BSNL GE-JTO Recruitment Examination
Test Paper - II

1. If the voltage applied across a capacitance is triangular in waveform then the waveform of the current is
   a) Triangular
   b) Trapezoidal
   c) Sinusoidal
   d) Rectangular

2. One of the following statement which is true for relative dielectric constant is -
   a) It is dimensionless
   b) It is not equal to unity for vacuum
   c) It's value for all substances is less than one
   d) None

2. Pure metals generally have-
   a) high conductivity and low temperature coefficient
   b) high conductivity and large temperature coefficient
   c) low conductivity and zero temperature coefficient
   d) low conductivity and high temperature coefficient

3. For small size, high frequency coils, the most common core material is
   a) Air
   b) Ferrite
   c) Powdered ion
   d) Steel

4. For an abrupt junction Varactor diode, the dependence of device capacitance (C) on applied reverse bias (V) is given by-
   a) C a V1/3
   b) C a V-1/3
   c) C a V1/2
   d) C a V-1/2

5. A superconductor is a-
   a) A material showing perfect conductivity and Meissner effect below a critical temperature
   b) A conductor having zero resistance
   c) A perfect conductor with highest dimagnetic susceptibility
   d) A perfect conductor which becomes resistive when the current density through it exceeds a critical value

6. When a semiconductor based temperature transducer has a temperature coefficient of –2500 mV/0C then this transducer is indeed a-
   a) Thermistor
   b) Forward biased pn junction diode
   c) Reverse biased pn junction diode
   d) FET

7. The location of lightning arrestor is -
   a) Near the transformer

b) Near the circuit breaker
c) Away from the transformer
d) None

8. Time constant of an RC circuit increases if the value of the resistance is -
   a) Increased
   b) Decreased
   c) Neither a nor b
   d) Both a and b

9. Intrinsic semiconductors are those which -
   a) Are available locally
   b) Are made of the semiconductor material in its purest from
   c) Have more electrons than holes
   d) Have zero energy gaps

10. The primary control on drain current in a JFET is exerted by -
    a) Channel resistance
    b) Size of depletion regions
    c) Voltage drop across channel
    d) Gate reverse bias

11. The electrical conductivity of metals which is expressed in ohm-1 m-1 is of the order of -
    a) 1010
    b) 105
    c) 10-4
    d) 10-6

12. When biased correctly, a zener diode â€'
    a) acts as a fixed resistance
    b) has a constant voltage across it
    c) has a constant current passing through it
    d) never overheats

13. The current amplification factor adc is given by â€'
    a) IC/IE
    b) IC/IB
    c) IB/IC
    d) IB/IC

14. Compared to bipolars, FETs have-
    a) high input impedance
    b) low input impedance
    c) same input impedance
    d) none

15. The source-drain channel of JFET is -
    a) ohmic
    b) bilateral
    c) unilateral
    d) both a and b

16. A diac is equivalent to a -
    a) Pair of SCRs

b) Pair of four layer SCRs
c) Diode and two resistors
d) Triac width

17. When a sample of N type semiconductor has electron density of 6.25 Â´ 1011 /cm3 at 300K and if the intrinsic concentration of carriers in this sample is 2.5 Â´ 1013/cm3 then the hole density will be â€'
    a) 106/cm3
    b) 103/ cm3
    c) 1010/ cm3
    d) 1012/ cm3

18. When the two networks shown in fig. are equivalent with respect to the terminals 1 and 2 at all frequencies then the values of CA, LB, LC and CC will be â€'

    a) 0.5, 0.33, 6, 0.166
    b) 0.5, 3, 6, 0.66
    c) 0.5, 3, 3, 2
    d) 0.5, 3, 6, 0.166

19. The transmission parameter of the network C when the transmission parameter of the network A and B are   and   respectively are -

20. The statement ,In any network of linear impedances, the current flowing at any point is equal to the algebraic sum of the currents caused to flow at that point by each of the sources of emf taken separately with all other emf,s reduced to zeroâ€™ represents -
    a) Kirchhoff,s law
    b) Norton,s theorem
    c) Thevenin,s theorem
    d) Superposition theorem

21. One of the following modes which has the characteristics of attenuation becoming less as the frequency is increased and is attractive at icrowave frequencies of circular cylindrical wave guides is â€'
    a) TE1 mode
    b) TM01 mode
    c) TE01 mode
    d) Higher order mode

22. A two-port network is symmetrical if â€'
    a) z11z22 â€' z12z21 = 1
    b) h11h22 â€' h12h21 = 1
    c) AD â€' BC = 1
    d) y11y22 â€' y12y21 = 1

23. For transmission line load matching over a range of frequencies, it is best to use a-
    a) balun
    b) broad band directional coupler
    c) double stub
    d) single stub of adjustable position

24. The poles and zeros of a driving point function of a network are simple and interlace on the negative real axis with a pole closest to the origin. It can be realised -
    a) by an LC network
    b) as an RC driving point impedance
    c) as an RC driving point admittance
    d) only by an RLC network
25. Poles and zeros of a driving point function of a network are simple and interlace on the jw axis. The network consists of elements –
    a) R and C
    b) L and C
    c) R and L
    d) R, L and C
26. For a two port reciprocal network, the output open circuit voltage divided by the input current is equal to –
    a) B
    b) Z12

    c) h12
27. In a short electric doublet the radiation properties are so that-
    a) The induction field diminishes as the square root of the distance and is only appreciable in the vicinity of the conductor.
    b) In the radiation, magnetic field is minimum when the current is maximum.
    c) The radiation resistance of a short doublet antenna is extremely high.
    d) Mean rate of power through a unit area of spherical sphere surrounding this doublet is proportional to the square of the elemental length, other factors remaining constant.
28. The frequency modulated (FM) radio frequency range is nearly -
    a) 250 –300 MHz
    b) 150 – 200 MHz
    c) 90 – 105 MHz
    d) 30-70 MHz
29. In an underground cable the distortion in the transmission of carrier frequency can be eliminated by using -
    a) Inductive loading
    b) Resistive loading
    c) Capacitive loading
    d) Shielding
30. The charachteristic impendance of a transmission line with inductance 0.294 mH /m and capacitance 60 pF/m is -
    a) 49 W
    b) 60 W
    c) 70 W
    d) 140 W
31. One of the following statements which is not true for a strip line compared to a waveguide is –

a) It can be directly connected to semiconductor microwave devices
b) It is much smaller in size
c) It has a smaller bandwidth
d) Losses are less

32. For a quarter wavelength ideal transmission line of characteristic impedance 50 ohms and load impedance 100 ohms, the input impedance will be –
a) 25W
b) 50W
c) 100W
d) 150W

33. The depth of penetration or skin depth for an electromagnetic field of frequency 'f' in a conductor of resistivity r and permeability m is-
a) inversely proportional to r and f and directly proportional to m
b) directly proportional to r and inversely proportional to f and m
c) directly proportional to f and inversely proportional to r and m
d) inversely proportional to r and m and directly proportional to f

34. When an antenna has a gain of 44dB then assuming that the main beam of the antenna is circular in cross-section the beam width will be -
a) 0.4456 0
b) 1.44560
c) 2.44560
d) 3.44560

35. Lens antennas used for microwaves are usually made of -
a) Polystyrene
b) Glass of low refractive index
c) Paraboloid surfaces
d) Dielectric media having large refractive index

36. One of the following types of instrument which is an electrometer is -
a) Electrodynamometer
b) PMMC
c) Electrostatic
d) Moving iron

37. When an ac current of 5A and dc current of 5A flow simultaneously through a circuit then which of the following statement is true ?
a) An ac ammeter will read less than 10A but more than 5A
b) An ac ammeter will read only 5A
c) A dc ammeter will read 10A
d) A dc ammeter will read zero

38. When Q factor of a circuit is high, then -
a) power factor of the circuit is high
b) impedance of the circuit is high
c) bandwidth is large
d) none of these

39. The resolution of a logic analyser is -
a) the maximum number of input channels
b) the minimum duration of the glitch it can capture

c) it,s internal clock period

d) the minimum amplitude of input signal it can display

40. The aperture time of an A to D converter is given by -

41. A memoryless system is â€'
   a) causal
   b) not causal
   c) nothing can be said
   d) none

42. An air capacitor is a â€'
   a) time variant
   b) active device
   c) time invariant
   d) time invariant and passive device

43. Thermistors are made of -
   a) pure metals
   b) pure insulators
   c) sintered mixtures of metallic oxides
   d) pure semiconductor

44. Pirani gauge is used to measure â€'
   a) very low pressures
   b) high pressures
   c) pressures in the region of 1 atm
   d) fluid flow

45. These circuits converts input power at one frequency to output power at a different frequency through one stage conversion â€'
   a) AC voltage controllers
   b) Cyclo converters
   c) Phase controlled rectifiers
   d) Inverters

46. In a forward voltage Triggering thyristor changes from â€'
   a) off state to on state
   b) on state to off state
   c) on state to on state
   d) off state to off state

47. Q factor of a coil in Maxwell bridge is obtained as â€'

48. A thyristor, when triggered, will change from forward blocking state to conduction state if its anode to cathode voltage is equal to -
   a) peak repetitive off state forward voltage
   b) peak working off state forward voltage
   c) peak working off state reverse voltage
   d) peak non-repetitive off state forward voltage

49. Gate characteristic of a thyristor-
   a) is a straight line passing through origin
   b) is of the type $Vg = a + bIg$

c) is a curve between Vg and Ig

d) has a spread between two curves of Vg â€' Ig

50. A four quadrant operation requires-

    a) two full converters in series

    b) two full converters connected back to back

    c) two full converters connected in parallel

    d) two semi converters connected back to back

51. If for a single phase half bridge inverter, the amplitude of output voltage is Vs and the output power is P, then their corresponding values for a single phase full bridge inverter are â€'

    a) Vs, P

    b) Vs/2, P

    c) 2Vs, 2P

    d) 2Vs, P

52. For critical damping of the resonant circuit consisting of Rd, L, C in series is â€'

    a) none of the above

53. In an enhancement type MOSFET the output V-I characteristics has â€'

    a) only an ohmic region

    b) only a saturation region

    c) only ohmic region at 10 W voltage value followed by a saturation region at higher voltages

    d) an ohmic region at large voltage values preceded by a saturation region at lower voltages

    e)

54. The energy gap in a semiconductor -

    a) increases with temperature

    b) remains constant

    c) slightly increase with temperature

    d) decrease with temperature

55. In an electronic circuit matching means -

    a) connecting a high impedance directly to low impedance

    b) selection of components which are compatible

    c) transferring maximum amount of signal between different kinds of circuits.

    d) RC coupled stages

56. P channel FETs are less superior than N channel FETs because

    a) They have higher input impedance

    b) They have high switching time

    c) They consume less power

    d) Mobility of electrons is greater than that of holes

57. Small increase in temperature in the CE connected transistor is the -

    a) Increase in ICEO

    b) Increase in ac current gain

    c) Decrease in ac current gain

d) Increase in output resistance

58. An amplifier has a band width of 20 KHz and a midband gain of 50 without feedback. If a negative feedback of 1% is applied then bandwidth with feedback is -
    a) 13. 3 KHz
    b) 30KHz
    c) 10KHz
    d) 40KHz

59. The output of a class B amplifier -
    a) is distortion free
    b) consists of positive half cycles only
    c) is like the output of a full wave rectifier
    d) comprises short duration current pulses

60. An amplifier with negative feedback -
    a) lowers its lower 3 dB frequency
    b) raises its upper 3 dB frequency
    c) increases its bandwidth
    d) all of the above

61. What changes would be necessary in block C if FM signals are to be received -
    a) Block becomes redundant
    b) A FM detector would be required
    c) A high frequency signal generator
    d) An additional local oscillator will be needed

62. The main disadvantage of Diode-Transistor logic (DTL) is its-
    a) greater speed
    b) slower speed
    c) average speed
    d) none of the above

63. Time delay Dt in digital signals in an SIS O shift register is given by â€'
    a) Dt = N Â´ Fc
    b) Dt = N Â´ 1/Fc
    c) Dt = 1/N Â´ Fc
    d) Dt = N Â¸ 1/Fc

64. The output Qn is 1 in a JK flip flop and it does not change when clock pulse is applied) The possible combination of Jn and Kn can be â€'
    a) (y denotes don,t care)
    b) y and 0
    c) y and 1
    d) 0 and y
    e) 1 and y

65. Basic memory cell of dynamic RAM consists of â€'
    a) a flip flop
    b) a transistor acting as a capacitor
    c) a transistor
    d) a capacitance

66. The 2,s complement of 10002 is –
    a) 0111
    b) 0101
    c) 1000
    d) 0001
67. Master slave flip-flop is made up of –
    a) two flip flops connected in series
    b) two flip flops connected in parallel
    c) a debouncer circuit
    d) a-D- latch
68. Number of nybbles making one byte is –
    a) 2
    b) 4
    c) 8
    d) 16
69. The intrinsic impedance of free space-
    a) is independent of frequency
    b) decreases with increase of frequency
    c) increases with increase of frequency
    d) varies as square root of frequency
70. A system consists of 12 poles and 2 zeroes. Its high frequency asymptote in its magnitude plot has a slope of -
    a) –200 dB/decade
    b) –240 dB/decade
    c) –230 dB/decade
    d) –320 dB/decade
71. In a unity feed back control system the open loop transfer function is
    a) The closed loop transfer unit will have pole at –
    b) –2, -2
    c) –2, -1
    d) –2, +j1,-j1
    e) –2, 2
72. In a compensating network the transfer function is of the form If this is a phase log network the value of   should be –
    a) exactly equal to 0
    b) between 0 and 1
    c) exactly equal to 1
    d) greater than 1
73. Considering the conditions-
    1. High loop gain   2. Less ringing
    3. Greater damping   4 Negative dB gain margin
    System stability requirements would include
    a) 1 and 3
    b) 1, 2 and 3
    c) 1 and 4
    d) 2, 3 and 4

74. A typical control system is shown.
   a) Assuming   the steady state errors is given by

75. The centre and radius of M of circles are given respectively by

76. The open –'loop transfer function for a unity feedback system is –'

77. what is the steady state error if the input is,
   r(t) = (2 + 3t + 4t2) u(t)
   a) 0
   b) 1
   c) 2
   d) 3
78. The sensitivity SGM of a system with the transfer function   is given by

79. In the equatorial plane only Geosychronous satellite are launched because it is the only plane which provides –'
   a) 24 hour orbit
   b) stationary satellite
   c) global communication
   d) zero-gravity environs
80. Radio Broadcasting is an example of –'
   a) space multiplexing
   b) time multiplexing
   c) frequency multiplexing
   d) none of the above
81. PAM signals can be demodulation by using a –'
   a) Low pass filters (LPE) alone
   b) A Schmitt trigger followed by a LPF
   c) A differentiator followed by a LPF
   d) A clipper circuit by a LPF
82. In an FDM receiver channels can be separated by using –'
   a) AND gates
   b) Band pass
   c) differentiation
   d) Integration
83. The most common modulation system used for telegraphy is-
   a) frequency shift keying
   b) two –' tone modulation
   c) pulse code modulation
   d) single tone modulation
84. Use of varoctor diode in generation of modulated segial be-
   a) FM generation only
   b) 100AM generation only

c) PM generation only
d) both PM and AM generation

85. In colour picture tube shadow mask is used to-
   a) reduce x-ray emission
   b) ensure that each beam strikes only its own dots
   c) increase screen brightness
   d) provide degaussing for the screen

86. The circuit that separates composite video warefore from the sync pulses is-
   a) the keyed AGC amplifar
   b) a clipper
   c) an integrator
   d) a sawtooth current

87. Band width of microwaves is-
   a) 1GHz -103 GHz
   b) 1GHz –100 GHz
   c) 1 GHz –10 GHz
   d) 1 GHz – 106 GHz

88. In transverse Magnetic mode-
   a) no electric line is in direction of propagation
   b) no magnetic line is in direction of propagation
   c) bath magnetic & electric lines are is direction of propagation
   d) neither magnetic nor electric lines in direction of propagation

89. Signal transmission in sky wave propagation is due to –
   a) Reforction of wave
   b) Reflection of wave
   c) Pierus through Inosphere
   d) None

90. According to Barkhausen Criterion Phase shift of signal should be –
   a) 600
   b) 900
   c) 1800
   d) 3600

91. The transmission does not have -
   a) Partition noise
   b) Flicker noise
   c) resistance
   d) Short noise

92. Varoctor diode has non linearity of -
   a) capacitance
   b) Inductance
   c) Resistance
   d) Is a linear device

93. Scattering matrix equation for directional coupler is –
   a) a)
   b) b)
   c) c)

   d) d)
94. Noise figure is calculated as â€'
   a) i/p signal to noise ratio X o/p signal to noise ratio
   b) i/p S/N Ratio / O/P S/N Ratio
   c) i/p S/N Ratio / O/P S/N Ratio X 100
   d) i/p S/N Ratio + O/P S/N Ratio
95. You can determine quickly the effect of adding poles and zeros by â€'
   a) Nicholas chart
   b) Nyquist plot
   c) Bode plot
   d) Root locus.
96. The polar plot of G(S) = intercepts real axis at w = wo. Then, the real part and wo are given by-
   a) â€'5, 1
   b) â€'2.5, 1
   c) â€'5,0-5
   d) â€'5, 2
97. Laplace transform F (s) of a function f (E) is given by

98. The initial and final values of F (t) will be respectively-
   a) zero and 1
   b) zero and 10
   c) 10 and zero
   d) 70 and 80
99. A satellite link uses different frequencies for receiving and transmitting in order to â€'
   a) avoid interference from terrestrial microwave links
   b) avoid interference between its powerful transmitted signals and weak in coming signal
   c) minimize free-space losses
   d) maximize antenna gain
100.   The first determining factor in selecting a satellite system is its-
   a) EIRP
   b) Antenna size
   c) Coverage area
   d) Antenna gain
101.   Equalizing pulses in TV are sent during-
   a) horizontal blanking
   b) vertical blanking
   c) the serrations
   d) the horizontal retrace
102.   The son seems to have -------- from his father a somewhat gloomy and moody manner-
   a) washed

b) inherited
c) admired
d) attempt

103. Essayist works with words as sculptor with-
a) water
b) stone
c) air
d) hills

104. What is a collection of sheep called ?
a) bunch
b) flock
c) herd
d) comet

105. Join these sentences meaningfully by choosing the correct alternative from the following :

106. You can buy a book.   You can read it.
a) and
b) nor
c) either
d) neither

107. What is the opposite of Asperity â€'
a) gentility
b) superiority
c) kindness
d) clarity

108. The Election Commission functions under-
a) Ministry of Home Affairs
b) Ministry of Law
c) Prime Minister,s Secretariat
d) None of these

109. Article 352 of Indian Constitution needs to be revoked in case-
a) President,s Rule is to be imposed
b) Emergency is declared
c) Services of a Government servant are to be terminated without any enquiry
d) A political party of national level is to be banned

110. Radio-activity was first discovered by-
a) Becquerel
b) Madam Curie
c) Rutherford
d) Jenner

111. Ninth Plan in India ranges from-
a) 1995-2000

b) 1996-2001
c) 1997-2002
d) 1998-2003

112. How much electricity does India propose to generate through nuclear power by the year 2000 AD?
a) 5,000 MW
b) 10,000 MW
c) 15,000 MW
d) 20,000 MW

113. In which year did the fall of Bastille take place?
a) 1769
b) 1789
c) 1889
d) 1869

114. To form a quorum how many members of the Lok Sabha or Rajya Sabha should be present?
a) 1/10th of total membership
b) 1/6th of total membership
c) 1/4th of total membership
d) 1/5th of total membership

115. How may countries are non-permanent members of the Security Council?
a) 6
b) 7
c) 9
d) 10

116. The International Date Line is represented by-
a) 1000 meridian
b) 00 meridian
c) 1800 meridian
d) 900 meridian

117. India,s first satellite was launched from-
a) Sriharikota
b) Cape Kennedy
c) Bangalore
d) A Soviet cosmodrome

118. Name the author of the famous book "Politics"-
a) Aristotle
b) Socrates
c) Plato
d) None of them

119. "Guernica" is Picasso,s painting on-
a) The Spanish Civil War
b) The American Civil War
c) The French Revolution
d) The Russian Revolution

120. The object of the Supreme Court,s Keshvanand Bharati ruling is -

a) To put a limit on Parliament,s amendatory powers
b) To give unlimited powers to Parliament to amend the Constitution
c) To give precedence to Directive Principles over Fundamental Rights
d) None of these

121. Which country in July ,99 officially announced mastering of indigenously developed neutron bomb technology?
a) N. Korea
b) France
c) India
d) China

122. Shifting cultivation is commonly used in which of the following states?
a) Tamil Nadu
b) Maharashtra
c) Jammu and Kashmir
d) Nagaland