

BSNL JTO Examination

1. Reactive current through the inductive load produces-
 - a) Magnetic field
 - b) Electric field
 - c) Super magnetic field
 - d) None

2. When a piece of copper and another of germanium are cooled from room temperature to 800 K then the resistance of -
 - a) each of them increases
 - b) each of them decreases
 - c) copper increases and germanium decreases
 - d) copper decreases and germanium increases

3. A capacitance transducer has two plates of area 5 cm² each separated by an air gap of 2mm. Displacement sensitivity in pF /cm due to gap change would be -
 - a) 11.1
 - b) 44.2
 - c) 52.3
 - d) 66.3

4. The critical angle in degrees, for an electromagnetic wave passing from Quartz ($\mu = \mu_0$, $\hat{I} = 4\hat{I}_0$) into air is-
 - a) 15
 - b) 30
 - c) 45
 - d) 90

5. When an RC driving point impedance function has zeros at $s = -2$ and $s = -5$ then the admissible poles for the function would be –
 - a) $s = 0$; $s = -6$
 - b) $s = -1$; $s = -3$
 - c) $s = 0$; $s = -1$
 - d) $s = -3$; $s = -4$

6. A capacitor used for power factor correction in single- phase circuit decreases –
 - a) the power factor
 - b) the line current
 - c) Both the line current and the power factor
 - d) the line current and increases power factor

7. The unit of inductance is –
 - a) ohm
 - b) inductive reactance

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- c) inducta
- d) Henry

8. Which type of by-pass capacitor works best at high frequencies –

- a) electrolytic
- b) mica
- c) ceramic
- d) plexiglass

9. The usual value of the surge impedance of a telephone line is –

- a) 600 W
- b) 500 W
- c) 75 W
- d) none

10. Telemetering is a method of –

- a) counting pulses, sent over long distances
- b) transmitting pictures from one place to another
- c) transmitting information concerning a process over a distance
- d) None

11. In an unbiased P-N junction thickness of depletion layer is of the order of –

- a) 0.005 mm
- b) 0.5 mm
- c) 5 mm
- d) 10-10 m

12. One of the semiconductor device, which behaves like two SCRs is–

- a) UJT
- b) triac
- c) JFET
- d) MOSFET

13. The following, which is not an advantage of semiconductor strain gauges as compared to conventional strain gauges, is –

- a) excellent hysteresis characteristics
- b) least sensitive to temperature changes
- c) high fatigue life
- d) smaller size

14. The fundamental ripple frequency of a half wave 3F rectifier with a 3F supply of frequency 50 Hz is –

- a) 150 Hz
- b) 50 Hz
- c) 100 Hz
- d) 250 Hz.

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15. For an FR biased PNP transistor –
- a) base is negative with respect to emitter
 - b) collector is positive with respect to emitter
 - c) collector is a little more positive than base
 - d) base is a little less positive with respect to emitter than collector
16. With normal operation of a JFET one can get I_{DSS} –
- a) the maximum drain current
 - b) the minimum drain current
 - c) normal drain current
 - d) none
17. An SCR is a semiconductor device made up of –
- a) Four N type layers
 - b) Two P types and three N type layers
 - c) Two P type and two N type layers
 - d) Three P type and one N type layers
18. For a UJT, if R_1 = resistance from emitter to base 1, R_2 = resistance from emitter to the base 2 and $R_{BB} = R_1 + R_2$ then the intrinsic stand off ratio (η) is –
- a)
 - b)
 - c)
 - d)
19. As the drain voltage is increased for a junction FET in the pinch off region then the drain current –
- a) becomes zero
 - b) abruptly decreases
 - c) abruptly increases
 - d) remains constant
20. When the energy gap of a semiconductor is 1.1eV then it would be –
- a) opaque to the visible light
 - b) transparent to the visible light
 - c) transparent to the infrared radiation
 - d) opaque to the infrared radiation
21. The equivalent capacitance across ab will be –
- d) 0
22. In the following fig. the power dissipated is maximum when the value of R_x is –
- a) 33.4 K
 - b) 17.6 K
 - c) 10 K
 - d) 5 K

23. The transfer function of a low pass RC network is –
24. The total capacitance across points 'a' and 'b' in the given figure is –
- 1.66 mF
 - 2.66 mF
 - 3.5 mF
 - 4.5 mF
25. The load resistance needed to extract maximum power from the following circuit is –
- 2W
 - 9W
 - 6W
 - 18W
26. Which one of the following conditions for z parameters would hold for a two port network containing linear bilateral passive circuit elements –
- $z_{11} = z_{22}$
 - $z_{12}z_{21} = z_{11}z_{22}$
 - $z_{11}z_{12} = z_{22}z_{21}$
 - $z_{12} = z_{21}$
27. In the network shown, the switch is opened at $t = 0$. Prior to that, the network was in the steady state, $V_s(t)$ at $t = 0$ is –
- 0
 - 5V
 - 10V
 - 15V
28. Which of the following statements are correct –
- Tellegen's theorem is applicable to any lumped network
 - The reciprocity theorem is applicable to linear bilateral networks.
 - Thevenin's theorem is applicable to two terminal linear active networks.
 - Norton's theorem is applicable to two terminal linear active networks.
- 1, 2 and 3
 - 1, 2, 3 and 4
 - 1, 2 and 4
 - 3 and 4
29. Which one of the following transfer functions represents the critically damped system ?
30. When the respective coil impedance of the circuit shown in the fig. is are $Z_1 = (5 + j8)\Omega$ and $Z_2 = (3 + j8)\Omega$ then the input impedance of the circuit will be –
- $(8 + 16j)\Omega$
 - $(2 + j0)\Omega$
 - $(15 + 64j)\Omega$

d) $(8 + 0j)W$

31. One of the following statement which is not correct -

- a) In case of an antenna, the radiation resistance and loss resistance are not two different quantities.
- b) The loss resistance includes loss by eddy currents, improper earth connections, insulation leakages etc) but not I^2R losses
- c) Radiation resistance varies directly as square root of the frequency
- d) None of the above

32. Ultraviolet radiation emitted when electron jumps from an outer stationary orbit to -.

- a) first stationary orbit
- b) second stationary orbit
- c) third stationary orbit
- d) fourth stationary orbit

33. When the signal is propagated in a waveguide which has a full wave of electric intensity change between the two farther walls and no component of the electric field in the direction of propagation then the mode is -

- a) TE₁₁
- b) TE₁₀
- c) TM₂₂
- d) TE₂₀

34. Consider the following statements pertaining to parabolic antenna -

- 1. It is commonly used above 1GHz
 - 2. It get's circularly polarized
 - 3. It's radiation pattern is highly directional
 - 4. It's radiation pattern is cardioid
- of these statements-
- a) 1,2 and 4 are correct
 - b) 1 and 3 are correct
 - c) 1,2 and 3 are correct
 - d) 2 and 4 are correct

35. When a vertical dipole antenna is used in conjunction with a loop antenna for direction finding, then the field pattern obtained will be-

36. When one end of a loss less transmission line of length $3/8 \lambda$ and characteristic impedance R_0 is short circuited and the other end is terminated in R_0 then the impedance at $1/8 \lambda$ away from the end terminated in R_0 is-

- a) Zero
- b) R_0
- c) $R_0/2$
- d) Infinite

37. For transmission of wave from a dielectric permittivity ϵ_1 into dielectric medium of lower

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permittivity $\hat{\epsilon}_2$ ($\hat{\epsilon}_1 > \hat{\epsilon}_2$) the critical angle of incidence Q_c (relative to the interface) is given by -

38. A transmission line has primary constants R, L, G and C and secondary constants Z_0 and g ($= a + jb$) if the line is loss less then .

39. The intrinsic impedance of a free space is-

40. One of the following which is a low gain but omni directional antenna is-

- a) discone
- b) log-periodic
- c) loop
- d) helical

41. Electronic voltmeters have –

- a) high input impedance
- b) low input impedance
- c) zero input impedance
- d) none

42. Which of the following statement about impulse voltage is true ?

- a) An impulse voltage is an unidirectional voltage.
- b) In chopped impulse voltage, flashover does not occur.
- c) Time taken to rise is exactly equal to the time taken to fall.
- d) RMS value of impulse voltage is always less than 50% of average value.

43. The precision of an instrument indicates its ability to reproduce a certain reading with a given –

- a) drift
- b) resolution
- c) shift.
- d) consistency

44. In heterodyne digital conductor, the input signal is heterodyned to a –

- a) higher frequency
- b) lower frequency
- c) both a and b)
- d) none

45. In a digital measuring device, if the input electrical signal is in the frequency range dc to f_{max} Hz, then it must be sampled at a rate of –

- a) f_{max} times/sec
- b) f_{max} times/ses
- c) every $2f_{max}/sec$
- d) $2 f_{max}$ times/sec .

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46. Moving Iron instruments measures the rms value of –
- a direct quantity
 - an alternating quantity
 - a virtual quantity.
 - none.
47. One of the following instruments which is used almost exclusively to measure radio frequency current is-
- Moving coil meter
 - Rectifier-type moving coil meter
 - Iron-vane meter
 - Thermocouple meter.
48. A good ohmic contact on a p- type semiconductor chip is formed by introducing –
- gold as an impurity below the contact
 - a high concentration of donors below the contract
 - a high concentration of acceptors below the contact
 - a thin insulator layer between the metal and semiconductor.
49. The use of thermocouple meters for ac measurement leads to a meterscale which is –
- linear
 - square law
 - logarithmic
 - exponential
50. If low pressure of the order of 10-6mm of Hg is to be measure then the instrument of choice would be-
- compound pressure gauge
 - thermocouple vacuum gauge
 - pirani gauge
 - ionization type vacuum gauge
51.
In the given circuit if the power dissipated in the 6W resistor is zero then V is –
- -
 -
 -
52. The equivalent circuit of a resistor is shown in the given figure. The resistor will be non inductive if –
- -
 -
 -

53. SCR turns OFF from conducting state to blocking state on –

- a) reducing gate current
- b) reversing gate voltage
- c) reducing anode current below holding current value
- d) applying ac to the gate

54. Static V-I characteristics of an SCR with different gate drives applied to the gate are indicated by-

- a) $I_{92} > I_{91} > I_{90}$
- b) $V_{92} > V_{91} > V_{90}$
- c) $P_{92} > P_{91} > P_{90}$
- d) either a or b

55. Each diode of a 3 phase, 6-pulse bridge diode rectifier conducts for-

- a) 60°
- b) 120°
- c) 180°
- d) 90°

56. A load, consisting of $R = 10\Omega$ and $wL = 10\Omega$ is being fed from 230 V, 50 Hz source through a 1 phase voltage controller. For a firing angle delay of 30° , the rms value of load current would be-

- a) 23 A

57. The total number of SCRs conducting simultaneously in a 3 phase full converter with overlap considered has the sequence of-

- a) 3, 3, 2, 2
- b) 3, 3, 3, 2
- c) 3, 2, 3, 2
- d) 2, 2, 2, 3

58. A single phase voltage controller, using two SCRs in antiparallel is found to be operating as a controlled rectifier. This is because

- a) load is R and pulse gating is used
- b) load is R and high frequency carrier gating is used
- c) load is RL and pulse gating is used
- d) load is RL and continuous gating is used

59. The inverse Fourier Transform of

60. In a GTO anode current begins to fall when gate current-

- a) is negative peak at time $t = 0$
- b) is negative peak at $t =$ shortage period t_s
- c) just begins to become negative at $t = 0$

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d) is negative peak at $t = (t_s + \text{fall time})$

61. Power amplifiers and Audio use

- a) Ferrite core
- b) Air core
- c) Solid iron core
- d) Laminated iron core

62. The amplifiers which are inserted at intervals amplify the signal and compensate for transmission loss on the cable are called-

- a) Line amplifiers
- b) Equalizing amplifiers
- c) Repeaters
- d) Compondors

63. A solid state device named TRIAC acts as a ----- switch

- a) 3 terminal unidirectional
- b) 2 terminal unidirectional
- c) 3 terminal bi-directional
- d) 2 terminal bi-directional

64. Identify the fastest logic circuit when speed of operation is concerned-

- a) TTL
- b) RTL
- c) DTL
- d) ATL

65. An amplifier CE is characterized by-

- a) Low voltage gain
- b) Moderate power gain
- c) Very high output impedance
- d) Signal phase reversal

66. The standard symbol for EX-OR gate is –

- a) b)
- c) d)

67. Boolean algebra is based on –

- a) numbers
- b) logic
- c) truth
- d) symbols

68. Magnetic amplifiers are used for –

- a) voltage amplification
- b) power amplification

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- c) current amplification
- d) frequency amplification

69. Number of resistors required for an N bit D/A converter in R-2R ladder D/A converter is-

- a) 4N
- b) 1N
- c) 3N
- d) 2N

70. 'Not allowed' condition in NAND gate SR flip flop is –

- a) $s = 0, R = 0$
- b) $s = 1, R = 1$
- c) $s = 0, R = 1$
- d) $s = 1, R = 0$

71. . In a PID controller the transfer function $G(s)$ is

72. A time invariant linear stable system is forced with an input $x(t) = A \sin \omega t$ under steady state conditions, the output $Y(t)$ of the system will be –

- a) $A \sin (\omega t + f)$, where $f = \tan^{-1}G(j\omega)$
 - b) $A G (j\omega) A \sin [\omega t + G(j\omega)]$
 - c) $G (j\omega) A \sin [2 \omega t + G (j\omega)]$
 - d) $G (j\omega) A \sin [\omega t + G (j\omega)]$
- $x(t) \text{-----} G(s) \text{-----} y(t)$

73. Mark the wrong statement for two phase servo motor –

- a) The rotor diameter is small
- b) The rotor resistance is low
- c) The applied voltages are seldom balanced
- d) The torque speed characteristic are linear.

74. The gain phase plot of open loop transfer function of four different systems labelled A, B, C, and D

are shown in the figure. The correct sequence of the increasing order of stability of the four systems will be-

- a) A, B, C, D
- b) D, C, B, A
- c) B, A, D, C,
- d) B, C, D, A

75. A unity feedback system has $G(S) = \frac{1}{s(s+1)}$. In the root locus, the break away point occurs between

- a) $S = 0$ and -1
- b) $S = -1$ and $-\infty$
- c) $S = -1$ and -2
- d) $S = -2$ and $-\infty$

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76. Twice in a year a few minute disturbance occurs in space communication during sun-blinding when --- are in line
- Sun and satellite
 - Sun and earth station
 - Satellite and earth station
 - Sun, satellite and earth station
77. The traffic handling capacity of an Earth station on the up link depends on-
- It's EIRP
 - Satellite antenna gain
 - Noise associated with the satellite
 - All of the above
78. A supergroup pilot is –
- applied at each multiplexing bay
 - used to regulate the gain of individual repeaters
 - applied at each adjustable equalizer
 - fed in at a GTE
79. If the antenna diameter in a radar system is increased by a factor of 4, the maximum range will be increased by a factor of
- Ö2
 - 2
 - 4
 - 8
80. In the given circuit the capacitor C is almost shorted for the frequency range of interest of the input signal . Under this condition the voltage gain of the amplifier will be-
- $h_{fe} = 100$ $h_{ie} = 1K$ –
- 0.33
 - 0.5
 - 0.66
 - 1
81. Microwave frequency bond is-
- 30 MHz –300 MHz
 - 300 MHz –3 GHz
 - 300 MHz –10 GHz
 - 300 MHz – 30 GHz
82. Directional couplers are designed as-
- coupler of two-wave guide
 - measuring instrument to measure power of signal through wave-guide
 - director to the signal flow
 - None of the above

83. Gyrator has a -

- a) Phase difference of 180° for transmission from port 1 to port 2 & no phase shift for transmission from port 2 to port 1
- b) Phase difference of 180° for transmission from port 1 to port 2 & no phase shift for transmission from port 1 to port 2
- c) 180° phase difference for transmission from either port
- d) 0° Phase difference for transmission from either port

84. In klystron tube for getting oscillations-

- a) electron beam travels & RF field remains stationary
- b) both electron beam & RF field travels in same direction
- c) both electron & RF field remains stationary
- d) RF field travels & electron beam remains stationary

85. The most noisy among below is –

- a) IMPATT diode
- b) Klystron
- c) GUNN diode
- d) TWT amplifier

86. The GUNN mode of gunn effect oscillator is also called as –

- a) Domain mode
- b) Delayed domain mode
- c) Quenched domain mode
- d) LSA mode

87. The total noise voltage across series ckt is –

- a)
- b)
- c)
- d)

88. The vertical height of F1 layer in ionospheric layer is –

- a) 180 km
- b) 70 km
- c) 110 km
- d) 400 km

89. 8085 mP contains instruction in instruction set-

- a) 64
- b) 74
- c) 246
- d) 256

90. If the clock freq. is 5 MHz how much time is required to execute on instruction 18 T-states-

- a) 3.6 m sec)

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- b) 36 m sec)
- c) 36 m sec)
- d) 36 sec)

91. In 8085 mP a word is equal to-

- a) 8 bit
- b) 16 bit
- c) 32 bit
- d) 64 bit

92. The instruction used to set continuous loops-

- a) JC
- b) JMP
- c) JP
- d) JPE

93. What happen when RET instruction executed -

- a) data retrieved from stock to register
- b) data from register saved on the stock
- c) 16 bit address of instruction saved on stock.
- d) 16 bit address from stock retrieved

94. DMA is a process-

- a) Interrupt data transfer.
- b) high speed data transfer under control of microprocessor
- c) high speed data transfer under control of DMA controller.
- d) Interrupt data read

95. No. of boolean function can be generated from 3 variables-

- a) 4
- b) 8
- c) 16
- d) 256

96. The data storage in dynamic RAM is cell of-

- a) capacitance
- b) transistor
- c) flip flop
- d) transistor acting as capacitor

97. What is 9's complement of 23-

- a) 76
- b) 77
- c) 78
- d) 79

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98. An array is collection of -

- a) different data type scattered throughout memory
- b) same data type scattered throughout memory
- c) same data type placed next to each other in memory
- d) different data type placed next to each other in memory

99. While reading from the memory location for active high i/p pins-

- a) Read and chip select i/p must be at logical 0 level
- b) Read at 0 and chip select at logical 1 level
- c) Read at 1 and chip select at logical 0 level
- d) Read and chip select i/p must be at logical 1 level

100. When all i/p bits of AND gate are zero then o/p will be-

- a) 0
- b) 1
- c) un-defined
- d) none

101. The fan out comparison between TTL logic and DRL logic is

- a) Both logic having higher fan out
- b) TTL logic having higher fan out than DRL logic
- c) TTL logic having lower fan out than DRL logic
- d) Both logic having lower fan out

102. I was asked to perform the task of numbering points we had scored –

- a) sad
- b) said
- c) tallow
- d) strenous

103. The taste is rancid as the rank is –

- a) odour
- b) look
- c) smell
- d) sound

104. Troupe is a group of performers in a –

- a) play
- b) circus
- c) cinema
- d) orchestra

105. Complete the sentence with correct alternative

He is --- well today-

- a) no
- b) none
- c) not
- d) nought

106. Fritter is –

- a) sour

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- b) chafe
- c) dissipate
- d) cancel

107. The sun rays falls vertically on-

- a) Tropics
- b) Doldrums
- c) Poles
- d) Equator

108. In India 'Lotus' award is given in the field of-

- a) Literature
- b) Films
- c) Sports
- d) Social Service

109. The Chauri-Chaura incident is related to

- a) A major offensive by underground revolutionaries
- b) Large scale looting of government property by congress worker
- c) Massive police firing on unarmed satyagrahis
- d) the burning of a police post by a mob

110. Dadamuni Ashok Kumar deceased on-

- a) 10 December 2001
- b) 20 December 2001
- c) 10 January 2001
- d) 20 January 2001

111. The first batsman in Test history to aggregate 350 plus runs in a Test Match is-

- a) Sanath Jaisurya
- b) Brian Lara
- c) Sachin Tendulkar
- d) Steve Waugh

112. Antibiotics which are effective against more than one type of bacteria are known as-

- a) Surya drugs
- b) Multibiotics
- c) Broad-spectrum
- d) Anti metabodies

113. The books Sushrut Sanhita and Charak S anhita are related to-

- a) Hindu rituals
- b) Interpretation of Puranas
- c) Interpretation of Vedas
- d) Ayurvedic system of medicine

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114. An enzyme is a protein that -

- a) Is used by the body as a food
- b) Acts as an organic catalyst
- c) Forms the hair and nails of the body
- d) Make up the membranes of the cells

115. Atal Behari Vajpayee was Prime Minister for 13 days in-

- a) May 1996
- b) June 1997
- c) September 1996
- d) July 2000

116. RBI lowers the deposit rates ceiling for non banking finance companies from 14 percent to – percent per annum-

- a) 12.5
- b) 11.5
- c) 10.5
- d) 9.5

117. Booker prize is won in the field of -

- a) Science
- b) Medicine
- c) Fiction writing
- d) Adventure

118. Leprosy is caused by-

- a) Bacterium
- b) Virus
- c) Protozoa
- d) Helminthes

119. . Zojila is a pass between-

- a) Kashmir valley and Ladakh
- b) Lahaul valley and Spiti
- c) Chumbi valley and Sikkim
- d) Aurnachal Pradesh and Tibet

120. Deforestation results in-

- 1. Flora destruction
 - 2. Fauna destruction
 - 3. Ecological misbalance
- a) 1, 2 and 3
 - b) 1 and 3
 - c) 1 and 2
 - d) 2 and 3

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