Model Question B.Sc (Electronics) Part-1

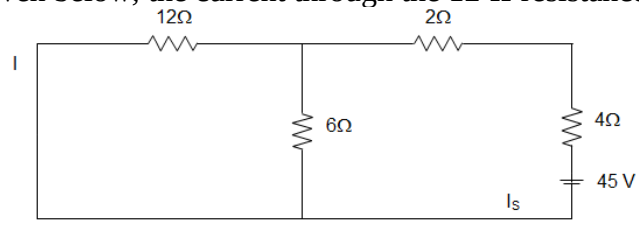
Paper-1

Group 'A'

1. Which of the following are the passive elements?
   (a) Resistor
   (b) Inductor
   (c) both
   (d) none of these
2. The unit of resistivity is
   (a) Ω
   (b)Ω – metre
   (c) Ω / metre
   (d) Ω / m^2.
3. 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
4. Mutual coupling coefficient is used for calculation of
   Inductance
   (a) Capacitance (c)Resistors (d) Transistor
5. A terminal where three or more branches meet is known as
   (a) Node (b)Terminus (c) Combination (d) Anode
6. A linear resistor having $0 < R < \infty$ is a
   (b) Current controlled resister (b) Voltage controlled resister
   (c) Both current controlled and voltage controlled resister (d) None of the above
7. 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
8. An electric circuit with 'b' branches and 'n' nodes will have …… loops equations
   (a) b-n+1 (b) b-1 (c) n-1 (d) n+1
9. Kirchhoff's current law is applicable to only
   (a) Junction in a network (b) Closed loops in a network
   (c)Open loops (d) Electronic circuits
10. According to Kirchhoff's voltage law, the algebraic some of all voltage 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
11. Kirchhoff's laws are not applicable to circuits with
    (a) Distributed parameters (b) Lumped parameters
    (c) Passive elements (d)Non-linear resistances
12. Which of the following theorems is applicable for both linear and nonlinear circuits?
    (a) Superposition (b) Thevenin's (c) Norton's (c) None of these
13. Norton's equivalent resistance is the .....as Thevenin's equivalent resistance.
    (a) Not same (b) Same (c) Both A and B (c) None of the above
14. Superposition theorem is not applicable for

(a) Voltage calculations (b) Bilateral elements (c) Power calculations
(d) Passive elements

15. For maximum transfer of power, internal resistance of the source should be
(a)Equal to the load resistance (b) Less than the load resistance
(c) Greater than the load resistance(d)None of the above
16. Efficiency of power transfer when maximum transfer of power occurs is
(a) 100% (b) 80% (c)85% (c) 50%
17. Which of the following is not a basic element of transformer?
(a) Core (b) Primary Winding (c) Secondary Winding (d) Mutual Flux
18. Transformers are rated in KVA instead of KW because…..
(a) Load power factor is often not known (b) KVA is fixed whereas KW depends on load power factor (c) Total transformer loss depends on volt-ampere
(d) It has become customary
19. Transformers are rated in…….
(a) KVA (b) KW (c) Volts (d) Ampere
20. In a circuit containing R, L and C, power loss can take place in
(a) C (b) L (c) R (c) All of the above
21. A circuit component that oppose the change in the circuit voltage is
(a) Resistance (b) Capacitance (c) Inductance (d) All of the above
22. Laplace transform of unit impulse, δ(t), is
(a) 1/s (b) 1 (c) ∞ (d) 0
23. In linear network satisfies
(a) Superposition condition (b) Homogeneity condition
(c) Both homogeneity and superposition condition (d)none of these
24. A closed path made by several branches of the network is known as
(a) Branch (b) Loop (c) Circuit (d) Junction
25. The value of the time constant in the R-L circuit is?
a) L/R b) R/L c) R d) L
26. In Reciprocity Theorem, which of the following ratios is considered?
a) Voltage to current b) Current to current
c) Voltage to voltage d) No ratio is considered
27. In the circuit given below, the current through the 12 Ω resistance is .....

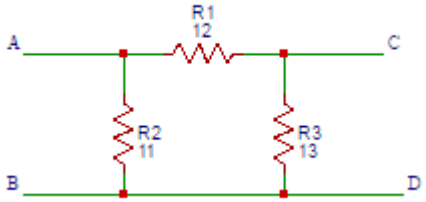


(a) 1.5 A (b) 2.5 A (c) 3.5 A (d) 4.5 A
28. The circuit is said to be in resonance if the current is ____ with the applied voltage.
(a) in phase(b) out of phase(c) 45^0 out of phase(d) 90^0 out of phase
29. In a series resonance circuit, series resonance occurs when?
(a) $X_L = 1$ (b) $X_C = 1$ (c) $X_L = X_C$ (d) $X_L = -X_C$
30. The expression of resonant frequency in a series resonant circuit is?
(a) $1/(2\pi\sqrt{C})$ (b) $1/(2\pi\sqrt{L})$
(c) $2\pi\sqrt{LC}$ (d) $1/(2\pi\sqrt{LC})$

31. Laplace transform changes the ____ domain function to the _____ domain function.
    (a) time, time (b) time, frequency
    (c) frequency, time (d) frequency, frequency
32. Which of the following is not an example of a linear element?
    (a) Resistor (b) Thermistor (c) Inductor (d) Capacitor
33. Which of the following does not change in an ordinary transformer.....
    (a) Frequency (b) Voltage (c) Current (d) Any of the above
34. The time constant of an R-C circuit is?
    (a) RC (b) R/C (c) R (d) C
35. After how many time constants, the transient part reaches more than 99 percent of its final value?
    (a) 2 (b) 3 (c) 4 (d) 5
36. If the roots of an equation are complex conjugate, then the response will be?
    (a) over damped (b) critically damped
    (c) damped (d) under damped
37. If the roots of an equation are real and equal, then the response will be?
    (a) over damped (b) damped (c) critically damped (d) under damped
38. In RC series circuit R = 2Ω, C = 2μF and 10V dc is applied. Then what is the value of current?
    (a) 0 A (b) 2 A (c) 5A (d) 10 A
39. Resistor stores the energy in the form of…..
    (a) Magnetic field (b) electric field (c) both (d) none of these
40. Transients are presents in the circuit when the circuit is having
    (a) R (b) L (c) C (d) Either L or C
41. …….. is an example of distributed element._____
    (a) Resistor (b) Thermistor
    (c) Semiconductor diode (d) Transmission lines
42. The conjugate of -4+j 3 is ……..
    (a) 4 – j 3 (b) 4+j 3 (c) -j 3 (d) -4- j 3
43. A current of 3+ j 4 amperes is flowing through a circuit. The magnitude of current is ……..
    (a) 7 A (b) 5 A (c) 1 A (d) 1.33 A
44. In the complex number 4+ j 7, 7 is called …….
    (c) Real component (b) imaginary component (c) in-phase (d) none of these
45. Identify the correct statement relating to the ideal transformer.
    (a) no losses and magnetic leakage (b) interleaved primary and secondary windings
    (c) a common core for its primary and secondary windings
    (d) core of stainless steel and winding of pure copper metal
46. Which of the following is the wrong expression?
    (a) $i_1N_1=i_2N_2$ (b) $i_1v_1=i_2v_2$ (c) $i_1N_2=i_2N_1$ (d) $v_2N_1=v_1N_2$
47. Which is the best-preferred method to calculate currents flowing in the circuit?
    (a) Mesh-voltage analysis (b) Node-current analysis
    (c) Superposition principle (d) Duality principle

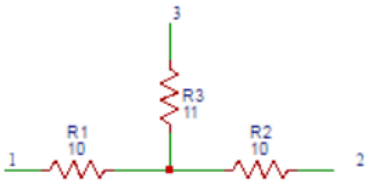
48. All……. are loops but ……..are not meshes.
    (a) Loops, Meshes (b) Meshes, loops
    (c) Branches, loops (d) Nodes, Branches
49. The basic laws for analyzing an electric circuit are :-
    (a) Einstein's theory (b) Newtons laws
    (c) Kirchhoff's laws (d) Faradays laws
50. By using source transformation voltage source in series resistor is replaced by ……..
    (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

51. Energy per unit charge is _____
    (a) Power
    (b) Voltage
    (c) Current
    (d) Capacitance
52. A conductor is said to have resistance of one ohm if a potential difference of one volt across its terminals causes a current of X ampere to flow through it. What will be the value of X?
    (a) 4
    (b) 2
    (c) 3
    (d) 1
53. Resistance depends on the ……..the conductor.
    (a) Temperature
    (b) Length
    (c) both
    (d) none
54. A basic network element which supplies power to the networks.
    (a) Source
    (b) Resistor
    (c) Diode
    (d) none of these
55. Every circuit is a network, but all networks are not ……
    (a) Circuits
    (b) Resistor
    (c) Capacitor
    (d) inductor.
56. Find the equivalent resistance at node A in the delta connected circuit shown in the figure below.



(a) 1
(b) 2
(c) 3
(d) 4

57. Find the equivalent resistance between node 1 and node 3 in the star connected circuit shown below.



(a) 30
(b) 31
(c) 32
(d) 33

58. KVL is based on the law of conservation of ……
    (a) Energy
    (b) Momentum
    (c) Charge
    (d) Mass

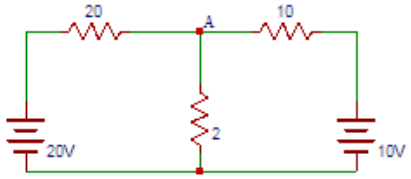
59. Potential difference in electrical terminology is known as?
    (a) Voltage
    (b) Current
    (c) Resistance
    (d) Conductance

60. The circuit in which current has a complete path to flow is called ……. Circuit.
    (a) short
    (b) open
    (c) closed
    (d) open loop

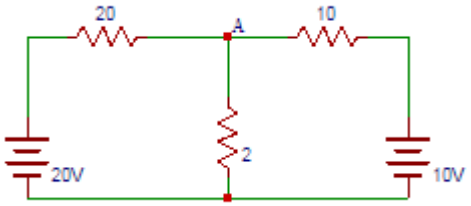
61. If the voltage-current characteristics is a straight line through the origin, then the element is said to be……
    (a) Linear element
    (b) Non-linear element
    (c) Unilateral element

(d) Bilateral element

62. If the resistances 1Ω, 2Ω, 3Ω, 4Ω are parallel, then the equivalent resistance is?
    (a) 0.46Ω
    (b) 0.48Ω
    (c) 0.5Ω
    (d) 0.52Ω
63. If the resistances 3Ω, 5Ω, 7Ω, 9Ω are in series, then their equivalent resistance(Ω) is?
    (a) 9
    (b) 20
    (c) 24
    (d) 32
64. The current law represents a mathematical statement of fact that _____
    (a) voltage cannot accumulate at node
    (b) charge cannot accumulate at node
    (c) charge at the node is infinite
    (d) none of the mentioned
65. Determine the current if a 20 coulomb charge passes a point in 0.25 seconds.
    (a) 10 A
    (b) 20 A
    (c) 2 A
    (d) 80 A
66. In Superposition theorem, while considering a source, all other voltage sources are…
    (a) open circuited
    (b) short circuit
    (c) change its position
    (d) removed from the circuit
67. In Superposition theorem, while considering a source, all other current sources are?
    (a) short circuited
    (b) change its position
    (c) open circuited
    (d) removed from the circuit
68. Find the voltage across 2Ω resistor due to 20V source in the circuit shown below.

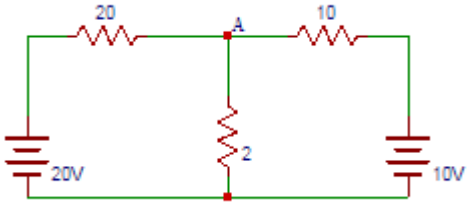


    (a) 1
    (b) 1.5
    (c) 2
    (d) 2.5
69. Find the voltage across 2Ω resistor due to 20V source in the following circuit.



(a) 0.5
(b) 0
(c) 1
(d) 1.5

70. Find the voltage across 2Ω resistor in the circuit shown below using Superposition theorem.



(a) 1
(b) 2
(c) 3
(d) 4

71. A passive network is one which contains

(a) Only variable resistance

(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

72. A closed path made by several branches of the network is known as

(a) Branch

(b) Loop

(c) Circuit

(d) Junction

73. 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

74. 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
75. The purpose of a parallel circuit resonance is to magnify
    (a) Current
    (b) Voltage
    (c) Power
    (d) Frequency
76. Color coding is generally used to measure the value of a
    (a) Resistance
    (b) Capacitance
    (c) Inductance
    (d) None
77. Which of the following refers to a parallel circuit?
    (a) The current through each element is sam
    (b) The voltage across element is in proportion to it's resistance value
    (c) The equivalent resistance is greater than any one of the resistor
    (d) The current through any one element is less than the source current
78. The frequency of domestic power supply in India is
    (a) 200 Hz
    (b) 100 Hz
    (c) 60 Hz
    (a) 50 Hz
79. 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
80. Which of the following statements pertains to resistors only?
    (a) Can dissipate considerable amount of power
    (b) Can act as energy storage devices
    (c) Connecting them in parallel increases the total value
    (d) Oppose sudden changes in voltage
81. 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
82. A transformer cannot work on the DC supply because …….._____
    (a) There is no need to change the DC voltage
    (b) A DC circuit has more losses
    (c) Faraday’s laws of electromagnetic induction are not valid since the rate of

change of flux is zero

(d) Cannot be determined

83. Identify the correct statement relating to the ideal transformer.
    (a) no losses and magnetic leakage
    (b) interleaved primary and secondary windings
    (c) a common core for its primary and secondary windings
    (d) core of stainless steel and winding of pure copper metal
84. Which of the following statement regarding an ideal single-phase transformer is incorrect? Transformer is having a turn ratio of 1: 2 and drawing a current of 10 A from 200 V AC supply is incorrect?
    (a) It's a step-up transformer
    (b) Its secondary voltage is 400 V
    (c) Its rating is 2 kVA
    (d) Its secondary current is 20 A
85. Ideal transformer core has permeability equal to _____
    (a) Zero
    (b) Non-zero finite
    (c) Negative
    (d) Infinite
86. Turns ratio of the transformer is directly proportional to _____
    (a) Resistance ratio
    (b) Currents ratio
    (c) Voltage ratio
    (d) Not proportional to any terms
87. For transformer given, turns ratio is equal to 'a', what will be the impedance of primary with respect to secondary?
    (a) a^2 times the secondary impedance
    (b) 'a' times secondary impedance
    (c) secondary impedance/a
    (d) secondary impedance/a^2
88. 89. Power transformed in the ideal transformer with turns ratio 'a' is _____
    (a) a^2 times primary
    (b) 'a' times primary
    (c) primary power/ a^2
    (d) primary power
90. For a transformer with primary turns 100, secondary turns 400, if 200 V is applied at primary we will get _____
    (a) 80 V at secondary
    (b) 800 V at secondary
    (c) 1600 V at secondary
    (d) 3200 V at secondary
91. For a transformer with primary turns 400, secondary turns 100, if 20A current is flowing through primary, we will get _____
    (a) 80A at secondary
    (b) 5A at secondary
    (c) 800A at secondary

(d) 40A at secondary

92. Transformers windings are generally made of _____
    (a) Steel
    (b) Iron
    (c) Copper
    (d) Steel iron alloy
93. Transformer core is designed to reduce _____
    (a) Hysteresis loss
    (b) Eddy current loss
    (c) Hysteresis loss and Eddy current loss
    (d) Cannot be determined
94. Function of transformer is to…… _____
    (a) Convert AC to DC
    (b) Convert DC to AC
    (c) Step down or up the DC voltages and currents
    (d) Step down or up the AC voltages and currents
95. The part of a transformer which is visible from outside _____
    (a) Bushings
    (b) Core
    (c) Primary winding
    (d) Secondary winding
96. Network in electronics or electrical is a collection of …….._____.
    (a) Interconnected components
    (b) Alternately connected circuits
    (c) Disconnected devices
    (d) Disconnected components
97. An electric network in which current and voltage values are identified is called _____ process.
    (a) Network analysis
    (b) Network bisection
    (c) Networking
    (d) None of the above
98. The flow of current through 2 or more input/output terminals of an electrical or electronic device is called…….
    (a) Component
    (b) Node
    (c) Circuit
    (d) Mesh
99. A point where multiple component terminals meet is called …….._.
    (a) Component
    (b) Node
    (c) Circuit
    (d) Mesh
100. A conductor has …… amount of resistance when considered as a node.
    (a) 0
    (b) 0.5

(c) 100
(d) Infinite

101. In a network, source is connected on …… port.
(a) Input
(b) Output
(c) Both ‘a’ and ‘b’
(d) Not connected

102. Capacitance of 2 plates is expressed in terms of ……..
(a) Ohms
(b) Micro Farads
(c) Henry
(d) Mega Ohms

103. Inductance of a material is expressed in terms of …….
(a) Ohms
(b) Farads
(c) Henry
(d) Columb’s

104. A procedure to simplify a network can be done by……..the number of components.
(a) Reducing
(b) Multiplying
(c) Adding
(d) None of the above

105. ……..in a network are replaced with other network components which provide same effect same effect.
(a) Physical components
(b) Resistor
(c) Impedance
(d) All the above

106. …….are used while solving network circuits.
(a) Methods
(b) Theorems
(c) Logics
(d) Both a and b

107. Impedance in network circuits is represented as ……. .

(a) R (b) L (c) Z (d) X

108. Ohms law was developed by ….
(a) Georg ohm
(b) John ohm
(c) Henry ohm
(d) Richard Ohm

109. The theorem used to transform a current type generator into a resistor is….
(a) Nortons theorem
(b) Kirchoff’s law

(c) Thevenin's theorem
(d) Tellegen's theorem

110. Kirchhoff law has ……. number of additional theorems.
(a) 2
(b) 3
(c) 4
(d) 5

111. ……. is expressed as the inverse of impedance.
(a) Resistance
(b) Admittance
(c) Reactance
(d) Capacitance

112. Resistance in Thevenin's networking theorem is calculated using by …… type source type short-circuited source.
(a) Voltage
(b) Current
(c) Both a and b
(d) None of the above

113. ……theorem in networking defines that summing network elements are represented as single parallel resistors and current source.
(a) Tellegen's
(b) Ohms
(c) Thevenin's
(d) Norton’s

114. Source conversion converts ……. source to …… source.
(a) Current to voltage
(b) Voltage to current
(c) Current to current
(d) Both a and b

115. Star configuration used in networking circuits is also called as …… configuration.
(a) Pi
(b) Triangle
(c) Rectangle
(d) None of the above

116. Delta configuration used in networking circuits is also called ……configuration.
(a) Pi
(b) Triangle
(c) Rectangle
(d) None of the above

117. What is the 1st step of mesh analysis?
(a) Each closed type loop is assigned a loop current
(b) Kirchhoff's 2nd law is applied for each loop
(c) Solve the equation to get loop current value
(d) Both a and b

118. Which of the following is 1st step of nodal analysis?
(a) Each node is assigned with arbitrary voltage

(b) Current in every branch is calculated
(c) Kirchhoff 1st law at every node is applied
(d) All the above

119. If a circuit operates with a constant current or voltage source, then the circuit is called a …… circuit.
(a) AC circuit
(b) DC circuit
(c) ADC circuit
(d) DAC circuit

120. Star configuration has ……..number of ports.
(a) 2
(b) 3
(c) 4
(d) Multiple

121. Delta network has …… number of nodes.
(a) 1
(b) 2
(c) 3
(d) 4

122. Kirchhoff's 1st law is also called…….
(a) Kirchhoff junction rule
(b) Kirchhoff node rule
(c) Kirchhoff point rule
(d) All the above

123. Kirchhoff's 2nd law is also called as ……...
(a) Kirchhoff voltage law
(b) Kirchhoff current law
(c) Kirchhoff resistance law
(d) Both a and b

124. Which of the following is the disadvantage of Kirchhoff's laws?
(a) Assumes zero magnetic fluctuation in closed type loop
(b) Presence of electric field and electromotive force breaks the rule due to change in magnetic flux
(c) Both a and b
(d) Electric field is 0

125. Norton's theorem is applied to the networks with ……..
(a) Current source
(b) Voltage source
(c) Linear time invariant
(d) All the above

126. Norton's theorem deals with …… circuit theory.
(a) AC
(b) DC
(c) ADC
(d) DAC

127. Thevenin's theorem is applicable for ……. resistive circuits.

(a) AC
(b) DC
(c) ADC
(d) DAC

128. A transformer is a ……. device.
(a) Static
(b) Dynamic
(c) Static and Dynamic
(d) None of the above

129. The smallest set of variables that determines the state of the system are known as ….
(a) State
(b) State variables
(c) State vector
(d) None of the above

130. The argument of the complex number (-1+j) is……
(a) 135
(b) -45
(c) 45
(d) -135

131. The difference of two conjugate numbers results in
(a) a complex number
(b) in-phase component only
(c) quadrature component only
(d) none of the above

132. x+j y is called
(a) An exponential number
(b) An odd number
(c) An even number
(d) A complex number

133. The operator 'j' is equal to….
(a) -1
(b) +1
(c) $\sqrt{-1}$
(d) x

134. The physical size of a resistor determines…..
(a) The voltage rating
(b) The current rating
(c) The power rating
(d) The temperature rating

135. A 15 Ω resistor, an inductor with 8 Ω inductive reactance, and a capacitor with 12 Ω capacitive reactance are in parallel across an ac voltage source. The circuit impedance is
(a) 12.7 Ω
(b) 127 Ω
(c) 4,436 Ω
(d) 6,174 Ω

136. If the value of C in a series RLC circuit is decreased, the resonant frequency
    (a) Is not affected
    (b) Increases
    (c) Is reduced to zero
    (d) Decreases
137. A 24 Ω resistor, an inductor with a reactance of 120 Ω, and a capacitor with a reactance of 120 Ω are in series across a 60 V source. The circuit is at resonance. The voltage across the inductor is
    (a) 60 V
    (b) 660 V
    (c) 30 V
    (d) 300 V
138. Q of the circuit stands for _.....factor.
    (a) Quality
    (b) Magnification
    (c) Tuning
    (d) Both a & b
139. ……_ resonant circuit works as a resistive circuit on a resonant frequency.
    (a) Series
    (b) Parallel
    (c) both a & b
    (d) none of the above
140. Quality factor (Q) of a circuit is also known as ……..
    (a) Figure of Merit
    (b) Series connector
    (c) Parallel connector
    (d) None of the above
141. The opposite of admittance is …….
    (a) Resistance
    (b) Conductance
    (c) Impedance
    (d) inductance
142. It is necessarily to find …… of current to solve the circuit according to the Kirchhoff's Laws .
    (a) Value
    (b) Direction
    (c) Symbol
    (d) speed
143. The circuits of star, delta star conversion, Thevenin theorem, Norton theorem etc. can be solved through the method of _____.
    (a) node voltage method
    (b) loop voltage method
    (c) equivalent method
    (d) Both a & b
144. Laplace transformation is based on …….
    (a) Integral formula

(b) Differential formula
(c) Both ‘a’ and ‘b’
(d) None of the above

145. Laplace transforms of the function e^{-2t} is….
(a) 1/2s
(b) (s + 2)
(c) 1/(s+2)
(d) 2s

146. The integral of a step function is…….
(a) A ramp function
(b) An impulse function
(c) Modified ramp function
(d) A sinusoidal function

147. Laplace transforms of tn u(t) is
(a) $\frac{n!}{s^n}$
(b) $\frac{n!}{s^{n-1}}$
(c) $\frac{(n-1)!}{s^{n-1}}$
(d) $\frac{n!}{s^{n+1}}$

148. The final value of the function I(s)=$\frac{s+6}{s(s+3)}$ is….
(a) 0
(b) 1
(c) 2
(d) 3

149. Maximum power in terms of the Thevenin’s voltage and load resistance …..
a) $(V_{Th})^2/4R_L$
b) $(V_{Th})^2 * 4R_L$
c) $(V_{Th})^2 + 4R_L$
d) $4R_L/(V_{Th})^2$

150. In AC networks, maximum power is delivered when _____
a) $Z_L * Z_S * = 0$
b) $Z_L + Z_S * = 1$
c) $Z_L = -Z_S *$
d) $Z_L = Z_S *$

Group-B

151. Identify the process in which an electron escapes from the metal surface.
(a) Electron emission
(b) Electron displacement
(c) Electron transgression
(d) Electron movement

152. How many types of electron emissions exist?

(a) 2
(b) 3
(c) 4
(d) 1

153. How does the intensity affect the photoelectric current?
(a) As intensity increases, the photoelectric current increases
(b) As the intensity increases, the photoelectric current decreases
(c) As the intensity decreases, the photoelectric current becomes twice
(d) No effect

154. The photoelectric emission could be explained by the _____
(a) Wave nature of light
(b) Particle nature of light
(c) Dual nature of light
(d) Quantum nature

155. What is the effect of intensity on the stopping potential?
a) As intensity increases, stopping potential increases linearly
b) As intensity increases, stopping potential decreases linearly
c) As intensity decreases, stopping potential increases exponentially
d) No effect

156. Work function of metals is generally measured in

a) Joules
b) electron-volt
c) watt-hour
d) watt

157. At room temperature, the electron cannot escape metal surface due to
a) Attractive forces of nucleus
b) Repulsive forces of electrons

c) Repulsive forces of nucleus
d) Pulling force of protons

158. The control grid of Triode is used to control the _____.
(a) Flow of Electrons
(b) Flow of Holes
(c) Flow of Electrons & Holes
(d) All are correct

159. When anode voltages are increased then space charge becomes _____.
(a) Eliminate
(b) Decrease
(c) Increase
(d) Maintain

160. The relation between changing of Plate voltage and Grid voltage is called _____.
(a) Amplification Factor
(b) Plate Resistance
(c) Mutual Conductance
(d) Saturation

161. When Plate voltage of the triode increases, the plate current becomes _____.
(a) Decreased
(b) Increased
(c) Same
(d) Stop

162. A vacuum tube is also known as electronic valve because
(a) it conducts only in one direction
(b) electrons are enclosed in evacuated envelope
(c) it carries electrons
(d) it is an electronic device

163. A vacuum diode can be used as _____.
(a) Amplifier
(b) Sound Detector
(c) Oscillator
(d) Rectifier

164. The forbidden band in silicon at 0^0 K is

(a) 1.1 eV
(b) 0.785 eV
(c) 1.5 eV
(d).2.0 eV

165. Intrinsic semiconductors are those
(a) Which are made of semiconductor material in its purest form
(b) Which have zero energy gap
(c) Which have more electrons than holes
(d) Which are available locally

166. Intrinsic semiconductor at room temperature will have, _____ available for conduction
(a) Electrons
(b) Holes
(c) Both electrons and holes
(d) None of the above

167. The energy gap is much more in silicon than in germanium because
(a) It has less number of electrons
(b) It has high atomic mass number
(c) Its crystal has much stronger bonds called ionic bonds
(d) Its valence electrons are more tightly bound to their parent nuclei

168. A Semiconductor has_____ temperature coefficient of resistance.
(a) negative
(b) Positive
(c) Zero
(d) None of the above

169. A semiconductor generally has _____ valence electrons
(a) 2
(b) 3
(c) 4
(d) 6

170. A doped semiconductor is also known as
(a) Intrinsic semiconductor
(b)Extrinsic semiconductor

(c)Diffused semiconductor
(d) None of the above

171. Addition of pentavalent impurity to semiconductors creates many_____
(a) Free Electrons
(b) Holes
(c) Valence electrons
(d) Bound electrons

172. A pentavalent impurity has_____
(a) 3 Valence electrons
(b) 6 Valence electrons
(c) 5 Valence electrons
(d) 4 Valence electrons

173. A trivalent impurity has_____
(a) 3 Valence electrons
(b) 6 Valence electrons
(c) 5 Valence electrons
(d) 4 Valence electrons

174. As the temperature of a semiconductor increases its
(a) Conductivity increases
(b)Resistivity increases
(c)Atomic number decreases
(d)Temperature co-efficient becomes zero

175. The conduction band
(a) Is always above the forbidden energy level
(b) Is the region of free electrons
(c) Concentrates holes for the flow of current
(d) Is a range of energies corresponding to the energies of the free electrons

176. The battery connections required to forward bias PN junction are
(a)+ve terminal to p and -ve terminal to n
(b)-ve terminal to p and +ve terminal to n
(c)-ve terminal to p and -ve terminal to n
(d) None of the above

177. The forbidden band in germanium at 0^0K is
(a) 0.03 eV

(b) 0.785 eV
(c) 1.5 eV
(d).2.0 eV

178. The atomic number of germanium is.....
(a) 4
(b) 8
(c) 16
(d) 32

179. _____ is used to describe the static V/I characteristic of a junction diode
(a) Bolzmann diode equation
(b) Richardson-Dushman equation
(c) Child's Three half-power law
(d) Einstein's photoelectric equation

180. For a germanium P-N junction, the barrier potential is nearly_____
(a) 0.3 V
(b) 3.5 V
(c) 3 V
(d) Zero

181. A reversed biased *PN* Junction has_____
(a) Very narrow depletion layer
(b) Almost no current
(c) Very low resistance
(d) Large current flow

182. A *PN* Junction, acts as a _____
(a)Unidirectional switch
(b) Bidirectional switch
(c) Controlled switch
(d) None of the above

183. A reverse biased PN junction has a resistance_____
(a) Of the order of Ω
(b) Of the order of KΩ
(c) Of the order of MΩ
(d) None of the above

184. With forward bias to a PN junction the width of the depletion layer_____
(a) Decreases

(b) Increases
(c) Remains the same
(d) None of the above

185. The leakage current in a PN junction is of the order of_____
(a) A
(b) mA
(c) kA
(d) μA

186. Zener diodes are also known as
(a) Voltage regulators
(b) Forward bias diode
(c) Breakdown diode
(d) None of the mentioned

187. The zener diode is heavily doped because_____
(a) to have low breakdown voltage
(b) to have high breakdown voltage
(c) to have high current variations
(d) to maintain perfect quiescent point

188. BJT stands for _____
(a) Bi-Junction Transfer
(b) Blue Junction Transistor
(c) Bipolar Junction Transistor
(d) Base Junction Transistor

189. A transistor has _____
(a) one pn junction
(b) two pn junctions
(c) three pn junctions
(d) four pn junctions

190. The base of a transistor is _____ doped
(a) heavily
(b) moderately
(c) lightly
(d) none of the above

191, A transistor is a _____ operated device

(a) current
(b) voltage
(c) both voltage and current
(d) none of the above

192. The element that has the biggest size in a transistor is _____
(a) collector
(b) base
(c) emitter
(d) collector-base-junction

193. The collector of a transistor is _____ doped
(a) heavily
(b) moderately
(c) lightly
(d) none of the above

194. The emitter of a transistor is _____ doped
(a) heavily
(b) moderately
(c) lightly
(d) none of the above

195. The value of α of a transistor is _____
(a)more than 1
(b) less than 1
(c) 1
(d) none of the above

196. A JFET is also called _____ transistor
(a) unipolar
(b) bipolar
(c) unijunction
(d) none of the above

197. FETs are preferred to BJTs at high frequencies because they are
(a) Less noisy
(b) Capable of handling highest frequencies
(c) Easy to fabricate
(d) All of the above

198. The most commonly used transistor arrangement is _____ arrangement
(a) common emitter
(b) common base
(c) common collector
(d) none of the above

199. How many terminals are there in a unijunction transistor?
(a) 1
(b) 2
(c) 3
(d) 4

200. A UJT has _____
(a) Two pn junctions
(b) One pn junction
(c)Three pn junctions
(d)None of the above

201. What do you mean by transistor?
(a) a semiconductor device
(b) current
(c) voltage
(d) None of these

202. In a transistor, signal is transferred from a _____ circuit.
(a) high resistance to low resistance
(b) low resistance to high resistance
(c) high resistance to high resistance
(d) low resistance to low resistance

203. In npn transistor, free electrons are the ____.
(a) equal charge carriers
(b) majority charge carriers
(c) minority charge carriers
(d) None of the above

204. The output impedance of a transistor is _____.
(a) high
(b) zero
(c) very low

(d) low

205. The input impedance of a transistor is _____.
(a) high
(b) zero
(c) very low
(d) low

206. As the temperature of a transistor goes up, the base-emitter resistance ____.
(a) decreases
(b) Increases
(c) remains the same
(d) None of the above

207. The name transistor is derived from ___ that means the resistance is changed.
A. ten resistor
B. transfer run
C. transfer resistor
D. None of the above

208. The emitter-base junction of a transistor is ___ Biased while the collector-base junction is ___.
A. Reverse, Forward B.
Reverse, Reverse
C. Forward, forward
D. Forward, reverse

209. In a pnp transistor, the majority current carriers are …….
A. holes
B. donor ions
C. acceptor ions
D. free electrons

210. A zener diode has _____ breakdown voltage.
(a) Undefined
(b Sharp
(c) Zero
(d) None of the above

211. The collector current in the transistor will

a) Increase if the temperature increases
b) Decrease if the temperature decreases
c) Not change with the temperature variation
d) None of the above

212. In a npn transistor, the minority current carriers are …….
(a) holes

(b) donor ions
(c) acceptor ions
(d) free electrons

213. A series resistance is connected in the zener circuit to _____.
(a) Properly reverse bias the zener
(b) Protect the zener
(c) Properly forward bias the zener
(d) None of the above

214. Transistors are generally made from ____.
(a) silicon
(b) iron
(c) copper`
(d) None of the above

215. In a npn transistor, the majority current carriers are …….
(a) holes
(b) donor ions
(c) acceptor ions
(d) free electrons

216. A zener diode is destroyed if it _____.
(a) Is forward biased
(b) Is reverse biased
(c) Carries more than rated current
(d) None of the above

217. In a pnp transistor, the minority current carriers are …….
A. holes
B. donor ions
C. acceptor ions
D. free electrons

218. A zener diode is _____ device.
(a) A non-linear
(b) A linear
(c) An amplifying
(d) None of the above

219. A UJT exhibits negative resistance when
a) Current is less than valley current
(b)Current is less than peak current
(c) Current is more than peak current but less than valley current
(d) None of the above

220. When the reverse voltage increases, the junction capacitance

(a) Decreases
(b) Stays the same
(c) Increases
(d) Has more bandwidth

221. The p-n junction behaves like a

a) diode
b) triode
c) tetrode
d) pentode

222. In the n-p-n transistors under forward biased condition, p layer is extremely thin because
a) The material used for p-type semiconductor is very costly
b) The p-type semiconductor requires more energy to disturb the electrons in the valence band
c) 90% electrons can be collected at the collector
d) 90% electrons can be controlled at the emitter

223. The conduction in JEFT is always by the

a) Majority carriers
b) Minority carriers
c) Holes
d) Electrons

224. The Hall Coefficient for p-type semiconductors is

a) Negative only
b) Positive only
c) Either positive or negative
d) Not applicable

225. The Hall Coefficient will be zero for
a) Insulator
b) N-type semiconductor
c) Conductor
d) P-type semiconductor

226. Fermi Level is the energy where the probability of a state occupied in conduction and valance band is
a) 0.1
b) 0.5

c) 1.0
d) 0.33

227. The thickness of depletion region in semiconductor diode is of the order of

a) 1×10^{-4} micron
b) 1×10^{-6} micron
c) 1 micron
d) 1×10^{-6} cm

228. Which of the following transistor configuration will give both current and voltage gain?
a) Common emitter
b) Common collector
c) Common case
d) None of the above

229. Why n-p-n transistors are preferred over the p-n-p transistors?

a) N-p-n transistors have low heat dissipation
b) N-p-n transistors are cheap and easily available
c) N-p-n transistors have high mobility of holes
d) N-p-n transistors have higher mobility of electrons than holes in p-n-p transistors

230. What are unijunction transistors used for?
a) Amplifying a circuit
b) Circuit breaker
c) Splitting device
d) On-Off switching device

231. Which type of material is the channel of a unijunction transistor made up of?
a) PN type
b) It doesn’t affect the working
c) P type
d) N type

232. What are the working regions of a unijunction transistor?
a) Linear region
b) Negative Resistance region
c) Saturation region
d) Cut-off region

233. What are the terminals of a unijunction transistor?
a) Collector, Base and Emitter
b) Emitter, Base 1 and Base 2
c) Gate, Drain and Source

d) Gate, Drain, Body and Source

234. The gate of FET is analogous to..... of BJT
(a) Base
(b) Substrate
(c) Emitter
(d) Collector

235. The FETs are also known as
(a) Linear devices
(b) Square root law devices
(c) Cube law devices
(d) Square law devices

236. Which of the following statement is true about FET?
(a) It has high output impedance
(b) It has high input impedance
(c) It has low input impedance
(d) It does not offer any resistance

237. Comparing the size of BJT and FET, choose the correct statement?
a) BJT is larger than the FET
b) BJT is smaller than the FET
c) Both are of same size
d) Depends on application

238. What is the main advantage of FET which makes it more useful in industrial applications?
a) Voltage controlled operation
b) Less cost
c) Small size
d) Semiconductor device

239. What is the value of current when the gate to source voltage is less than the pinch off voltage?
a) 1 A
b) 5 A
c) 100 A
d) 0

240. What is the value of drain current when gate to source voltage is equal to pinch off voltage?
a) 0 A
b) 1 A
c) 2 A
d) Cannot be determined

241. To use FET as a voltage controlled resistor, in which region it should operate?

a) Ohmic region
b) cut off
c) Saturation
d) cut off and saturation

242. For an n-channel FET, What is the direction of current flow?
a) Source to drain
b) Drain to source
c) Gate to source
d) Gate to drain

243. For a p-channel FET, What is the direction of current flow?
a) Source to drain
b) Drain to source
c) Gate to source
d) Gate to drain

244. The pinch off voltage of JFET is 5v. What is its cut off voltage?
a) 2.5V
b) 3V
c) 4V
d) 5V

245. The action of JFET in its equivalent circuit can be represented as which of the following?
a) Current controlled current source
b) Current controlled voltage source
c) Voltage controlled current source
d) Voltage controlled Voltage source

246. Which of the following is used as the recombination agent by semiconductor device manufactures?
a) Silver
b) Gold
c) Platinum
d) Aluminium

247. What is the SI unit of electron diffusion constant?
a) cm^2/s
b) m^2/s
c) m/s
d) none

248. In diffusion, the particles flow from a region of _____ to region of _____
a) High, low
b) Low , high

c) High , medium
d) Low, medium

249. Which of the following parameter describes the best movement of the electrons inside a semiconductor?
a) Velocity gradient
b) Diffusion
c) Mobility
d) Density gradient

250. Which of the following term isn't a part of the total current density in a semiconductor?
a) Temperature
b) μ
c) e
d) E

251. What does dn/dx represent?
a) Velocity gradient
b) Volume gradient
c) Density gradient
d) None

252. A zener diode works on the principle of_____
a) tunneling of charge carriers across the junction
b) thermionic emission
c) diffusion of charge carriers across the junction
d) hopping of charge carriers across the junction

253 When the voltage across the zener diode increases_____
a) temperature remains constant and crystal ions vibrate with large amplitudes
b) temperature increases and crystal ions vibrate with large amplitudes
c) temperature remains constant and crystal ions vibrate with smaller amplitudes
d) temperature decreases and crystal ions vibrate with large amplitudes

254. Avalanche breakdown in zener diode is _____
a) electric current multiplication takes place
b) phenomenon of voltage multiplication takes place
c) electrons are decelerated for a period of time
d) sudden rise in voltage takes place.

255. Bridge rectifier is an alternative for
a) Full wave rectifier
b) Peak rectifier
c) Half wave rectifier
d) None of the mentioned

256. In a full wave rectifier, the current in each diode flows for
(a) whole cycle of the input signal

(b) half cycle of the input signal
(c) more than half cycle of the input signal
(d) none of the above

257. In a full wave rectifier, if the input frequency is 50 Hz, then output frequency will be
(a) 50 Hz
(b) 75 Hz
(c) 100 Hz
(d) 200 Hz

258. In a center tap full wave rectifier, if Vm is the peak voltage between center tap and one end of the secondary, the maximum voltage coming across the reverse bias diode is
(a)Vm
(b) 2 Vm
(c) Vm/2
(d) Vm/√2

259. The maximum efficiency of full wave rectification is
(a) 40.6%
(b) 100%
(c) 81.2%
(d) 85.6%

260. The maximum efficiency of half wave wave rectification is
(a) 40.6%
(b) 100%
(c) 81.2%
(d) 85.6%

261. The ripple factor of a bridge rectifier is
(a) 0.482
(b) 0.812
(c) 1.11
(d) 1.21

262. The bridge rectifier is preferred to an ordinary two diode full wave rectifier because
(a) it needs much smaller transformer for the same output
(b) no center tap required
(c) less PIV rating per diode
(d) all the above

263. Early effect in BJT refers to
(a) avalanche breakdown
(b) thermal breakdown

(c) base narrowing
(d) Zener breakdown

264. The leakage current ICBO flows in
(a) The emitter, base and collector leads
(b) The emitter and base leads
(c) The emitter and collector leads
(d) The base and collector leads.

265. The emitter of the transistor is generally doped the heaviest because it
(a) has to dissipate maximum power
(b) has to supply the charge carriers
(c) is the first region of transistor
(d) must possess low resistance

266. Which of the following transistor configuration circuit is much less temperature dependent
(a) common base
(b) common emitter
(c) common collector
(d) none of the above

267. The CE amplifier circuit are preferred over CB amplifier circuit because they have
(a) lower amplification factor
(b) larger amplification factor
(c) high input resistance and low output resistance
(d) none of these

268. The number of Grids in the Pentode are_____.
(a) 1
(b) 2
(c) 3
(d) 4

269. A metal is heated inside Vacuum tube called_____.
(a) Cathode
(b) anode
(c) Emitter
(d) a & c are correct

270. A Tube consists of three electrodes is called _____.
(a) Diode
(b) Pentode
(c) Triode
(d) Tetrode

271. A Tube consists of five electrodes is called _____.
(a) Diode

(b) Pentode
(c) Triode
(d) Tetrode

272. The another name of plate is _____.
(a) Grid
(b) Cathode
(c) Anode
(d) Atom

273. The potential applied on the control grid of triode is called _____.

(a) Signal
(b) Cathode Biasing
(c) Grid Biasing
(d) Plate Biasing

274. Which of the following represents the best definition for the diffusion length for holes?
(a) Average distance which an electron is injected travels before recombining with an electron
(b) Average distance which a hole is injected travels before recombining with an electron
(c) Average distance which a hole is injected travels before recombining with a hole
(d) Average distance which an electron is injected before recombining with a hole

275. The change in the carrier density is due to
(a) Flow of incoming flux
(b) Flow of outgoing flux
(c) Difference of flow between incoming and outgoing flux
(d) Difference of flow between incoming and outgoing flux plus generation and minus recombination

276. What does p/τ represent?
a) holes
b) time
c) holes per second lost
d) p per unit time

277. Identify the correct condition for a semiconductor to be electrically neutral.
a) $N_d+p=N_a+n$
b) $N_d-p=N_a+n$
c) $N_d+p=N_a-n$
d) $N_d-p=N_a-n$

278. What is the SI unit of conductivity?
a) Ωm

b) $(\Omega m)^{-1}$
c) Ω
d) m

279. Which of the following expressions doesn't represent the correct formula for Drift current density?
(a) $J=\sigma E$
(b) $J=qn\mu E$
(c) $J=\mu E$
d) None

280. In a semiconductor which of the following carries can contribute to the current?
a) Electrons
b) Holes
c) Both
d) None

281. The number of Grids in the Pentode are_____.
(a) 1
(b) 2
(c) 3
(d) 4

282. Number of secondary electrons emitted per number of primary electrons depends on
a) Material of target
b) Frequency of primary electrons
c) Intensity
d) None of the above

283. In a diode, when there is saturation current, the plate resistance is
(a) Zero
(b) Infinite
(c) Some finite quantity
(d) Data is insufficient

284. For a given plate voltage the plate current in a triode is maximum when the potential of
a) The grid is positive and the plate is negative
b) The grid is positive and the plate is positive
c) The grid is zero and the plate is positive
d) The grid is negative and the plate is positive

285. The amplification produced by a triode is due to the action of
a) Filament
b) Cathode
c) Grid
d) plate

286. In a triode amplifier, the value of maximum gain is equal to
    a) Half the amplification factor
    b) Amplification factor
    c) Twice the amplification factor
    d) Infinity
287. What are the two principal electrodes in every tube?
    a) Plate and control grid
    b) Cathode and screen grid
    c) Plate and cathode
    d) Screen grid and control grid
288. For a given plate voltage, if negative potential on the control grid of triode is increased, the plate current
    a) decreases
    b) remains the same
    c) increases
    d) becomes zero
289. A triode can be used as
    a) an amplifier
    b) an oscillator
    c) a rectifier
    d) a regulator
290. Which generates the least noise in operation?
    a) Triode valve
    b) Tetrode valve
    c) Pentode valve
    d) Octode valve
291. A vacuum tube will conduct only if its plate is _____ with respect to the cathode.
    a) positive
    b) negative
    c) at zero potential
    d) at infinite potential
292. The voltage gain by the triode depends on
    a) Filament voltage
    b) Plate voltage
    c) Plate resistance
    d) Plate current
293. Before ionisation, a gas- filled tube has a _____ resistance.
    a) very high
    b) very small

c) small
d) zero

294. The peak inverse voltage of a diode is defined as the maximum allowable
a) negative voltage across the load resistor
b) negative voltage applied to plate with respect to cathode
c) positive voltage to plate with respect to cathode
d) positive voltage applied across the load resistor

295. What is the typical value of ac plate resistance for a triode?
a) 1000 Ω
b) 100 kΩ
c) 1000 kΩ
d) 10 Ω

296. The plate resistance of a tube is mainly due to
a) space charge
b) electrodes of the tube
c) vacuum in the tube
d) gas in the tube

297. A vacuum diode acts as a rectifier because of its _____ conduction.
a) unidirectional
b) bidirectional
c) isotropic
d) omnidirectional

298. Saturation in a tube is a condition where an increase in plate voltage will produce
a) a rise in electron emission
b) a decrease in electron emission
c) no appreciable change in plate current
d) an appreciable change in plate current

299. In a triode valve
a) If the grid voltage is zero then plate current will be zero
b) If the temperature of the filament is doubled, then the thermionic current will also be doubled.
c) If the temperature of the filament is doubled, then the thermionic current will nearly be four times
d) At a definite grid voltage, the plate current varies with plate voltage according to Ohm's law

300. When the temperature of either n-type or p-type increases, determine the movement of the position of the Fermi energy level?
(a) Towards up of energy gap
(b) Towards down of energy gap
(c) Towards centre of energy gap

(d) Towards out of page

Model Question B.Sc (Electronics) Part-1

Paper-2

Q1. A transistor has _____
   a) one pn junction
   b) two pn junctions
   c) three pn junctions
   d) four pn junctions

Q2. In a pnp transistor, the current carriers are _____
   a) acceptor ions
   b) donor ions
   c) free electrons
   d) holes

Q3. In a transistor, collector current is controlled by _____
   a) collector voltage
   b) base current
   c) collector resistance
   d) all of the above

Q4. Which is the least doped region in a transistor?
   a) Either emitter or collector
   b) Base
   c) Emitter
   d) Collector

Q5. A current ratio of I_C/I_E is usually less than one and is called _____
   a) beta
   b) theta
   c) alpha
   d) omega

Q6. Thermal stability can be obtained by_____
   a) shifting operating point
   b) increasing power supply
   c) heat sink
   d) decreasing current at collector

Q7. The arrow in the symbol of a transistor indicates the direction of _____
   a) electron current in the emitter
   b) electron current in the collector
   c) hole current in the emitter
   d) donor ion current

Q8. A NPN transistor conducts when
   a) Both collector and emitter are positive with respect to the base
   b) Collector is positive and the emitter is negative with respect to the base
   c) Collector is positive and the emitter is at the same potential as the base
   d) Both collector and emitter are negative with respect to the base

Q9. The most commonly used semiconductor in the manufacture of a transistor is _____
   a) germanium
   b) silicon
   c) carbon
   d) none of the above

Q10. In a transistor _____
   a) $I_C = I_E + I_B$
   b) $I_B = I_C + I_E$
   c) $I_E = I_C - I_B$
   d) $I_E = I_C + I_B$

Q11. In amplifier circuit, biasing of transistor is necessary to
   a) Fix the value of current amplification
   b) Establish suitable D.C working conditions
   c) Ensure that transistor is saturated
   d) Ensure that transistor is cut-off

Q12. In a transistor highly doped part is
   a) Emitter
   b) Base
   c) Collector
   d) None of the above

Q13. A heat sink is generally used with a transistor to _____
   a) increase the forward current
   b) decrease the forward current
   c) compensate for excessive doping
   d) prevent excessive temperature rise

Q14. Transistor biasing represents _____Conditions
   a) a.c.
   b) d.c.
   c) both a.c. and d.c.
   d) none of the above

Q15. Voltage-divider bias provides _____
   a) an unstable Q point
   b) a stable Q point
   c) a Q point that easily varies with changes in the transistor's current gain
   d) a Q point that is stable and easily varies with changes in the transistor's current gain

Q16. The configuration in which input impedance of transistor amplifier is lowest is
   a) Common base
   b) Common collector
   c) Common emitter
   d) None of above

Q17. A transistor may be used as a switching device or as a _____
   a) fixed resistor
   b) tuning device
   c) rectifier
   d) variable resistor

Q18. The value of α of a transistor is _____
   a) more than 1
   b) less than 1
   c) 1
   d) none of the above

Q19. When transistors are used in digital circuits they usually operate in the _____
   a) active region
   b) breakdown region
   c) saturation and cut-off regions
   d) linear region

Q20. The phase difference between the output and input voltages of a CE amplifier is _____
   a) 180^o
   b) 0^o
   c) 90^o
   d) 270^o

Q21. The relation between β and α is _____
   a) $\beta = 1 / (1 - \alpha)$
   b) $\beta = (1 - \alpha) / \alpha$
   c) $\beta = \alpha / (1 - \alpha)$s
   d) $\beta = \alpha / (1 + \alpha)$

Q22. Hybrid means _____
   a) Mixed
   b) Single
   c) Unique
   d) None of the above

Q23. The output stage of a multistage amplifier is also called _____
   a) Mixer stage
   b) Power stage
   c) Detector stage
   d) F stage

Q24. When negative voltage feedback is applied to an amplifier, its voltage gain _____
   a) Is increased
   b) Is reduced
   c) Remains the same
   d) None of the above

Q25. Which of the following relation is true about gate current?
   a) $I_G=I_D+I_S$
   b) $I_D=I_G$
   c) $I_S= I_G$
   d) $I_G=0$

Q26. Transistor biasing is done to keep _____in the circuit
   a) Proper direct current
   b) Proper alternating current
   c) The base current small
   d) Collector current small

Q27. It is generally desired that a transistor should have _____input impedance
   a) Low
   b) Very low
   c) High
   d) Very high

Q28. There are _____*h* parameters of a transistor
   a) Two
   b) Four
   c) Three
   d) None of the above

Q29. The base of a transistor is _____doped
   a) heavily
   b) moderately
   c) lightly
   d) none of the above

Q30. _____coupling is generally employed in power amplifiers
   a) Transformer
   b) RC
   c) direct
   d) Impedance

Q31. The value of negative feedback fraction is always _____
   a) Less than 1
   b) More than 1
   c) Equal to 1
   d) None of the above

Q32. Which of the following equations gives the relation between I_D and V_{gs}?
   a) $I_D=I_{DSS}\ (1-V_{gs}/V_p)^2$
   b) $I_D=I_{DSS}\ (1-V_{gs}/V_p)^1$
   c) $I_D=I_{DSS}\ (1-V_{gs}/V_p)^3$
   d) $I_D=I_{DSS}\ (1-V_{gs}/V_p)^4$

Q33. Operating point represents _____
   a) Values of I_C and V_{CE} when signal is applied
   b) The magnitude of signal
   c) Zero signal values of I_C and V_{CE}
   d) None of the above

Q34. When an a.c. signal is applied to an amplifier, ,the operating point moves along _____
   a) d.c. load line
   b) a.c. load line
   c) both d.c. and a.c. load lines
   d) none of the above

Q35. A JFET has three terminals, namely _____
   a) cathode, anode, grid
   b) emitter, base, collector
   c) source, gate, drain
   d) none of the above

Q36. The *h* parameter approach gives correct results for _____
   a) Large signals only
   b) Small signals only
   c) Both small and large signals
   d) None of the above

Q37. A class A power amplifier uses _____
   a) Two transistors
   b) Three transistors
   c) One transistor
   d) None of the above

Q38. A feedback circuit usually employs _____network
   a) Resistive
   b) Capacitive
   c) Inductive
   d) None of the above

Q39. For a fixed bias circuit the drain current was 1mA, what is the value of source current?
a) 0mA
b) 1mA
c) 2mA
d) 3mA

Q40. Transistor biasing is generally provided by a _____
a) Biasing circuit
b) Bias battery
c) Diode
d) None of the above

Q41. The main disadvantage of the FET is its
a) Low input impedance
b) Low thermal stability
c) High noise
d) Low gain-band width product

Q42. The channel of a JFET is between the _____
a) gate and drain
b) drain and source
c) gate and source
d) input and output

Q43. In the zero signal conditions, a transistor sees _____load
a) d.c.
b) a.c.
c) both d.c. and a.c.
d) none of the above

Q44. A transistor behaves as a linear device for _____
a) Small signals only
b) Large signals only
c) Both small and large signals
d) None of the above

Q45. The maximum efficiency of resistance loaded class A power amplifier is _____
a) 5%
b) 50%
c) 30%
d) 25%

Q46. Which of the following current equations is true?
a) IG = ID
b) IG = IS
c) ID = IS
d) IG = ID = IS

Q47. A JFET is also called _____ transistor
a) unipolar
b) bipolar
c) unijunction
d) none of the above

Q48. The gain of an amplifier with feedback is known as _____gain
a) Resonant
b) Open loop
c) Closed loop
d) None of the above

Q49. A FET differs from a bipolar transistor as it has

a) Negative resistance
b) Simpler fabrication
c) High input impedance
d) Any of the above

Q50. What will happen if values of R_s increase?
a) V_{gs} Increases
b) V_{gs} Decreases
c) V_{gs} Remains the same
d) $V_{gs}=0$

Q51. For proper operation of the transistor, its collector should have _____
a) Proper forward bias
b) Proper reverse bias
c) Very small size
d) None of the above

Q52. The source terminal of a JEFT corresponds to _____of a vacuum tube
a) plate
b) cathode
c) grid
d) none of the above

Q53. The input capacitor in an amplifier is the _____capacitor
a) Coupling
b) Bypass
c) Leakage
d) None of the above

Q54. The parameter h_{ie} stands for input impedance in _____
a) CB arrangement with output shorted
b) CC arrangement with output shorted
c) CE arrangement with output shorted
d) None of the above

Q55. For an amplifier, the FET is operated in
a) Avalanche breakdown region
b) Pinch-off region
c) VVR region
d) None of the above

Q56. The self-bias configuration eliminates the need for two dc supplies.
a) True
b) False

Q57. The maximum efficiency of transformer coupled class A power amplifier is ……
a) 30%
b) 50%
c) 80%
d) 45%

Q58. The point of intersection of d.c. and a.c. load lines represents _____
a) Operating point
b) Current gain
c) Voltage gain
d) None of the above

Q59. When voltage feedback (negative) is applied to an amplifier, its input impedance _____
a) Is decreased

b) Is increased
c) Remains the same
d) None of the above

Q60. The pinch-off voltage in a JFET is analogous to _____voltage in a vacuum tube
a) anode
b) cathode
c) grid cut off
d) none of the above

Q61. If a transistor amplifier draws 2mA when input voltage is 10 V, then its input impedance is _____
a) 20 kΩ
b) 2 kΩ
c) 10 kΩ
d) 5 kΩ

Q62. The h_{fe} parameter is called _____in CE arrangement with output shorted
a) Voltage gain
b) Current gain
c) Input impedance
d) None of the above

Q63. A JFET is a _____driven device
a) current
b) voltage
c) both current and voltage
d) none of the above

Q64. Which of the following is (are) true of a self-bias configuration compared to a fixed-bias configuration?
a) One of the dc supplies is eliminated.
b) A resistor RS is added.
c) VGS is a function of the output current ID.
d) All of the above

Q65. Class _____ power amplifier has the highest collector efficiency
a) C
b) A
c) B
d) AB

Q66. The disadvantage of base resistor method of transistor biasing is that it _____
a) Is complicated
b) Is sensitive to changes in β
c) Provides high stability
d) None of the above

Q67. Negative feedback is employed in _____
a) Oscillators
b) Rectifiers
c) Amplifiers
d) None of the above

Q68. The purpose of capacitors in a transistor amplifier is to _____
a) Protect the transistor
b) Cool the transistor
c) Couple or bypass a.c. component
d) Provide biasing

Q69. If the operating point changes, the *h* parameters of transistor _____
   a) Also change
   b) Do not change
   c) May or may not change
   d) None of the above

Q70. For the field-effect transistor, the relationship between the input and the output quantities is _____.
   a) linear
   b) nonlinear
   c) 3rd degree
   d) None of the above

Q71. Power amplifiers handle _____signals compare to voltage amplifiers
   a) Small
   b) Very small
   c) Large
   d) None of the above

Q72. The biasing circuit has a stability factor of 50. If due to temperature change, ICBO changes by 1 μA, then I_C will change by _____
   a) 100 μA
   b) 25 μA
   c) 20 μA
   d) 50 μA

Q73. The voltage gain of an emitter follower is _____
   a) Much less than 1
   b) Approximately equal to 1
   c) Greater than 1
   d) None of the above

Q74. In the d.c. equivalent circuit of a transistor amplifier, the capacitors are considered _____
   a) Short
   b) Open
   c) Partially short
   d) None of the above

Q75. The gate of a JFET is _____biased
   a) reverse
   b) forward
   c) reverse as well as forward
   d) none of the above

Q76. The values of *h* parameter of a transistor in CE arrangement are _____arrangement
   a) The same as for CB
   b) The same as for CC
   c) Different from that in CB
   d) None of the above

Q77. The input controlling variable for an FET transistor is a _____ level.
   a) resistor
   b) current
   c) voltage
   d) All of the above

Q78. In class A operation, the operating point is generally located _____of the d.c. load line.
   a) At cut off point

b) At the middle
c) At saturation point
d) None of the above

Q79. The leakage current in a silicon transistor is about _____the leakage current in a germanium transistor
a) One hundredth
b) One tenth
c) One thousandth
d) One millionth

Q80. When a negative voltage feedback is applied to an amplifier, its bandwidth _____
a) Is increased
b) Is decreased
c) Remains the same
d) Insufficient data

Q81. In a FET, there are _____pn junctions at the sides
a) three
b) four
c) five
d) two

Q82. If R_C and R_L represent the collector resistance and load resistance respectively in a single stage transistor amplifier, then a.c. load is _____
a) $R_L + R_C$
b) $R_C \parallel R_L$
c) $R_L - R_C$
d) R_C

Q83. In order to determine h_{fe} and h_{ie} parameters of a transistor, _____ is an a.c. short-circuited
a) Input
b) Output
c) Input as well as output
d) None of the above

Q84. The coupling capacitors are _____ for the dc analysis and _____ for the ac analysis.
a) open-circuit, low impedance
b) short-circuit, low impedance
c) open-circuit, high impedance
d) None of the above

Q85. A power amplifier has comparatively _____ β
a) Small
b) Large
c) Very large
d) None of the above

Q86. In a p-channel JFET, the charge carriers are _____
a) electrons
b) holes
c) both electrons and holes
d) none of the above

Q87. The operating point is also called the _____
a) Cut off point
b) Quiescent point
c) Saturation point

d) None of the above

Q88. The output impedance of an emitter follower is _____
a) High
b) Very high
c) Almost zero
d) Low

Q89. An amplifier has a power gain of 100. Its db gain is _____
a) 10 db
b) 20 db
c) 40 db
d) None of the above

Q90. The purpose of emitter capacitor (i.e. capacitor across R_E) is to _____
a) Avoid voltage gain drop
b) Forward bias the emitter
c) Reduce noise in the amplifier
d) None of the above

Q91. In a fixed-bias configuration, the voltage level of VGS is equal to _____.
a) V_S
b) V_g
c) V_{GS}(off)
d) V_P

Q92. If the zero signal dissipation of a transistor is 1W, then power rating of the transistor should be at least _____
a) 5 W
b) 33 W
c) 75 W
d) 1 W

Q93. The current in a coupling circuit for high frequencies is
a) Zero
b) Maximum
c) Minimum
d) Average

Q94. A JFET has _____power gain
a) small
b) very high
c) very small
d) none of the above

Q95. Emitter follower is a _____circuit
a) Voltage feedback
b) Current feedback
c) Both voltage and current feedback
d) None of the above

Q96. If temperature changes, *h* parameters of a transistor _____
a) May or may not change
b) Do not change
c) Also change
d) None of the above

Q97. For proper amplification by a transistor circuit, the operating point should be located at the _____of the d.c. load line
a) The end point

b) Middle
c) The maximum current point
d) None of the above

Q98. If the input capacitor of a transistor amplifier is short-circuited, then _____
a) Transistor will be destroyed
b) Biasing conditions will change
c) Signal will not reach the base
d) None of the above

Q99. The level of VDS is typically between _____ % and _____ % of VDD.
a) 0, 100
b) 10, 90
c) 25, 75
d) None of the above

Q100. Which of the following is (are) feedback?
a) Voltage-series
b) Voltage-shunt
c) Current-series
d) D. All of the above

Q101. In CE arrangement, the value of input impedance is approximately equal to _____
a) h_{ie}
b) h_{oe}
c) h_{re}
d) None of the above

Q102. When a transistor is cut off_____
a) Maximum voltage appears across transistor
b) Maximum current flows
c) Maximum voltage appears across load
d) None of the above

Q103. The demerit of a collector to base bias is_____
a) its need of high resistance values
b) its dependence on β
c) its independence on β
d) the positive feedback produced by the base resistor

Q104. The disadvantage of voltage divider bias is that it has _____
a) High stability factor
b) Low base current
c) Many resistors
d) None of the above

Q105. Which of the following cases damage the transistor?
a) when V_{CE} is increased too far
b) when V_{CE} is decreased too far
c) when V_{BE} is increased too far
d) when V_{BE} is decreased too far

Q106. A transistor converts _____
a) d.c. power into a.c. power
b) a.c. power into d.c. power
c) high resistance into low resistance
d) none of the above

Q107. In which of the following configuration does a MOSFET works as an amplifier?
a) Common Source (CS)
b) Common Gate (CG)

c) Common drain (CD)
d) All of the mentioned

Q108. At what phase shift is the magnitude of βA at its maximum in the Nyquist plot?
a) 90°
b) 180°
c) 270°
d) D. 0°

Q109. How many h-parameters of a transistor are dimensionless?
a) Four
b) Two
c) Three
d) One

Q110. At cut-off, the JFET channel is _____
a) at its widest point
b) completely closed by the depletion region
c) extremely narrow
d) reverse biased

Q111. The size of a power transistor is made considerably large to _____
a) Provide easy handling
b) Dissipate heat
c) Facilitate connections
d) None of the above

Q112. The gate voltage in a JFET at which drain current becomes zero is called _____voltage
a) saturation
b) pinch-off
c) active
d) cut-off

Q113. The thermal runway is avoided in a collector to base bias because_____
a) of its independence of β
b) of the positive feedback produced by the base resistor
c) of the negative feedback produced by the base resistor
d) of its dependence of β

Q114. Thermal runaway occurs when _____
a) Collector is reverse biased
b) Transistor is not biased
c) Emitter is forward biased
d) Junction capacitance is high

Q115. _____configuration has low thermal stability
a) CE
b) CB
c) CC
d) All of the above

Q116. For highest power gain, one would use _____ configuration
a) CC
b) CB
c) CE
d) none of the above

Q117. The two important advantages of a JFET are _____
a) high input impedance and square-law property
b) inexpensive and high output impedance

c) low input impedance and high output impedance
d) none of the above

Q118. A common- Source amplifier is similar to which BJT amplifier?
a) Common-emitter amplifier
b) Common-collector amplifier
c) Common-base amplifier
a) emitter-follower amplifier

Q119. Only the condition βA = _____ must be satisfied for self-sustained oscillations to result.
a) 0
b) –1
c) 1
d) D. None of the above

Q120. Low efficiency of a power amplifier results in _____
a) Low forward bias
b) Less battery consumption
c) More battery consumption
d) None of the above

Q121. Which of the following points locates the quiescent point?
a) (I_C, V_{CB})
b) (I_E, V_{CE})
c) (I_E, V_{CB})
d) (I_C, V_{CE})

Q122. _____ has the lowest noise-level
a) triode
b) ordinary transistor
c) tetrode
d) JFET

Q123. An amplifier is stable if the absolute magnitude of βA is _____.
a) infinity
b) less than 1
c) greater than 1
d) D. None of the above

Q124. When ther transistor is operated in cut-off and saturation mode, it acts like a
a) Linear Amplifier
b) Photodiode
c) LED
d) Switch

Q125. Which of the following devices has the highest input impedance?
a) JFET
a) MOSFET
b) Crystal diode
c) ordinary transistor

Q126. Power amplifiers generally use transformer coupling because transformer permits _____
a) Cooling of the circuit
b) Impedance matching
c) Distortion less output
d) Good frequency response

Q127. A JFET has high input impedance because _____
a) it is made of semiconductor material
b) input is reverse biased

c) of impurity atoms
d) none of the above

Q128. The dimensions of h_{ie} parameters are _____
a) Mho
b) Ohm
c) Farad
d) Ampere

Q129. In a transistor amplifier circuit $V_{CE} = V_{CB} +$ _____
a) V_{BE}
b) $2V_{BE}$
c) $5\ V_{BE}$
d) None of the above

Q130. CC configuration is used for impedance matching because its _____
a) Input impedance is very high
b) Input impedance is low
c) Output impedance is very low
d) None of the above

Q131. In the design of a biasing circuit, the value of collector load R_C is determined by _____
a) V_{CE} consideration
b) V_{BE} consideration
c) I_B consideration
d) None of the above

Q132. The input control parameter of a JFET is _____
a) gate voltage
b) source voltage
c) drain voltage
d) gate current

Q133. In a common-source JFET amplifier, the output voltage is _____
a) 180^o out of phase with the input
b) in phase with the input
c) 90^o out of phase with the input
d) taken at the source

Q134. For DC, the current in a coupling circuit is
a) Zero
b) Maximum
c) Minimum
d) Average

Q135. Reducing all dc sources to zero is one of the steps in getting the
a) DC equivalent circuit
b) AC equivalent circuit
c) Complete amplifier circuit
d) Voltage divider biased circuit

Q136. The output resistance is given by _____
a) $\Delta V_{CE}/\Delta I_B$
b) $\Delta V_{BE}/\Delta I_B$
c) $\Delta V_{BE}/\Delta I_C$
d) $\Delta V_{CE}/\Delta I_C$

Q137. The small amount of current which flows even when base current $I_B=0$ is called_____
a) I_{BEO}

b) I_{CBO}
c) I_{CEO}
d) I_C

Q138. A FET has no interelectrode capacitance, its band width is
a) Low
b) High
c) Infinity
d) Zero

Q139. The operation of a JFET involves a flow of
a) Minority carriers
b) Majority carriers
c) Recombination carriers
d) Any of the above

Q140. Thermal stability is dependent on thermal runaway which is_____
a) an uncontrolled positive feedback
b) a controlled positive feedback
c) an uncontrolled negative feedback
d) a controlled negative feedback

Q141. If biasing is not done in an amplifier circuit, it results in _____?
a) Decrease in the base current
b) Unfaithful amplification
c) Excessive collector bias
d) None of the above

Q142. When Si NPN transistor in inactive, the base to emitter voltage is equal to
a) 0.6
b) 0.4
c) 1.4
d) 0.88

Q143. A P-N-P transistor has
a) Only acceptor ions
b) Only donor ions
c) Two P-regions and one N-region
d) Three P-N junction

Q144. In a FET
a) One junction is forward biased and the other reverse biased
b) Both junctions are reverse biased
c) Both junctions are forward biased
d) None of the above

Q145. In which region a transistor acts as an open switch?
a) cut off region
b) inverted region
c) active region
a) saturated region

Q146. What is the DC characteristic used to prove that the transistor is indeed biased in saturation mode?
b) $IC = \beta I_B$
c) $IC > \beta I_B$
d) $IC >> \beta I_B$
e) $IC < \beta I_B$

Q147. In saturation region, the depletion layer_____
a) increases linearly with carrier concentration

b) decreases linearly with carrier concentration
c) increases by increasing the emitter current
d) decreases by decreasing the emitter voltage drop

Q148. An active device is one which _____
a) Mechanically controls electron flow
b) Electrically controls electron flow
c) Pneumatically controls electron flow
d) Automatically controls electron flow

Q149. FET acts as constant current source in
a) Ohmic region
b) Breakdown region
c) Pinch off region
d) Both (b) and (c)

Q150. The preferred from of biasing a JFET amplifier is ..... bias
a) Self
b) Drain
c) Source
d) Gate

Q151. Active devices can also be used as_____
a) Amplifiers
b) Choppers
c) Converters
d) Inverters

Q152. In which region a transistor acts as a closed switch?
a) cut off region
b) inverted region
c) active region
d) saturated region

Q153. Op-Amp is abbreviated as _____.
a) Operational Amplifier
b) Operand amplitude
c) Operational amplitude
d) None of the above

Q154. Op-Amp is a _____ type of amplifier.
a) Current
b) Voltage
c) Power
d) Resistance

Q155. Op-Amp has _____ inputs.
a) Single
b) Similar
c) Zero
d) Differential

Q156. Op-Amp has _____ outputs.
a) Single
b) Similar
c) Multiple
d) Differential

Q157. Op-Amp with positive feedback acts as _____.
a) Oscillator
b) Amplifier

c) Rectifier
d) Clipper

Q158. Op-Amp is originated from _____ computers.
a) Analog
b) Digital
c) Both a and b
d) None of the above

Q159. Op-Amp performs _____ operations.
a) Arithmetic
b) Logical
c) Alphanumeric
d) Both a and b

Q160. Find the output voltage of an ideal op-amp. If V_1 and V_2 are the two input voltages
a) $V_O = V_1 - V_2$
b) $V_O = A \times (V_1 - V_2)$
c) $V_O = A \times (V_1 + V_2)$
d) $V_O = V_1 \times V_2$

Q161. Balancing type feedback is also called as _____.
a) Positive type feedback
b) Negative type feedback
c) Both a and b
d) None of the above

Q162. CMRR parameter in an instrumentation amplifier stands for _____.
a) Common mode rejection ratio
b) Common medium rejection ratio
c) Common mode ratio of reference
d) None of the above

Q163. What is the value of CMRR of an ideal instrumentation amplifier?
a) 1
b) 0
c) Infinity
d) 0.5

Q164. Ideal op-amp has infinite voltage gain because
a) To control the output voltage
b) To obtain finite output voltage
c) To receive zero noise output voltage
d) None of the mentioned

Q165. Which factor determine the output voltage of an op-amp?
a) Positive saturation
b) Negative saturation
c) Both positive and negative saturation voltage
d) Supply voltage

Q166. Which of the following is the disadvantage of Op-amp ?
a) Are designed for low power operation only
b) Not suitable for high output
c) Requires passive components
d) All the above

Q167. Ideal Op-amp has _____ input impedance.
a) 0
b) Infinite
c) Negative

d) Positive
e) Hint

Q168. Ideal Op-amp has _____ input offset voltage.
a) 0
b) Infinite
c) Negative
d) Positive

Q169. A differential type amplifier in an Op-amp provides which of the following characteristics?
a) Rejection of CM signal
b) High input type impedance
c) Low noise
d) All the above

Q170. Slew rate is expressed in terms of _____.
a) Volts/ seconds
b) Amperes/ seconds
c) Seconds
d) Both a and b

Q171. Which of the following are the applications of an op-amp?
a) Voltage followers
b) Selective inversion circuit
c) Current to voltage converter
d) All the above

Q172. Does the real Op-amp have finite gain?
e) Yes
f) No
g) May be
h) Not always

Q173. Power supply rejection ratio is also called as _____.
a) Supply voltage rejection ratio
b) Supply current rejection ratio
c) Supply rejection ratio
d) None of the above

Q174. Which of the following electrical characteristics is not exhibited by an ideal op-amp?
a) Infinite voltage gain
b) Infinite bandwidth
c) Infinite output resistance
d) Infinite slew rate

Q175. An ideal op-amp requires infinite bandwidth because
a) Signals can be amplified without attenuation
b) Output common-mode noise voltage is zero
c) Output voltage occurs simultaneously with input voltage changes
d) Output can drive infinite number of device

Q176. Generally, an op-amp is a _____ stage amplifier.
a) Single
b) Double
c) Multi
d) Zero

Q177. Op-Amp is available in the form of _____ package.
a) IC
b) Kit
c) Device

d) All the above

Q178. The Barkhausen criterion for an oscillator
a) Loop gain should be unity
b) Loop gain should be less than unity
c) The phase of a feedback signal with respect to input should be 0° or 360°
d) Both A and C

Q179. The following are the necessary requirements of an oscillator
a) Amplitude stability
b) Frequency stability
c) Power stability
d) Both A and B

Q180. An oscillator differs from an amplifier because it
a) Has more gain
b) Requires no input signal
c) Requires no d.c. supply
d) Always has the same input

Q181. Which of the following oscillators are used for low frequency (LF) applications
a) LC oscillators
b) RC oscillators
c) Both LC and RC Oscillators
d) None

Q182. The expression for frequency of oscillations of a RC phase shift oscillator is
a) $f = 1 / (2\pi\sqrt{RC})$
b) $f = 1 / (2\pi\sqrt{R(C1 + C2)})$
c) $f = 1 / (2\pi RC\sqrt{6})$
d) none of the above

Q183. An oscillator produces _____ oscillations
a) Damped
b) Undamped
c) Modulated
d) None of the above

Q184. LC oscillators are used for produce a waveform with frequency ranging from
a) 1MHz to 500 MHz
b) 100 KHz to 500 MHz
c) 1 KHz to 1 MHz
d) 1MHz to 100 GHz

Q185. In Phase Shift oscillator, the frequency determining elements are_____
a) L and C
b) R, L and C
c) R and C
d) None of the above

Q186. An oscillator employs _____ feedback
a) Positive
b) Negative
c) Neither positive nor negative
d) Data insufficient

Q187. In an LC transistor oscillator, the active device is _____
a) LC tank circuit
b) Biasing circuit
c) Transistor
d) None of the above

Q188. In an LC oscillator, the frequency of oscillator is _____ L or C.
a) Proportional to square of
b) Directly proportional to
c) Independent of the values of
d) Inversely proportional to square root of

Q189. In a phase shift oscillator, we use _____ RC sections
a) Two
b) Three
c) Four
d) None of the above

Q190. For an oscillator to properly start, the gain around the feedback loop must initially be
a) 1
b) Greater than 1
c) Less than 1
d) Equal to attenuation of feedback circuit

Q191. In Colpitt's oscillator, feedback is obtained _____
a) By magnetic induction
b) By a tickler coil
c) From the centre of split capacitors
d) None of the above

Q192. In an LC oscillator, if the value of L is increased four times, the frequency of oscillations is _____.
a) Increased 2 times
b) Decreased 4 times
c) Increased 4 times
d) Decreased 2 times

Q193. The oscillator that is mostly used for generating signals of frequency of few 'MHz' is
a) Armstrong oscillator
b) Crystal oscillator
c) Wein bridge oscillator
d) Colpitts oscillator

Q194. What must be done to ensure that oscillation will not die out in RC phase shift oscillator?
a) Gain of amplifier is kept greater than 29
b) Gain of amplifier is kept greater than 1
c) Gain of amplifier is kept less than 29
d) Gain of amplifier is kept less than 1

Q195. The gain of an ideal oscillator is
a) Unity
b) Zero
c) Infinity
d) Slightly more than unity

Q196. The oscillator circuit with only D.C power source can be produce
a) Sinusoidal wave only
b) Saw tooth wave only
c) Square wave only
d) Any of the above

Q197. Ultra high frequency oscillators work in the range
a) 10 Hz to 10 kHz
b) 1 kHz to 20 kHz
c) 20 kHz to 30 MHz
d) Above 30 MHz

Q198. The most suitable oscillator circuits for 1 MHz frequency is
a) Hartely oscillator
b) Phase shift oscillator
c) Wein bridge oscillator
d) None of the above

Q199. Which of the following is the main advantage of using oscillators?
a) Suitability for low voltages
b) High output voltage
c) Constant frequency of oscillations
d) High frequency

Q200. _____ oscillator is the most stable oscillator
a) Crystal controlled
b) Weinbridge
c) Colpitts
d) Hartley

Q201. _____ oscillator uses a tapped coil in the LC tuned circuit
a) Hartley
b) Armstrong
c) Colpitts
d) Pierce

Q202. Hartley oscillator is commonly used in _____
a) Radio receivers
b) Radio transmitters
c) TV receivers
d) None of the above

Q203. A _____ is a pulse generator circuit.
a) multivibrator
b) frequency generator
c) amplifier
d) rectifier

Q204. What rectifier does?
a) converting DC to AC
b) converting AC to DC
c) converting high DC to low DC
d) none of these

Q205. Maximum efficiency of Half Wave Rectifier is:
a) 25%
b) 41%
c) 65%
d) 85%

Q206. How many types of multivibrators are?
a) 2
b) 4
c) 5
d) 3

Q207. Voltage regulators require
a) Only line regulation
b) Only load regulation
c) A constant load
d) Load and line regulation

Q208. Maximum efficiency of Full Wave Rectifier is:

. a) 25%
b) 41%
c) 65%
d) 81%

Q209 The external triggering is not needed for the transition of state in the
. a) Bistable multivibrator
b) Monostable multvibrator
c) Astable multivibrator
d) (b) and (c) both

Q210 Astable Multivibrator is _____ in both of the states.
. a) stable
b) unstable
c) free running
d) all are correct

Q211 Ripple factor =_____
. a) Irms / Idc
b) Irms – Idc
c) Irms + Idc
d) Irms * Idc

Q212 Bistable multivibrator is _____ in any state.
. a) Stable
b) Unstable
c) Saturated
d) Independent

Q213 Voltage regulators keep a constant ……output voltage when the input or load varies
. within limits.
a) DC
b) AC
c) Ripple
d) None of above

Q214 When load varies _____ voltage regulation maintains constant output voltage
. a) Line
b) Load
c) Both a and b
d) None of the above

Q215 In which rectifier value of ripple factor is less?
. a) Buck converter
b) Full wave rectifier
c) Half wave rectifier
d) None of above

Q216 What is a square wave generator?
. a) Flip-flop
b) Bi-stable multivibrator
c) Astable multivibrator
d) Monostable multivibrator

Q217 What is the duty cycle of the output of an astable multivibrator?
. a) 50%
b) 100%
c) 75%
d) 55%

Q218 Ripple factor of Half Wave Rectifier is:

. a) 3.21
b) 2.21
c) 1.21
d) 0.21

Q219 How can the duty cycle be changed for an astable multivibrator?
. a) By adding another capacitor to the circuit
b) By adding diodes to the circuit
c) By adding an inductor to the circuit
d) The duty cycle cannot be changed

Q220 The monostable multivibrator is a circuit whose output has
. a) two stable state and one quasi-stable state
b) one stable state and two quasi-stable state
c) one stable state and one quasi-stable state
d) two stable state only

Q221 Ripple factor of Full Wave Rectifier is:
. a) 0.483
b) 0.383
c) 0.283
d) 0.83

Q222 Which of these is not a type of monostable multivibrator?
. a) Schmitt trigger as a monostable multivibrator
b) Emitter coupled monostable multivibrator
c) Using an op-amp
d) 555 Timer as a monostable multivibrator

Q223 Bistable circuit is also known as _____
. a) Latch
b) Gate
c) Flip-flop
d) Bidirectional circuit

Q224 Multivibrators are characterized by _____
. a) Registers
b) Capacitors
c) Transistors
d) All of the Mentioned

Q225 Astable circuit acts as a/an _____
. a) Amplifier
b) Oscillator
c) Relaxation oscillator
d) Multiplexer

Q226 The _____ stores the electric charges.
. a) transformer
b) capacitor
c) resistor
d) none of these

Q227 In an astable multivibrator, the amplifying elements are _____
. a) FET
b) JFET
c) OP-AMP
d) All of the Mentioned

Q228 Monostable multivibrator can also be termed as _____
. a) Full astable multivibrator

b) Half astable multivibrator
c) Half bistable multivibrator
d) Full bistable multivibrator

Q229. When input voltage varies _____ voltage regulation maintains the constant output voltage
a) Line
b) Load
c) Both a and b
d) None of the above

Q230. The output voltage of a regulated power supply is affected by which of the following factors
a) Input voltage
b) Load current
c) Temperature
d) All the above

Q231. Bridge rectifier is an alternative for
a) Full wave rectifier
b) Peak rectifier
c) Half wave rectifier
d) None of the mentioned

Q232. To overcome ripple in rectifies DC, one can use
a) A capacitor in series with a the load resistance
b) A capacitor in parallel to the load resistance
c) Both of the mentioned situations will work
d) None of the mentioned situations will work

Q233. More complex circuitry that performs the opposite function, that is converting DC to AC, is called
a) communication
b) inverter
c) common-mode
d) D. isolated

Q234. Half-wave rectification requires a _____ diode in a single-phase supply
a) single
b) double
c) multi
d) None of above

Q235. C-filters are suitable for _____ load resistances
a) low
b) high
c) all
d) none of above

Q236. L-filters are suitable for _____ load resistances
a) low
b) high
c) all
d) none of above

Q237. A capacitor filter or C filter can be used in a rectifier by connecting it
a) in parallel with the load
b) in series with the load
c) in parallel with the supply
d) in series with the supply

Q238. An inductor filter connected in series with a resistive load provides a
a) smoothing of the output voltage waveform
b) smoothing of the input voltage waveform
c) smoothing of the output current waveform
d) smoothing of the input current waveform

Q239. An L filter is connected _____
a) in series
b) in parallel
c) in both series and parallel
d) none of the mentioned

Q240. In a half-wave rectifier, the
a) current & voltage both are bi-directional
b) current & voltage both are uni-directional
c) current is always uni-directional but the voltage can be bi-directional or uni-directional
d) current can be bi-directional or uni-directional but the voltage is always uni-directional

Q241. An astable multivibrator requires:
a. balanced time constants
b. a pair of matched transistors
c. no input signal
b) dual J-K flip-flops

Q242. What controls the output pulse width of a one shot?
a) the clock frequency
b) the width of the clock pulse
c) an RL time constant
d) an RC time constant

Q243. The RMS value of a half wave rectifier current is 10 A. Its value for full wave rectification would be
a) 10 A
b) 14.14 A
c) 20/Pi A
d) 20 A

Q244. For single phase supply frequency of 50 Hz, ripple frequency in half wave rectifier is (in Hz)
a) 25
b) 50
c) 100
d) 200

Q245. For single phase supply frequency of 50 Hz, ripple frequency in full wave rectifier is (in Hz)
a) 25
b) 50
c) 100
d) 200

Q246. In case of a C filter, the AC is not allowed to pass to the load by
a) offering it high impedance
b) offering it low impedance
c) short circuiting the AC component
d) open circuiting the AC component

Q247. When a capacitor charges:

. a) the voltage across the plates rises exponentially
b) the circuit current falls exponentially
c) the capacitor charges to the source voltage in 5×RC seconds
d) all of the above

Q248. Pulse stretching, time-delay, and pulse generation are all easily accomplished with which type of multivibrator circuit?
a. astable
b. monostable
c. multistable
d. bistable

Q249. Peak inverse voltage for a diode is the
a) Voltage corresponding to rated maximum voltage
b) Maximum voltage that can be applied across the diode in the conducting direction
c) Maximum voltage that can be applied across the diode in the non-conducting direction
d) None of the above

Q250. The current in a Zener diode is controlled by
a) Zener diode resistance
b) Potential barrier
c) Reverse bias voltage
d) External circuits

Q251. The diode which is preferred for D.C coupling is
a) LED
b) Power diode
c) Signal diode
d) Zener diode

Q252. In case of a C filter, if R (load resistance) is increased
a) ripple factor is reduced
b) ripple factor is increased
c) ripple factor is not affected
d) increases noise in the circuit

Q253. When voltage applied to a diode is more than PIV, it is likely to result in
a) More distortion on output side
b) Poor regulation
c) Conduction in both direction
d) Breakdown at the junction

Q254. Modulation is the phenomenon of_____
a) superimposing the audio frequency signal over a carrier wave
b) separating the audio frequency signal from the carrier wave
c) separating carier wave from the modulated wave
d) any of 'a, 'b,c above

Q255. Modulation is done in_____
a) Transmitter
b) Radio receiver
c) Between transmitter and radio receiver
d) None of the above

Q256. A modulation index of 0.5 would be same as
e) 0.5 of Modulation Depth
f) 1/2% of Modulation Depth
g) 5% of Modulation Depth
h) 50% of Modulation Depth

Q257. Aliasing refers to
a) Sampling of signals less than at Nyquist rate
b) Sampling of signals greater than at Nyquist rate
c) Sampling of signals at Nyquist rate
d) d. None of the above

Q258. Amplitude modulation is
e) Change in amplitude of the carrier according to modulating signal
f) Change in frequency of the carrier according to modulating signal
g) Change in amplitude of the modulating signal according to carrier signal
h) Change in amplitude of the carrier according to modulating signal frequency

Q259. Demodulation is the_____
e) process of changing of modulating wave as the carrier wave
f) process of coupling modulated wave with modulating wave
g) process of separating carrier wave from the modulated wave
h) process of combining the message signal with carrier wave

Q260. Which devices we use for AM demodulation_____
Diode detector
a) Transducer
b) Both a and b
c) None of these

Q261. The amount of data transmitted for a given amount of time is called
a) Bandwidth
b) Frequency
c) Noise
d) d. Signal power

Q262. In a communication system, noise is most likely to affect the signal_____
e) at the transmitter
f) in the transmission medium
g) in the formation source
h) at the destination

Q263. In an AM wave useful power is carrier by _____
a) Carrier
b) Sidebands
c) Both sidebands and carrier
d) None of the above

Q264. Carrier waves are_____
a) high frequency waves
b) low frequency waves
c) information signal
d) audio waves

Q265. Amplitude modulation is used for broadcasting because_____
a) it is more noise immune than other modulation systems
b) compared with other systems, it requires less transmitting power
c) its circuitry is simple
d) no other modulation systems can provide the necessary bandwidth for high fidelity

Q266. In AM modulation the bandwidth(ω) is equal to:
a) $B = 2\ \omega_m$
b) b. $B = (\omega_c + \omega_m) - (\omega_c - \omega_m)$
c) c. ω_m
d) d. None of the above

Q267. The ability of the receiver to select the wanted signals among the various incoming signals

. is termed as

a) Sensitivity
b) Selectivity
c) Stability
d) None of the above

Q268. Super heterodyne receivers

a) Have better sensitivity
b) Have high selectivity
c) Need extra circuitry for frequency conversion
d) All of the above

Q269. In frequency modulation_____

a) frequency of the carrier remains constant
b) carrier frequency varies in accordance with the modulating signal frequency
c) carrier frequency varies in accordance with the modulating signal amplitude
d) both 'a' and 'b'

Q270. The ratio between the modulating signal voltage and the carrier voltage is called?

a) Amplitude modulation
b) Modulation frequency
c) Modulation index
d) Ratio of modulation

Q271. Two forms of angular modulation are_____

a) phase modulation and frequency modulation
b) phase modulation and amplitude modulation
c) frequency modulation and amplitude modulation
d) any of above

Q272. Super heterodyne receivers

a) Have better sensitivity
b) Have high selectivity
c) Need extra circuitry for frequency conversion
i) All of the above

Q273. In amplitude modulation, the bandwidth is_____

e) twice the audio signal frequency
f) thrice the audio signal frequency
g) thrice the carrier wave frequency
h) twice the carrier wave frequency

Q274. In A.M., the total modulation index should not exceed one or else_____

e) the system will fail
f) distortion will result
g) amplifier will be damaged
h) either a or c

Q275. Standard intermediate frequency used for AM receiver is

a) 455 MHz
b) 455 KHz
c) 455 Hz
d) None of the above

Q276. The modulation index of an over modulated wave is_____

a) 1
b) <1
c) 0
d) >1

Q277. An SCR has _____ pn junctions

. a) Two
b) Three
c) Four
d) None of the above

Q278 An SCR is a solid state equivalent of _____
. e) Triode
f) Pentode
g) Gas-filled triode
h) Tetrode

Q279 An SCR has _____ semiconductor layers
. a) Two
b) Three
c) Four
d) None of the above

Q280 An SCR has three terminals viz _____,_____,_____
. a) Cathode, anode, gate
b) Anode, cathode, grid
c) Anode, cathode, drain
d) None of the above

Q281 An SCR behaves as a _____. switch
. a) Unidirectional
b) Bidirectional
c) Mechanical
d) None of the above

Q282 An SCR is sometimes called _____
. a) Triac
b) Diac
c) Unijunction transistor
d) Thyristor

Q283 In the normal operation of an SCR, anode is _____ w.r.t. cathode
. a) At zero potential
b) Negative
c) Positive
d) None of the above

Q284 In normal operation of an SCR, gate is _____ w.r.t. cathode
. a) Positive
b) Negative
c) At zero potential
d) None of the above

Q285 An SCR combines the features of _____
.
a) A rectifier and resistance
b) A rectifier and transistor
c) A rectifier and capacitor
d) None of the above

Q286 The control element of an SCR is _____
. a) Cathode
b) Anode
c) Anode supply
d) Gate

Q287 The normal way to turn on a SCR is by _____

. a) Breakover voltage
b) Appropriate anode current
c) Appropriate gate current
d) None of the above

Q288. An SCR is turned off by _____
a) Reducing anode voltage to zero
b) Reducing gate voltage to zero
c) Reverse biasing the gate
d) None of the above

Q289. An SCR is a _____ triggered device
a) Voltage
b) Current
c) Voltage as well as current
d) None of the above

Q290. When an SCR is turned on, the voltage across it is about _____
a) Zero
b) 10 V
c) 100 V
d) 1 V

Q291. An SCR is made of silicon and not germanium because silicon _____
a) is inexpensive
b) is mechanically strong
c) has small leakage current
d) is tetravalent

Q292. If firing angle in an SCR circuit is increased, the output _____
a) Remains the same
b) Is increased
c) Is decreased
d) None of the above

Q293. When SCR starts conducting, then _____ loses all control
a) Gate
b) Cathode
c) Anode
d) None of the above

Q294. During the normal operation of an SCR the gate is _____
a) Negative w.r.t. cathode
b) Positive w.r.t. cathode
c) At zero potential
d) None of the above

Q295. AC power in a load can be controlled by connecting_____
a) Two SCRs in series
b) Two SCRs in parallel
c) Two SCRs in parallel opposition
d) None of the above

Q296. An SCR can be used
a) as static conductor
b) for power control
c) for speed control of dc shunt motor
d) all of these

Q297. With gate open, the maximum anode current at which SCR is turned off from ON condition is called

a) breakdown voltage
b) peak reverse voltage
c) holding current
d) latching current

Q298. A single phase ac - dc converter is also known as
a) rectifier
b) inverter
c) chopper
d) regulator

Q299. If the gate voltage of an SCR is removed, then the
a) anode current decreases
b) anode current does not decrease at all
c) anode current increases
d) cathode current increases

Q300. In a silicon controlled rectifier, the load is connected
a) Across anode
b) In series with anode
c) Across cathode
d) In series with cathode