

BSNL Whole Testpaper

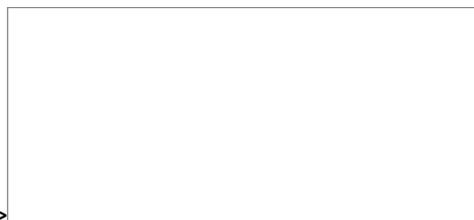
Test Paper - X

1. For an abrupt junction varactor diode, the dependence of device capacitance (c) on applied reverse bias (V) is given by –
 - a.) $C \propto V^{1/3}$
 - b.) $C \propto V^{-1/3}$
 - c.) $C \propto V^{1/2}$
 - d.) $C \propto V^{-1/2}$
2. The main purpose of plating the high frequency inductors and capacitors with silver is to
 - a.) Reduce their dc resistances
 - b.) Reduce their ac resistances
 - c.) Increase their ac resistance
 - d.) Increases their dc resistance
3. In a semiconductor the measurement of Hall coefficient provides information on the –
 - a.) Sign and mass of charge carriers
 - b.) Mass and concentration of charge carriers
 - c.) Sign of charge carries alone
 - d.) Sign and concentration of charge carriers
4. In electrical machines, laminated cores are used with a view to reduce –
 - a.) Hysteresis loss
 - b.) Eddy current loss
 - c.) Magnetic loss
 - d.) None
5. In a cable the voltage stress is maximum at the surface of the –
 - a.) Sheath
 - b.) conductor
 - c.) Insulator
 - d.) None
6. The series equivalent resistance value in case of a lossy capacitor will be –
 - a.) Very small
 - b.) Small

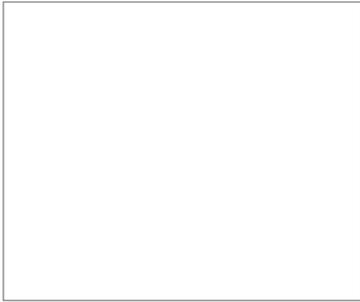
- c.) Large
d.) None
7. One of the following material which has negative temperature coefficient of resistance is-
- a.) Brass
b.) Copper
c.) Aluminium
d.) Carbon
8. The input impedance of a CRD is nearly –
- a.) zero
b.) around 10 ohms
c.) around 100 ohms
d.) around one mega ohm
9. In order to convert intrinsic semiconductors into extrinsic ones, the level of doping required is about –
- a.) 1 : 10^3
b.) 1 : 1
c.) 1 : 10^8
d.) 1 : 10^5
10. One of the following, which is not a transducer in the true sense, is –
- a.) Thermocouple
b.) Piezoelectric pick up
c.) Photo-Voltaic cell
d.) LCD
11. The threshold voltage of a MOSFET can be lowered by –
- a.) Using a thinner gate oxide
b.) Increasing the substrate concentration
c.) Both a & b
d.) None
12. The resistance of a metallic wire would –
- a.) Increase as the operating frequency increases.
b.) Decrease as the operating frequency increases
c.) Remain unaffected on increasing the operating frequency
d.) None

13. One of the following statements which is correct regarding the two transistor model of the p-n-p-n four layer device is –
- a.) It explains only the turn ON portion of the device characteristic.
 - b.) It explains only the turn OFF portion of the device characteristics.
 - c.) It explains only the negative region portion of the device characteristics.
 - d.) It explains all the regions of the device characteristics.
14. The gain-band width product of a junction transistor is affected to a maximum extent by –
- a.) Base collector parasitic capacitance
 - b.) Base collector space charge layer capacitance
 - c.) Base collector space charge layer capacitance
 - d.) Base emitter diffusion capacitance
15. The modulation of effective base width by collector voltage is known as early effect, hence reverse collector voltage –
- a.) Increases both alpha and beta
 - b.) Decreases both alpha and beta
 - c.) Increases alpha but decreases beta
 - d.) Decreases beta but increase alpha.
16. One of the following theorem which is the manifestation of the law of conservation of energy is –
- a.) Tellegen,s theorem
 - b.) Reciprocity theorem
 - c.) Thevenin,s theorem
 - d.) Norton,s theorem
17. The network shown in the fig. represents a :

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- a.) band-pass filter
 - b.) low-pass filter
 - c.) high-pass filter
 - d.) band-stop filter
18. For the circuit shown in the fig. the current I is –



- a.) indeterminable due to inadequate data
 - b.) zero
 - c.) 4A
 - d.) 8A
- 19.1 When the π network of figure – I and T-network of figure – II are equivalent then the values of R_1 , R_2 and R_3 will be respectively –



- a.) 9W, 6W and 6W
 - b.) 6W, 6W and 9W
 - c.) 9W, 6W and 9W
 - d.) 6W, 9W and 6W
20. When two identical 3v, 1W batteries are connected in parallel with like polarity to like then the Norton equivalent circuit of this combination is –
- a.) 3A, 0.5W
 - b.) 6A, 1W
 - c.) 3A, 1W
 - d.) 6A, 0.5W
21. The dominate mode in a waveguide is characterized by-
- a.) Longest cut off wavelength
 - b.) Shortest cut off wavelength
 - c.) Infinite attenuation
 - d.) Zero attenuation
- 22.22. The antenna most commonly used for TV broadcasting in the UHF band is
- a.) Turnstile antenna
 - b.) Dipole antenna

- c.) Yagi antenna
d.) Rhombic antenna
23. The crossed dipoles in turnstile antenna are excited with voltage such that the phase shift between the voltage is-
- a.) Zero
b.) 45°
c.) 90°
d.) 180°
24. The channel required for FM telemetry is-
- a.) The same as that required for AM telemetry
b.) Smaller than the required for AM telemetry
c.) 100 Times that required for AM telemetry
d.) 10 times that required for AM telemetry
25. When the input impedance of loss-less transmission line is 100 ohms when terminated in a short circuit and 64 ohms when terminated in an open circuit, then the input impedance of the line is
- a.) 80 W
b.) 164 W
c.) 36 W
26. Evanescent mode attenuation in a waveguide depends upon the-
- a.) 32 GHz
b.) 8 GHz
c.)
d.)
27. Out of the following the one that mostly reflects the high frequency radio waves is-
- a.) D
b.) E
c.) F_1
d.) F_2
28. One of the following which is not a wide band antenna is-
- a.) Marconi
b.) Helical
c.) Rhombic

- d.) Folded dipole
29. The power carried by an electromagnetic wave traveling in free space changes with distance 'd' in proportion to-
- a.) d
b.) 1/d
c.) 1/d²
d.) d²
30. In a FM receiver, the channel bandwidth is around-
- a.) 10 KHz
b.) 20 KHz
c.) 75 KHz
d.) 200 KHz
31. When the power of transmitter is doubled, then the field strength at a point will go up by-
- a.) 2 dB
b.) 6 dB
c.) 3 dB
d.) None
32. In any transmitting antenna system, efficiency primarily depends upon-
- a.) Ohmic losses of various conductors
b.) Radiation resistance
c.) Ground conductivity
d.) Atmospheric conditions
33. The signal to quantisation noise ratio in a PCM system depends upon –
- a.) sampling rate
b.) number of quantisation levels
c.) message signal band width
d.) size of the transmission system.
34. Q. is –
- a.) directly proportional to damping factor.
b.) inversely proportional to damping factor.
c.) directly proportional to the square of damping factor.
d.) directly proportional to the cube of damping factor.
35. A dry cell is a –

- a.) time variant only
 - b.) active device only
 - c.) time-varying and active device
 - d.) none.
36. A digital frequency counter can be converted to a DVM by addition of a stage of suitable –
- a.) voltage controlled oscillator
 - b.) D/A converter to it
 - c.) power amplifier to it
 - d.) operational amplifier to it.
37. A 0 to 200 V dc moving coil voltmeter has a guaranteed accuracy of 0.75 % of full scale reading. The voltage measured by instrument is 100V. The limiting error is –
- a.) 3%
 - b.) 2%
 - c.) 1.5%
 - d.) 0.75%
38. The dynamic characteristics of capacitive transducers are similar to those of a –
- a.) low pass filter
 - b.) high pass filter
 - c.) notch filter
 - d.) band stop filter
39. The temperature coefficient of resistance for a thermistor is –
- a.) low and negative
 - b.) low and positive
 - c.) high and negative
 - d.) high and positive
40. Which of the following types of transducers can be used for measurement of an angular position is –
- a.) Circular potentiometer
 - b.) Synchro
 - c.) E-pick off
 - d.) both a and b
41. A 300V full-scale deflection voltmeter has an accuracy of $\pm 2\%$. When it reads 222V. The actual voltage –
- a.) Lies between 217.56V and 226.44V

- b.) Lies between 217.4V and 226.6V
c.) Lies between 216V and 228V
d.) Is exactly 222V
42. In a thyristor, ratio of latching current to holding current is-
- a.) 0.4
b.) 1.0
c.) 2.5
d.) 6.0
43. In a single-phase full converter bridge the average output voltage is given by-
- a.
- b.
- c.
- d.
44. A 3 phase semi converter can work as-
- a.) converter for $\alpha = 0^\circ$ to 180°
b.) converter for $\alpha = 0^\circ$ to 90°
c.) inverter for $\alpha = 90^\circ$ to 180°
d.) inverter for $\alpha = 0^\circ$ to 90°
45. In the given arrangement A-3 the circuit is initially in steady state with thyristor T off. At the moment thyristor T is turned on the thyristor current is –
-
- a.) 2 A
b.) 22 A
c.) 40A
d.) 42 A
46. In dc choppers for chopping period T, the out put voltage can be controlled by FM by varying-
- a.) T keeping T_{on} constant
b.) T off keeping T constant

- c.) T keeping T_{off} constant
- d.) none of the above
47. In synchronized UJT triggering of an SCR, voltage V_o across capacitor reaches UJT threshold voltage thrice in each half cycle so that there are three firing pulses during each half cycle. The firing angle of the SCR can be controlled.
- a.) once in each half cycle.
- b.) thrice in each half cycle
- c.) twice in each half cycle.
- d.) four times in each half cycle.
48. When a series LC circuit is connected to a dc supply of V volt through a thyristor, then the peak current through thyristor is-
-
-
-
-
49. In a single phase voltage controller with RL load, ac output power can be controlled if
- a.) firing angle $\alpha > \square$ and (load phase angle) and conduction angle
- b.)
- c.)
- d.)
50. Class C amplifier is mainly used as-
- a.) As an RF amplifier
- b.) As stereo amplifier
- c.) In communication sound equipment
- d.) As distortion generator
51. Parasitic oscillations in amplifiers are caused by-
- a.) Negative feedback
- b.) Push-pull operation
- c.) Poor interstage coupling
- d.) Transistor inter – junction capacitance
52. The input impedance in a voltage shunt feedback is-

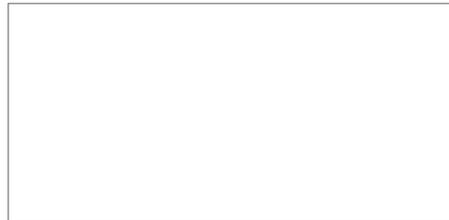
- a.) decreased
 - b.) Increased
 - c.) Remains unchanged
 - d.) None of the above
53. The signal/noise (S/N) ratio of an amplifier developing an output voltage of 10 v and a noise voltage of 1 mV is ----- dB
- a.) 40
 - b.) 100
 - c.) -40
 - d.) 80
54. The feedback factor ' BA_v ' is negative for negative feedback-
- a.) True
 - b.) False
 - c.) May or May not be
 - d.) None of the above
55. For sustaining oscillations in a feedback amplifier the loop gain should be-
- a.) Zero
 - b.) Less than one
 - c.) Greater than one
 - d.) None of the above
56. An operational amplifier has a slew rate of 100 v/ microsecond. For a frequency of 10MHz the maximum value of the sine-wave output voltage will be-
- a.) 100 v
 - b.) 50/p v
 - c.) .10v
 - d.) .5v
57. A signal having uniformly distributed amplitude in the interval $(-v, +v)$ is to be encoded using PCM with uniform quantization. The signal to quantizing noise ratio is determined by the-
- a.) Dynamic range of the signal
 - b.) Number of quantizing level
 - c.) Sampling rate
 - d.) Power spectrum of signal
58. For signal amplitude modulated to a depth of 100 % by a sinusoidal signal power is-

- a.) Same as the power of unmodulated carrier
 - b.) Twice as the power of unmodulated carrier
 - c.) 3/2 times the power of unmodulated carrier
 - d.) 2/3 times the power of unmodulated carrier
59. Identify the false statement about MOSFET.
- It can deplete in-
- a.) Depletion mode
 - b.) Enhancement modes
 - c.) Depletion and enhancement modes
 - d.) Depletion only mode
60. The process of conversion from an analog signal to digital signal is known as an –
- a.) analog to digital conversion
 - b.) digital to analog conversion
 - c.) analog to analog conversion
 - d.) digital to digital conversion
61. TTL circuits are used in main frame computers because of their –
- a.) fast operating speed
 - b.) slow operating speed
 - c.) medium operating speed
 - d.) none of the above
62. When a large number of analog signals is to be converted to digital form, an analog multiplexer is used. The A to D converter suitable in this case will be –
- a.) dual slope type
 - b.) up down counter type
 - c.) successive approximation type
 - d.) forward counter type
63. Identify wrong rule for binary subtraction ?
- a.) $0 - 0 = 0$
 - b.) $1 - 0 = 1$
 - c.) $1 - 1 = 0$
 - d.) $0 - 1 = -1$ with borrow of 1
64. The binary equivalent of 9.375_{10} is –
- a.) 1001.011_2

- b.) 1101.101_2
c.) 1100.011_2
d.) 1111.001_2
65. In FM if transmission bandwidth is doubled then the SNR is-
- a.) Also doubled
b.) Improved fourfold
c.) Decreased by one fourth
d.) Unaffected
66. Main memory are of two kinds –
- a.) ROM and RAM
b.) random and sequential
c.) primary and secondary
d.) central and peripheral
67. The resolution for n bit system D/A converter is –
-
68. In a PCM system, the number of quantization level are 16 and the maximum signal frequency is 4KHz. The bit transmission rate is-
- a.) 64 K bits / sec
b.) 32 bits / sec
c.) 32 K bits /sec
d.) 16K bits /sec
69. Mark out sop in the following-
-
70. The reverse saturation Current I_{CO} in a transistor amplifier-

- a.) doubles for every 10°C rise in temperature
- b.) doubles for every 5°C rise in temperature
- c.) doubles for every 1°C rise in temperature
- d.) increases linearly with temperature

71. The given circuit is equivalent to –



72. The interface chip used for data transmission between 8086 and a 16-bit ADC is –

- a.) 8529
- b.) 8251
- c.) 8255
- d.) 8253

73. The output signal amplitudes for 1,s and 0,s in an ADM transmission system –

- a.) Fixed and the repetition rate is also fixed
- b.) Fixed but the repetition rate is variable
- c.) Variable and the repetition rate is also variable
- d.) variable but the repetition rate is fixed

74. A composite voltage $V = 10 \sin 100t + 10 \cos 100t$ is applied across a series combination of a capacitor of $1/\text{mF}$ and a resistance of 10 kW . The average power dissipated in the resistance is –

- a.) 5mW

b.) 3.5mW

c.) 4mW

d.) 8mW

75. Considering a negative feedback system

The closed loop system is stable for

76. Mark the features of the break away point in the root locus of a closed loop control system with the characteristic equation $1 + KG_1(s)H_1(s) = 0$

1. It need not always occur only on the real axis.

2. At this point $G_1(s)H_1(s) = 0$

3. At this point

Select the correct answer using codes below.

a.) 1, 2 and 3

b.) 1 and 2

c.) 2 and 3

d.) 1 and 3

77. Which of the following components can be used as a rotating amplifier in a control system?

1. An amplidyne

2. A separatively excited dc generator

3. A self excited dc generator

4. A sychro

select the correct answer using codes below-

a.) 3 and 4

b.) 1 and 2

c.) 1, 2 and 3

d.) 1, 2, 3 and 4

78. In the formation of Routh's array the situation of a row of zeros indicates that the system-

- a.) has symmetrically located roots.
- b.) is not sensitive to variations in gain
- c.) is stable
- d.) unstable

79. A 3-port circulator is shown in the figure.

Which one of the following scattering matrices related to this circulator?



80. In the given figure a signal flow graph is shown. Consider the statements regarding the signal flow graph-



- 1. There are three forward paths
- 2. There are three individual loops
- 3. There are two non touching loops

of these statements-

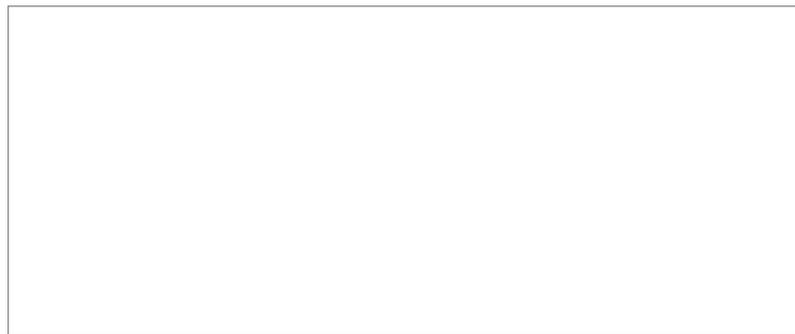
- a.) 1, 2 and 3 are correct
- b.) 1 and 2 are correct
- c.) 2 and 3 are correct
- d.) 1 and 3 are correct

81. Mark out wrong statement.

Modulation is used to-

- a.) Reduce the bandwidth used
- b.) Separate differing transmissions

- c.) Ensure that intelligence may be transmitted over long distances
d.) Allow the use of practicable antennas
82. The best scanning system for tracking if the target has been acquired is-
- a.) lobe switching
b.) sequential lobbing
c.) conical scanning
d.) monopulse
83. The amplification in parametric amplifiers used in microwave communication system is limited by-
- a.) type of biasing
b.) cassegranian antenna
c.) pyramidal horn antenna
d.) dipole antenna
84. Gating signal is applied to the circuit as shown in the given figure, to switch the field effect transistor. When gating signal is 0V, the output voltage V_o will be-



- a.) Zero
b.) Sine wave (2Vp-p)
c.) 2Vdc
d.) 1/2V
85. Hamming codes are used for error detection and correction. If the minimum Hamming distance is m , then the number of errors correctable is-
- a.) equal to M
b.) less than $M/2$
c.) equal to $2M$
d.) greater than M
86. Mark out a 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 is linear.
87. The frequency deviation in phase modulation is-
- a.) independent of the modulating signal frequency
- b.) inversely proportional to the modulating signal frequency
- c.) directly proportional to the modulating signal frequency.
- d.) inversely proportional to the square root of the modulating frequency.
88. A telephone channel has bandwidth B of and . It is connected to a Teletype machine having 32 different symbols. The symbols rate required for errorless transmission is nearly-
- a.) 1800 symbol/s
- b.) 3000 symbols/s
- c.) 5000 symbols/s
- d.) 6000 symbols/s
89. Which power amplifiers has maximum efficiency?
- a.) Class A
- b.) Class AB
- c.) Class B
- d.) Class C
90. Negative resistance characteristics for its operation is used by –
- a.) TWT
- b.) Klystron
- c.) Magnetron
- d.) MASERS
91. Is a non mark able interrupt-
- a.) RST 7.5
- b.) RST 6.5
- c.) RST 5.5
- d.) TRAP
92. Instructions in C are of type-
- a.) 2
- b.) 3
- c.) 4

- d.) 6
93. In C programming character variable can at a time store-
- a.) 1 character
- b.) 8 characters
- c.) 16 characters
- d.) 256 characters
94. To obtain 16 x 8 memory using 16x4 memory. How many IC required-
- a.) 16
- b.) 2
- c.) 4
- d.) 8
95. In active low logic, the logic 1 state corresponds to-
- a.) high voltage level
- b.) low voltage level.
- c.) negative voltage
- d.) ground level.
96. If JK inputs are tied together, the circuit reduces to-
- a.) SR FF
- b.) D FF
- c.) T FF
- d.) JK FF
97. For designing half adder are require-
- a.) a NOT gate and a OR gate
- b.) a AND gate and a OR gate
- c.) two AND gate
- d.) a AND gate and a X – OR gate
98. Partly random and partly cyclic sequential access of memory is in-
- a.) magnetic tape
- b.) CD ROM
- c.) Magnetic Drum
- d.) Floppy
99. A pointer which points the memory address of the current or next instruction is-
- a.) Index register

- b.) Temp register
c.) Program counter
d.) Stack pointer
100. For address modification purpose computer uses-
- a.) Temp register
b.) Index register
c.) Stack pointer
d.) Program counter
101. Let,s go for a walk, . The tag question required for this statement is :
- a.) Shall we ?
b.) Should we ?
c.) don,t we?
d.) do we ?
- 102.He looked very grave
- Which of the following words has the closest meaning to the word underlined.
- a.) angry
b.) serious.
c.) frightened
d.) upset.
- 103.Sharma did not work ----- so his master asked him to leave-
- a.) proper
b.) properly
c.) rightly
d.) straight
104. Being punctual is necessary in your job. (Substitute the underlined word without changing its meaning) -
- a.) attractive
b.) free from worries
c.) on time
d.) cheerful
- 105.Reema said that she had never ----- a book she liked so much.
- a.) held upon
b.) saw into
c.) come across

- d.) viewed on
106. The first bullet train is assembled in –
- a.) South Korea
- b.) North Korea
- c.) Japan
- d.) Malaysia
107. Minister of Parliamentary Affairs and Communications and Information Technology of Government of India is –
- a.) Uma Bharati
- b.) Pramod Mahajan
- c.) Murli Manohar Joshi
- d.) Uma Kashyap
108. Chairman of the Cricket Board's Zonal Academics is –
- a.) N Venkat Rao
- b.) Jag Mohan Dalmia
- c.) Chandru Borde
- d.) Kapil Dev
109. Romario matched the career total of retired Zico by-
- a.) 830 goals
- b.) 835 goals
- c.) 834 goals
- d.) 831 goals
110. The best source of Vitamin A is
- a.) Lime bean
- b.) Carrot
- c.) Tomato
- d.) Orange
111. Titan is the name of the moon related to planet-
- a.) Uranus
- b.) Neptune
- c.) Saturn
- d.) There is no such moon
112. World Environment Day was observed on-
- a.) 5 May 99

- b.) 15 May 99
c.) 5 June 99
d.) 5 July 99
113. Who wrote 'Mudrarakshasa'?
- a.) Kautilya
b.) Visakhadatta
c.) Kalhana
d.) Kalidas
114. Where were the first Asian Games held?
- a.) New Delhi
b.) Teheran
c.) Tokyo
d.) Bangkok
115. Tagore's Gitanjali is-
- a.) A collection of poems
b.) A collection of short stories
c.) A collection of dramas
d.) A novel
116. In which year did Mahatma Gandhi launch his first non-cooperation movement-
- a.) 1917
b.) 1918
c.) 1919
d.) 1920
117. In how many years is Kumbh Mela held?
- a.) 3
b.) 5
c.) 8
d.) 10
e.) 12
118. Panchayat polls were held in Jammu and Kashmir after a gap of-
- a.) 40 years
b.) 20 years
c.) 33 years

d.) 23 years

119. The hardest part in a tooth is-

a.) Dental tubule

b.) Dentine

c.) Enamel

d.) Pulp

120. What is Pimpri famous for?

a.) Chemicals factory

b.) Fertilizer factory

c.) Antibiotics factory

d.) Cement factory

e.) None of these.