



17. If the collector and emitter terminals of a BJT are interchanged, the β of the inverted mode will be
- (A) equal to β of normal mode
 - (B) greater than β of normal mode
 - (C) less than β of normal mode
 - (D) zero
18. A transformer cannot be called an amplifier because it cannot give
- (A) current gain
 - (B) voltage gain
 - (C) gain at high frequencies
 - (D) power gain
19. Solar cell is an example of
- (A) photoconductive device
 - (B) photoemissive device
 - (C) both photoconductive device and photoemissive device
 - (D) photovoltaic device
20. In a FET, the drain voltage above which there is no increase in drain current is called
- (A) critical voltage
 - (B) pinchoff voltage
 - (C) breakdown voltage
 - (D) pick up voltage
21. In a JFET source follower, $\mu = 200$, $r_d = 20k\Omega$ and source load resistance $R_L = 1k\Omega$. The output resistance of the source follower is approximately
- (A) 333Ω
 - (B) 500Ω
 - (C) 600Ω
 - (D) $1k\Omega$

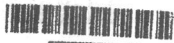


60614

22. In a full wave rectifier using a centre tapped transformer RMS value of secondary voltage = 560V and load = $2k\Omega$. The RMS voltage across each diode is
- (A) 280V (B) 201.3V
(C) 395.3V (D) 790.7V
23. When two identical stages with upper cut off of ω_H are cascaded, the overall 3 dB point is at
- (A) ω_H (B) $0.5\omega_H$
(C) $2\omega_H$ (D) $0.64\omega_H$
24. Which one of the following can be achieved by using the reset terminals in a timer chip?
- (A) Keyed oscillations (B) Delayed monostable action
(C) Square wave generation (D) Pulse generation
25. A two stage amplifier with negative feedback has an overshoot when the damping factor is
- (A) zero (B) less than unity
(C) negative (D) greater than unity
26. Which one of the following relations for a transistor is correct?
- (A) $h_{ie} = \frac{1+h_{fb}}{h_{ib}}$ (B) $h_{ie} = \frac{h_{ib}}{1+h_{fb}}$
(C) $h_{ie} = \frac{1-h_{fb}}{h_{ib}}$ (D) $h_{ie} = \frac{h_{ib}}{1-h_{fb}}$
27. In a class C amplifier the output current is zero for
- (A) half cycle (B) full cycle
(C) less than half cycle (D) more than half cycle



28. A class B push pull amplifier suffers from
- (A) crossover distortion
 - (B) excessive harmonic distortion
 - (C) intermodulation distortion
 - (D) None of the above
29. An oscillator of the LC type that has a split capacitor in the tank circuit is
- (A) Hartely oscillator
 - (B) Colpitts oscillator
 - (C) Wein bridge oscillator
 - (D) Pierce oscillator
30. Clamper circuits are also known as
- (A) AC restorer
 - (B) DC restorer
 - (C) voltage to frequency converter
 - (D) frequency to voltage converter
31. Frequency multiplication can be obtained by using
- (A) Class A amplifiers
 - (B) Class B amplifiers
 - (C) Class C amplifiers
 - (D) Class AB amplifiers
32. The feedback network of a phase shift oscillator usually consists of
- (A) RC circuit
 - (B) RL circuit
 - (C) LC circuit
 - (D) None of the above
33. CB amplifier is most suitable for use in
- (A) very high frequency circuits
 - (B) low frequency circuits
 - (C) medium frequency circuits
 - (D) low current circuits



60614

7

34. A loudspeaker is operated by
- (A) audio voltage amplifier (B) audio current amplifier
(C) audio power amplifier (D) None of the above
35. Which of the following amplifiers has largest bandwidth?
- (A) RC coupled amplifier
(B) Difference amplifier
(C) Transformer coupled amplifier
(D) Direct coupled amplifier
36. The potential difference between two points, neither of which is grounded, is to be amplified. We will use
- (A) RC coupled amplifier
(B) audio power amplifier
(C) difference amplifier
(D) transformer coupled amplifier
37. The upper cut-off frequency of an RC coupled amplifier mainly depends on
- (A) coupling capacitor
(B) cathode bypass capacitor
(C) output capacitance of the signal source
(D) interelectrode capacitance and stray capacitance
38. When the emitter resistance is bypassed by a capacitor in an amplifier
- (A) voltage gain is reduced
(B) voltage gain is increased
(C) thermal runaway is caused
(D) the Q-point is stabilised
39. To amplify a RF signal containing 870 kHz, 875 kHz and 880 kHz, we use
- (A) audio frequency amplifier (B) wide band amplifier
(C) tuned voltage amplifier (D) push-pull amplifier



40. The frequency response characteristic of a voltage amplifier has a slope of -10dB/decade in the high frequency region. This is equivalent to
- (A) -3dB/octave (B) -1.5dB/octave
(C) -6dB/octave (D) -5dB/octave
41. The term "free running" is usually associated with
- (A) bistable multivibrator (B) astable multivibrator
(C) monostable multivibrator (D) Any of the above
42. When a PNP transistor is saturated
- (A) base, emitter and collector are at the same potential
(B) emitter is at a higher potential than base and collector
(C) collector is at a higher potential than base and emitter
(D) base is at a higher potential than emitter and collector
43. Crossover distortion is eliminated in a push-pull amplifier by
- (A) using a transformer with a large step down ratio
(B) using a transformer with a large step up ratio
(C) providing a small forward bias to the transistors
(D) supplying both transistors with in phase signals
44. In a single stage RC coupled amplifier, the phase of the output with respect to the input at very low and at very high frequencies approaches respectively
- (A) 135° and 225° (B) 90° and 270°
(C) 270° and 90° (D) 90° and 180°
45. For which of the following configurations, does the input impedance of the amplifier depend strongly on the load resistance?
- (A) CE (B) CC
(C) CB (D) CE and CB



60614

9

46. In a RC coupled amplifier, the rate of change of voltage gain in the high frequency range is
- (A) -3dB/octave (B) -10dB/octave
(C) -16dB/octave (D) None of the above
47. The input to a push-pull amplifier contains components of 150 Hz, 300Hz, 450 Hz and 600 Hz. The output will contain
- (A) only 150 Hz (B) only 150 Hz and 450 Hz
(C) only 300 Hz and 600 Hz (D) All the four components
48. An important advantage of the RC coupling scheme is
- (A) economy (B) good frequency response
(C) high efficiency (D) good impedance matching
49. A Zener diode is primarily used for
- (A) rectification
(B) producing constant current
(C) producing constant voltage
(D) detection of audio signals in radio waves
50. The low frequency cut-off in an amplifier is due to
- (A) only coupling capacitors
(B) only bypass capacitors
(C) both coupling and bypass capacitors
(D) the internal transistor junction capacitances
51. The Boolean expression $\bar{x} \bar{y} z + yz + xz$ after minimisation becomes
- (A) x (B) y
(C) z (D) $x + y + z$




52. The Hamming code 1101101 has been received. Fault has occurred at
- (A) second portion (B) third portion
(C) fourth portion (D) fifth portion
53. Extremely low power dissipation and low cost per gate can be achieved in
- (A) MOS ICs (B) CMOS ICs
(C) TTL ICs (D) ECL ICs
54. Which of the following digital IC families gives the maximum fan-out?
- (A) ECL (B) PMOS
(C) HTL (D) CMOS
55. An example of a universal logic gate is
- (A) AND (B) OR
(C) NOT (D) NOR
56. A positive logic AND gate is the same as a negative logic
- (A) OR gate (B) AND gate
(C) NAND gate (D) NOR gate
57. An example of a weighted self-complementing code is
- (A) 8421 code (B) 7421 code
(C) $84\bar{2}\bar{1}$ code (D) Gray code
58. An example of a binary number which is equal to its 2's complement is
- (A) 0000 (B) 1000
(C) 0001 (D) 1111



60614

59. The octal equivalent of decimal 0.3125 is
- (A) 0.16 (B) 0.26
(C) 0.24 (D) 0.124
60. An example of a 16 bit μp is
- (A) Zi log 80 (B) 8085
(C) Motorola 6800 (D) 8086
61. Which one of the following A/D converters utilises a logic programmer?
- (A) Dual slope A/D converter
(B) Continuous balance type A/D converter
(C) Successive approximation A/D converter
(D) Stair case ramp type A/D converter
62. The ASCII code is
- (A) an error detecting code (B) a self correcting code
(C) an alphanumeric code (D) a weighted code
63. Module - 2 addition is represented by
- (A) $\bar{x}y + x\bar{y}$ (B) $xy + \bar{x}\bar{y}$
(C) $x + \bar{x}y$ (D) $xy + \bar{x}z + yz$
64. Which one of the following is correct?
- (A) $\bar{x}\bar{y}z + yz + xz = \bar{y}z + xz$ (B) $\bar{x}yz + yz + xz = xy + \bar{x}z$
(C) $xy + \bar{x}z = xy + \bar{x}z + yz$ (D) $x + \bar{x}y = xy$
65. SN 7410 IC is a
- (A) quad 2 input NAND gate (B) triple 3 input NAND gates
(C) dual m/s JK flip-flops (D) multiplexer

- 
66. The primary data pointers of 8085 are
- (A) registers B and C (B) registers D and E
(C) registers H and L (D) registers B and D
67. The value of the most significant bit of the result following the execution of an instruction by 8085 is stored in
- (A) carry status flag (B) auxiliary carry status flag
(C) sign status flag (D) zero status flag
68. The 8080 μp has an instruction set of 91 instructions. The op-code needed should be at least
- (A) 6 bits long (B) 7 bytes long
(C) 7 bits long (D) 8 bits long
69. Which memory does a microprogrammed computer have in its control memory unit?
- (A) Semiconductor ROM (B) Semiconductor RAM
(C) Magnetic RAM (D) None of the above
70. The photomasking process during fabrication of ICs
- (A) controls the depth of diffusion of impurities
(B) forms an insulating layer that prevents diffusion in selected areas
(C) is used to remove selected areas of SiO_2
(D) is used for removal of photoresist
71. The basic RS flip-flop is a
- (A) bistable multivibrator (B) monostable multivibrator
(C) astable multivibrator (D) free running multivibrator



72. In a positive logic system a logic 1 represents
- (A) zero voltage
 - (B) -1 volts
 - (C) more negative of the two voltage levels
 - (D) more positive of the two voltage levels
73. The input impedance of an OP-AMP is
- (A) zero
 - (B) small
 - (C) very high but not infinite
 - (D) infinite
74. The equivalent decimal number for Gray code 1011 is
- (A) 14
 - (B) 13
 - (C) 41
 - (D) 31
75. The output of an OP-AMP is
- (A) 90° out of phase with the input
 - (B) -90° out of phase with the input
 - (C) 45° out of phase with the input
 - (D) 180° out of phase from the input
76. If the gain of a chopper amplifier is 1000 and the OP-AMP gain is 50,000, then the DC gain of the chopper stabilised OP-AMP will be
- (A) 50,000
 - (B) 1000
 - (C) 50
 - (D) 50×10^6
77. Which of the following memories has got equal access time for all locations of the memory unit?
- (A) ROM
 - (B) PROM
 - (C) RAM
 - (D) ERAM



78. A source programme is translated into machine language by
- (A) programmer (B) operator
(C) compiler (D) card reader
79. MSI circuit usually contains
- (A) less than 10 gates (B) 10 to 100 gates
(C) more than 100 gates (D) 1000 gates
80. LSI circuits usually contain
- (A) less than 10 gates (B) 10 to 100 gates
(C) more than 100 gates (D) more than 1000 gates
81. For building a decade counter, the minimum number of flip-flops is
- (A) 4 (B) 5
(C) 6 (D) 10
82. The characteristic equation of a T flip-flop is
- (A) $Q_{N+1} = \bar{T}Q_N + T\bar{Q}_N$ (B) $Q_{N+1} = TQ_N$
(C) $Q_{N+1} = \bar{T}Q_N$ (D) $Q_{N+1} = \bar{T}\bar{Q}_N$
83. Every processor must necessarily have a
- (A) data bus
(B) data bus and address bus
(C) control bus
(D) data bus, control bus and an address bus
84. How much of memory a μp with a 12 bit address bus be able to access?
- (A) 1 KB (B) 4 KB
(C) 8 KB (D) 0.4 KB

91. Which of the following instructions copies a byte of data into the accumulator from the memory address given in the instruction?
- (A) LDA address (B) LDA×B
(C) LHL address (D) STA address
92. A DAD H instruction is same as
- (A) shifting each bit one position to the left
(B) shifting each bit one position to the right
(C) shifting each bit one position to the left with a zero inserted in LSB position
(D) shifting each bit one position to the right with a zero inserted in MSB position
93. In an ORA r instruction
- (A) zero flag is set
(B) auxiliary carry flag is set
(C) carry flag is set
(D) None of the flags are affected
94. Return from a subroutine is affected by
- (A) a jump instruction (B) an RST instruction
(C) a RET instruction (D) a hardware interrupt signal
95. PSW stands for
- (A) accumulator contents
(B) flag byte
(C) accumulator and the flag byte
(D) accumulator and temporary register byte
96. Which of the following control signal does not belong to printer interface?
- (A) DAV (B) DACC
(C) NEW LINE ACK (D) TRACK OO



60614

17

97. Which of the following methods, used in formatting a floppy disk, is not IBM compatible?
- (A) Single density single side (B) Double density single side
(C) Single density double side (D) All of the above
98. A USART chip provides
- (A) half duplex operation
(B) full duplex operation
(C) diplex operation
(D) full duplex operation, but cannot work in asynchronous mode
99. The calibration signal available from a CRO is of
- (A) square waveshape (B) sawtooth waveshape
(C) sinusoidal waveshape (D) Any of the above
100. The input impedance of an oscilloscope must be
- (A) low (B) high
(C) inductive (D) capacitive
101. To double the current range of a $50\mu A$, 2000Ω meter movement, the shunt resistance required is
- (A) 40Ω (B) 50Ω
(C) 2000Ω (D) 25Ω
102. The purpose of the INT/EXT switch in a CRO is to
- (A) select the input to SYNC control
(B) provide an internal signal to the vertical input
(C) select inputs to the horizontal terminals
(D) None of the above



103. Two sinusoids of peak amplitude ratio 1:2 differing in phase by 90° give a Lissajou's pattern as
- (A) straight line in first and third quadrants
 - (B) straight line in second and fourth quadrants
 - (C) ellipse
 - (D) circle
104. A transformer with a 20:1 voltage step down ratio has 6V across 0.6Ω in the secondary. I_s and I_p are given by
- (A) 10A, 5A
 - (B) 5A, 10A
 - (C) 10A, 0.5A
 - (D) 1A, 0.5A
105. A voltmeter utilises a $20\mu A$ meter movement. The sensitivity of the voltmeter is
- (A) $1000\Omega/V$
 - (B) $20000\Omega/V$
 - (C) $50k\Omega/V$
 - (D) 10 micro ohms per volt
106. The scale used for moving coil meter is
- (A) a nonlinear scale
 - (B) a linear scale
 - (C) a square scale
 - (D) a log scale
107. Maximum input frequency = f and chopping frequency = F . In a chopper amplifier
- (A) $F > 10f$
 - (B) $F < 0.1f$
 - (C) $F = 2f$
 - (D) $F = 0.5f$
108. Damping ratio = δ and rise time = t_r . If the bandwidth of a system is increased
- (A) both δ and t_r increase
 - (B) δ decreases but t_r increases
 - (C) δ increases but t_r decreases
 - (D) both δ and t_r decrease



60614

19

109. An amplitude detector detects
- (A) the peak value of the modulation signal
 - (B) the envelope of the modulating signal
 - (C) the peak value of the carrier signal
 - (D) the average value of the carrier signal
110. Microwave links are generally preferred to co-axial cable for TV transmission because
- (A) they have less overall phase distortion
 - (B) they are cheaper
 - (C) of their greater bandwidth
 - (D) of their relative immunity to impulse noise
111. In amplitude modulation, the magnitude of the sidebands is (m_a = modulation index)
- (A) m_a times the carrier amplitude
 - (B) $2m_a$ times the carrier amplitude
 - (C) $m_a/2$ times the carrier amplitude
 - (D) $m_a/4$ times the carrier amplitude
112. Sinusoidal carrier voltage of frequency 1 MHz is amplitude modulated by a band of frequencies from DC to 5 kHz. The frequency of the upper sideband and lower sideband will be
- (A) 1005 kHz and 1000 kHz
 - (B) 1010 kHz and 990 kHz
 - (C) 1005 kHz and 995 kHz
 - (D) 1500 kHz and 995 kHz
113. The RMS value of the antenna current is 5A before modulation and it increases to 5.8A after amplitude modulation. The percentage of modulation index is
- (A) 88%
 - (B) 80%
 - (C) 83.14%
 - (D) 81.21%



114. In FM demodulation, Foster-Seely discriminator uses a
- (A) single tuned circuit
 - (B) double tuned circuit in which primary and secondary are tuned to different frequencies
 - (C) double tuned circuit in which primary and secondary are tuned to the same frequency
 - (D) combination of two transistors in push-pull operation
115. Polarised relays
- (A) can distinguish between the two directions of current flow through their coil windings
 - (B) cannot distinguish between the two directions of current flow through their coil windings
 - (C) cannot operate at high speed
 - (D) can be used as smallest element of signaling code
116. Simplex circuit is one in which
- (A) two messages are transmitted by one station and received by the other simultaneously over the same line
 - (B) only one message is sent at a time over a line
 - (C) one character of a word is transmitted independently of another
 - (D) two messages are sent in opposite directions simultaneously over the same line
117. The channel capacity of a band limited Gaussian channel is given by
- (A) $C = B \log_2 \left(2 + \frac{S}{N} \right)$
 - (B) $C = B \log_2 (1 + S/N)$
 - (C) $C = B \log_{10} (1 + S/N)$
 - (D) $C = B \log_e (1 + S/N)$

123. Line of sight transmission is a characteristic of propagation for
- (A) VHF only
 - (B) VHF and UHF
 - (C) low radio frequencies below 1MHz
 - (D) AM picture signal but not FM sound signal
124. When a line of any odd multiple of a quarter wavelength is short circuited, it represents
- (A) infinite impedance
 - (B) zero impedance
 - (C) unity impedance
 - (D) characteristic impedance Z_0
125. Ungrounded antenna near the ground
- (A) acts as an antenna array
 - (B) acts as a single antenna of twice the height
 - (C) must be vertically polarised
 - (D) must be horizontally polarised
126. For matching purposes, tapers are preferred to transformers because of
- (A) ease of fabrication
 - (B) low cost
 - (C) durability
 - (D) low loss
127. A crystal which has a sensitivity of -55 dBm with a 1 MHz BW amplifier, will have a sensitivity with 4 MHz BW amplifier equal to
- (A) -55 dBm
 - (B) -52 dBm
 - (C) $+58$ dBm
 - (D) 52 dBm
128. A helical antenna is used for satellite because of its
- (A) circular polarisation
 - (B) broad bandwidth
 - (C) good front to back ratio
 - (D) None of the above



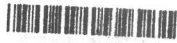
60614

23

129. In a TV transmission system
- (A) the picture is AM and sound is FM
 - (B) the picture is FM and sound is AM
 - (C) both the picture and the sound are AM
 - (D) both the picture and the sound are FM
130. Delhi TV is transmitting on channel 4. For this channel, the carrier frequency for the picture is
- (A) 60 MHz
 - (B) 62.25 MHz
 - (C) 67.7 MHz
 - (D) 68.5 MHz
131. When an EM wave is propagated in a waveguide
- (A) they travel along the broader walls of the guide
 - (B) they are reflected from the walls but do not travel along them
 - (C) they travel through the dielectric without touching the wall
 - (D) None of the above
132. The wavelength of an EM wave in waveguide
- (A) is directly proportional to phase velocity
 - (B) is inversely proportional to phase velocity
 - (C) is greater than that in free space
 - (D) depends only on the waveguide dimensions and the free space wavelength
133. In an AM wave, $V_{\max} = 10V$ and $V_{\min} = 5V$. The percentage of modulation is
- (A) 2
 - (B) 33.3
 - (C) 50
 - (D) 100
134. For attenuation to be minimum in a transmission line at audio frequencies, the condition is
- (A) $LG = RC$
 - (B) $LC = GR$
 - (C) $LR = R$
 - (D) $LR = G$




135. VSWR on a transmission line is always
- (A) less than 1
(B) less than or equal to 1
(C) equal to zero
(D) greater than 1 or equal to 1
136. If bandwidth of an amplifier is reduced, thermal noise in the amplifier will
- (A) increase
(B) decrease
(C) not be affected
(D) become random in nature
137. The signal to noise ratio at the input of an amplifier can be improved
- (A) by decreasing the source impedance
(B) by increasing the source impedance
(C) by matching the source impedance with the input impedance of the amplifier
(D) None of the above
138. The colour of light emitted by an LED depends on
- (A) forward bias
(B) reverse bias
(C) forward current
(D) type of semiconductor material used.
139. Bulk type photoconductive cells have
- (A) wide spectral response
(B) small response time
(C) high cost
(D) high dark to light resistance ratio
140. A PN junction photodiode is
- (A) operated in forward direction
(B) encased in an opaque package
(C) a very fast photodetector
(D) dependent on thermally generated minority carriers



60614

141. Silicon is invariably used in the manufacture of junction photodiodes because
- (A) more electron hole pairs are generated
 - (B) thermally generated minority current is extremely small
 - (C) Silicon is more rugged than Ge
 - (D) it needs less reverse bias
142. A PIN photodiode has ultrafast response primarily due to
- (A) the presence of the middle I layer
 - (B) heavy doping of P and N regions
 - (C) higher electrical conductivity of silicon
 - (D) its wide spectral response
143. The superposition theorem is essentially based on the concept of
- (A) duality
 - (B) linearity
 - (C) reciprocity
 - (D) non-linearity
144. Thevenin resistance is found
- (A) between any two open terminals
 - (B) by short-circuiting the given two terminals
 - (C) by removing voltage sources along with their internal resistances
 - (D) between same open terminals as for V_{th}
145. Norton's equivalent of a circuit consists of a
- (A) constant current source with a conductance in parallel
 - (B) constant current source in series with an infinite resistance
 - (C) constant voltage source in parallel with a high resistance
 - (D) single current source and a single voltage source

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146. Two identical 3A , 4Ω Norton equivalent circuits are connected in parallel with like polarity to like. The combined Norton equivalent circuit is
- (A) 6A , 4Ω (B) 6A , 2Ω
(C) 3A , 2Ω (D) 6A , 8Ω
147. A step recovery diode
- (A) has an extremely short recovery time
(B) conducts equally well in both directions
(C) is mainly used as a harmonic generator
(D) is an ideal rectifier of high frequency signals
148. A PIN diode is frequently used as a
- (A) peak clipper
(B) voltage regulator
(C) harmonic generator
(D) switching diode for frequencies upto GHz range
149. Intermodal dispersion results from the fact that the light waves propagate through an optical fiber
- (A) in different modes (B) along different routes
(C) as a group of frequencies (D) with same velocity
150. An all plastic optical fiber is strong mechanically as compared to an all glass fiber but has
- (A) higher losses
(B) lower bandwidth
(C) lower tensile strength
(D) higher losses and lower bandwidth



SPACE FOR ROUGH WORK



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