased under reverse bias
(d) increases with heavy doping

Q86. Forbidden energy gap in germanium at 0 K is about

(a) 10 eV
(b) 5 eV
(c) 2 eV
(d) 0.78 eV

Q87. Light dependent resistors are

(a) highly doped semiconductor
(b) intrinsic semiconductor
(c) lightly doped semiconductor
(d) either (a) or (c)

Q88. Fermi level is the amount of energy in which

(a) a hole can have at room temperature
(b) an electron can have at room temperature
(c) must be given to an electron move to conduction band
(d) none of the above

Q89. An ideal Op-amp is an ideal

(a) voltage controlled current source
(b) voltage controlled voltage source
(c) current controlled current source
(d) current controlled voltage source

Q90. Free electrons exist in

(a) first band
(b) second band
(c) third band
(d) conduction band

Q91. As compared to bipolar junction transistor, a FET

(a) is less noisy
(b) has better thermal stability
(c) has higher input resistance
(d) all of the above

Q92. For a P-N diode, the number of minority carriers crossing the junction depends on

(a) forward bias voltage
(b) potential barrier
(c) rate of thermal generation of electron hole pairs
(d) none of the above

Q93. Which variety of copper has the best conductivity?

(a) Pure annealed copper
(b) Hard drawn copper
(c) Induction hardened copper
(d) Copper containing traces of silicon

Q94. The output, V-I characteristics of an Enhancement type MOSFET has

(a) only an ohmic region
(b) only a saturation region
(c) an ohmic region at low voltage value followed by a saturation region at higher voltages
(d) an ohmic region at large voltage values preceded by a saturation region at lower voltages

Q95. Piezoelectric quartz crystal resonators find application where

(a) signal amplification is required
(b) rectification of the signal is required
(c) signal frequency control is required
(d) modulation of signal is required

Q96. The forbidden energy gap between the valence band and conduction band will be least in case of

(a) metals
(b) semiconductors
(c) insulators
(d) all of the above

Q97. If too large current passes through the diode

(a) all electrons will leave
(b) all holes will freeze
(c) excessive heat may damage the diode
(d) diode will emit light

Q98. In a bipolar transistor, the emitter base junction has

(a) forward bias
(b) reverse bias
(c) zero bias
(d) zero or reverse bias

Q99. A sine wave has a frequency of 50 Hz. Its angular frequency is _____ radian/second.

(a) 100 n
(b) 50 jt
(c) 25 JT
(d) 5 n

Q100. 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