

**Previous Question Paper for Government Polytechnic Lecturers exam  
(ECE) held on 10-6-2012**

1. For Global communication, the number of satellites needed is  
1) 1                      2) 2                      3) 3                      4) 5
2. A broadcast radio transmitter radiates 20kW when the modulation percentage is 60. The carrier power will be  
1) 1.2KW              2) 1.45KW              3) 16.94KW              4) 20KW
3. In a band-stop filter having RLC series resonant circuit, the o/p is taken across the  
1) R                      2) series combination of L and C                      3) L                      4) C
4. When compared to a first order LPF, a second order LPF has,  
1) lower voltage gain                      2) higher voltage gain  
3) faster drop in filter response                      4) higher cut-off frequency
5. An initially relaxed RC series network with  $R = 2M\Omega$  and  $C = 1\mu F$  is switched on to a 10V step input. The voltage across capacitor after 2 seconds will be  
1) zero                      2) 3.68V                      3) 6.32V                      4) 10V
6. A satellite earth station has  
1) only transmitting equipment  
2) only receiving equipment  
3) both transmitting as well as receiving equipment  
4) neither transmitting nor receiving equipment
7. Strapping is used in cavity magnetron to  
1) ensure bunching                      2) prevent cathode – back heating  
3) improve the phase focusing effect                      4) prevent mode jumping
8. The distance of a geostationary satellite from the surface of the Earth is nearly  
1) 360 km                      2) 3600 km                      3) 36,000km                      4) 3,60,000km
9. A unit step voltage is applied at  $t = 0$  to a series RL circuit with zero initial conditions.  
1) It is possible for the current to be oscillatory  
2) The voltage across the resistor at  $t = 0$  is zero  
3) The energy stored in the inductor in the steady state is zero  
4) The resistor current eventually falls to zero
10. A cascaded stage of 3 amplifiers has individual voltage gains of 25, 10 and 4. Its overall gain in dB is  
1) 30                      2) 39                      3) 60                      4) 1000
11. The temperature coefficient of a metal is -----, and that of a semiconductor is ----- respectively.  
1) +ve, -ve                      2) +ve, +ve                      3) -ve, +ve                      4) -ve, -ve

12. In end fire array, the principal direction of radiation
- 1) is perpendicular to the array axis
  - 2) is perpendicular to the array axis and also to the plane containing the array elements
  - 3) coincides with the direction of the array axis
  - 4) is  $45^\circ$  to the direction of array axis
13. A series R-L-C circuit has  $R = 2\Omega$ ,  $L = 1\text{mH}$  and  $C = 0.4\mu\text{F}$ . Its Q factor is
- 1) 5
  - 2) 50
  - 3) 25
  - 4) 100
14. For f1 layer the maximum density is  $2.3 \times 10^{18}$  electron per c.c. the critical frequency for f1 layer will be
- 1) 1.36 MHz
  - 2) 13.6 MHz
  - 3) 136 MHz
  - 4) 1360 MHz
15. For a Hartley oscillator, frequency of oscillations is given by
- 1)  $\frac{1}{2\pi LC}$
  - 2)  $\frac{2\pi}{\sqrt{LC}}$
  - 3)  $\frac{1}{2\pi\sqrt{LC}}$
  - 4)  $2\pi LC$
16. In a low level amplitude modulation system the amplifiers following the modulated stage can be only
- 1) Linear amplifiers
  - 2) Class C amplifier
  - 3) Harmonic generators
  - 4) Other Non-linear amplifiers
17. In a linear circuit, the superposition principle can be applied to calculate
- 1) voltage and power
  - 2) voltage and current
  - 3) current and power
  - 4) voltage, current and power
18. Spectral density of white noise
- 1) varies with frequency
  - 2) is constant
  - 3) varies with bandwidth
  - 4) none
19. The self impedance of a thin half wave dipole antenna is
- 1)  $73\Omega$
  - 2)  $(73 - j42)\Omega$
  - 3)  $(73 + j42)\Omega$
  - 4)  $36.5\Omega$
20. Which of the following circuits cannot be used to demodulate SSB?
- 1) Synchronous demodulator
  - 2) Product detector
  - 3) Phase discriminator
  - 4) Balanced modulator
21. The signal to noise ratio of DSB-SC is ----- as that of SSB-SC
- 1) same
  - 2) double
  - 3) half
  - 4) 3/2 times
22. If  $f(t) = -f(-t)$ , and  $f(t)$  satisfies Dirichlet conditions, then  $f(t)$  can be expanded in Fourier series containing
- 1) sine terms and constants
  - 2) only cosine terms
  - 3) cosine terms and constants
  - 4) only sine terms
23. Medium wave broadcast is used for
- 1) Regional service
  - 2) National service
  - 3) International service
  - 4) All
24. A NOR gate has 3 inputs A, B, C. For which combination of inputs is the output high?
- 1)  $A = B = C = 0$
  - 2)  $A = B = C = 1$
  - 3)  $A = B = 1$  and  $C = 0$
  - 4)  $A = C = 1$  and  $B = 0$

25. The power gain of a half wave dipole with respect to an isotropic radiator is  
 1) 1.76 dB      2) 1.5 dB      3) 2.15 dB      4) 1.64 dB
26. Two impedances  $10 - j10$  and  $10 + j10$  are connected in parallel. Their combined impedance is  
 1)  $5 + j5$       2)  $5 - j5$       3)  $10 + j0$       4)  $20 - j10$
27. Norton's equivalent circuit  
 1) is same as Thevenin's circuit      2) has no relation with Thevenin's circuit  
 3) is dual of Thevenin's circuit      4) is reciprocal of Thevenin's circuit
28. A constant k band-pass filter has a pass band from 1000 to 4000 Hz. The resonant frequencies of series and shunt arms is  
 1) 3000 Hz      2) 2500 Hz      3) 2000 Hz      4) 1500 Hz
29. At cut-off, a prototype HPF has a phase constant of  
 1) 0      2)  $\pi$       3)  $\frac{\pi}{2}$       4)  $-\frac{\pi}{2}$
30. Faraday's law can be expressed in differential form as  
 1)  $\nabla \cdot \vec{E} = -\frac{\partial \bar{B}}{\partial t}$       2)  $\nabla \times \vec{E} = -\frac{\partial \bar{B}}{\partial t}$       3)  $\nabla \times \vec{H} = \vec{J} + \frac{\partial \bar{D}}{\partial t}$       4)  $\vec{B} = \nabla \times \vec{A}$
31. Maxwell's Divergence equation for the magnetic field is given by  
 1)  $\nabla \times B = 0$       2)  $\nabla \cdot B = 0$       3)  $\nabla \times B = \rho$       4)  $\nabla \cdot B = \rho$
32. The effective aperture of an isotropic radiator is  
 1) 1.0      2) 0      3)  $0.13\lambda^2$       4)  $0.08\lambda^2$
33. The M.K.S. unit of magnetic field H is  
 1) Ampere      2) Weber      3) Weber per square meter      4) Ampere per meter
34. Two sinusoidal voltage sources  $V_1 = 50 \sin(100t)$  and  $V_2 = 50 \sin(100t + \pi)$  are connected in parallel and feed an inductance  $X_L = 2\Omega$ . The current through  $X_L$  is  
 1) 25A      2) about 1.75A      c) zero      d) 50A
35. The reflection coefficient ( $K_r$ ), characteristic impedance ( $Z_0$ ) and load impedance ( $Z_L$ ) of a transmission line are connected together by the relation  
 1)  $K_r = (Z_L + Z_0)/(Z_0 - Z_L)$       2)  $K_r = (Z_L Z_0)/(Z_0 - Z_L)$   
 3)  $K_r = (Z_L - Z_0)/(Z_L + Z_0)$       4)  $K_r = (Z_L - Z_0)/(Z_0 Z_L)$
36. The normalized characteristic impedances of a prototype LPF, with T-section and  $\pi$ -section  
 1) become equal at  $f = \infty$       2) become equal at  $f = 0$   
 3) become equal at  $f = f_c$       4) will never be equal
37. Equation  $\nabla^2 V = -\rho/\epsilon$  is called the  
 1) Poisson's equation      2) Laplace equation      3) Continuity equation      4) None
38. The stability factor of a typical amplifier using self-bias, lies between  
 1) 0 and  $\infty$       2) 0 and 1      3)  $\infty$  and  $(\beta+1)$       4) 1 and  $(\beta+1)$

39. The maximum usable frequency of an ionospheric layer at  $60^\circ$  incidence and with 8 MHz critical frequency is  
 1) 16 MHz      2)  $16/\sqrt{3}$  MHz      3) 8 MHz      4) about 6.93 MHz
40. A transmission line having  $50\Omega$  impedance is terminated in a load of  $(40 + j30)\Omega$ . The VSWR is  
 1)  $1/3$       2)  $0.8 + j0.6$       3) 1      4) 2
41. A  $3\mu\text{F}$  capacitor is charged by a constant current  $2\mu\text{A}$  for 6 seconds. The voltage across the capacitor at the end of charging will be  
 1) 3V      2) 4V      3) 6V      4) 9V
42. Degaussing coil is used in a colour TV tube to  
 1) increase screen brightness      2) reduce X-ray emission  
 3) ensure that each beam bits only its own dots  
 4) reduce the effect of the Earth's magnetic field
43. In India, the TV channel width is  
 1) 6 MHz      2) 4 MHz      3) 5 MHz      4) 7 MHz
44. In a TV receiver the contrast is controlled  
 1) AC voltage in video signal      2) DC voltage in video signal  
 3) Signal brightness      3) None of the above
45. In FM, the carrier deviation is determined by  
 1) Modulating signal      2) Derivative of the modulating signal  
 3) Either of the above      4) None of the above
46. For a FM wave, the modulating frequency of 10kHz and bandwidth is 2 MHz. If modulating signal amplitude is doubled, bandwidth will be  
 1) 1.99 MHz      2) 1MHz      3) 2 MHz      4) 3.98 MHz
47. The inverse fourier transform of the function  $F(\omega) = \frac{2}{j\omega}$  is  
 1)  $|t|$       2)  $\cos \omega t$       3)  $\text{sgn}(t)$       4)  $u(t)$
48. Fourier transform of the unit step function is  
 1)  $\pi\delta(\omega)$       2)  $1/j\omega$       3)  $(1/j\omega) + \pi\delta(\omega)$       4)  $(1/j\omega) + 2\pi\delta(\omega)$
49. If  $f(t)$  and  $F(\omega)$  form a Fourier transform pair, then the Fourier transform of  $F(t)$  is  
 1)  $2\pi f(-\omega)$       2)  $2\pi f(\omega)$       3)  $\pi f(-\omega)$       4)  $\pi f(\omega)$
50. Which of the following alphanumeric characters is not allowed in Basic?  
 1) Capital letters A to Z      2) Lower case letters a to z  
 3) Digits 0 to 9      4) Special characters +, -, \*, /, etc.
51. If the unit step response of a network is  $(1 - e^{-at})$  then its unit impulse response will be  
 1)  $\alpha e^{-at}$       2)  $-\alpha e^{-at}$       3)  $\frac{1}{\alpha} e^{-at}$       4)  $(1 - \alpha)e^{-at}$

52. One mega byte is equivalent to  
 1)  $2^{10}$  bytes      2)  $2^{20}$  bytes      3)  $2^{30}$  bytes      4)  $2^{16}$  bytes
53. The output Boolean equations for a Full Adder's Sum (S) and Carry (C) are given by  
 1)  $S = \sum(3, 5, 6, 7), C = \sum(1, 2, 4, 7)$       2)  $S = \sum(1, 2, 4, 7), C = \sum(3, 5, 6, 7)$   
 3)  $S = \sum(1, 2, 4, 7), C = \sum(1, 2, 3, 7)$       4)  $S = \sum(3, 5, 6), C = \sum(1, 2, 4)$
54. The simplest difference in the realization of a Half Adder and a Half-Subtractor is  
 1) one AND gate      2) one NOT gate      3) one OR gate      4) one EX-OR gate
55. Which one of the following is also called 'rat race'?  
 1) E plane tee      2) H plane tee      3) Magic tee      4) Hybrid ring
56. Boolean expression for the output of X-NOR logic gate with inputs A and B is  
 1)  $AB' + A'B$       2)  $(AB)' + AB$   
 3)  $(A' + B) + (A + B')$       4)  $(A' + B') + (A + B)$
57. The input and output signals for CE amplifier are always -----  
 1) equal      2) impulse      3) out of phase      4) complementary to each other
58. For a transistor if  $\alpha = 0.98$  and emitter current  $I_E$  is 2 mA, then the collector current is  
 1) 0.44 mA      2) 0.88 mA      3) 1.96 mA      4) 3.32 mA
59. The gain of an amplifier with feedback is given by the relation  
 1)  $A/1+A\beta$       2)  $\beta/1+A\beta$       3)  $\beta/1 - A\beta$       4)  $A/1-A\beta$
60. Parallel adder is  
 1) sequential circuit      2) combinational circuit  
 3) either sequential or combinational circuits      4) None of the above
61. If  $x(t)$  and its first derivative are Laplace transformable and the Laplace transform  $x(t)$  is  $X(s)$  then,  $\lim_{t \rightarrow 0} x(t)$  is  
 1)  $\lim_{s \rightarrow 0} \left[ \frac{X(s)}{s} \right]$       2)  $\lim_{s \rightarrow 0} [sX(s)]$       3)  $\lim_{s \rightarrow \infty} \left[ \frac{X(s)}{s} \right]$       4)  $\lim_{s \rightarrow \infty} [sX(s)]$
62. In open circuit impedance parameters, independent variables are  
 1)  $V_2$  and  $I_2$       2)  $V_1$  and  $V_2$       3)  $V_1$  and  $I_1$       4)  $I_1$  and  $I_2$
63. The channel capacity C of a band limit Gaussian channel equals  
 1)  $B \log_2(1 + S/N)$       2)  $B \log(S/N)$       3)  $\frac{1}{B} \log_2(S/N)$       4)  $\frac{1}{B} \log_2(1 + S/N)$
64. An m-derived Low Pass filter has  $f_c=1000\text{Hz}$  and  $m = 0.6$ . This filter will have infinite attenuation at  
 1)  $f = 1666.67 \text{ Hz}$       2)  $f = 1125 \text{ Hz}$       3)  $f = 1562.5\text{Hz}$       4)  $f = 1250 \text{ Hz}$
65. Electromagnetic transmission in rectangular wave guide uses  
 1)  $TE_{10}$  mode      2) TEM mode      3)  $TE_{20}$  mode      4)  $TE_{11}$  mode
66. A power level of +10 dBm corresponds to  
 1) 10W      2) 1W      3) 100mW      4) 10mW



67. The input to a negative clamper has peak value of  $\pm V_p$ . Then, in the output, the positive and negative peaks are nearly
- 1) 0 and  $-2V_p$  respectively
  - 2)  $V_p$  and  $-V_p$  respectively
  - 3)  $2V_p$  and 0 respectively
  - 4)  $-V_p$  and  $+V_p$  respectively
68. Modified Ampere's law is represented as
- 1)  $\nabla \times \vec{H} = \sigma \vec{E} + j\omega \epsilon \vec{E}$
  - 2)  $\nabla \times \vec{H} = \sigma \vec{E} + \frac{\partial \vec{E}}{\partial t}$
  - 3)  $\mu \vec{H} = \nabla \times \vec{A}$
  - 4)  $\nabla \cdot \vec{H} = \vec{J} + \frac{\partial \vec{D}}{\partial t}$
69. If  $R_H$  is the Hall effect coefficient, then the conductivity  $\sigma$  and mobility  $\mu$  are related (for a semiconductor) as
- 1)  $\frac{\mu \sigma}{R_H} = \text{constant}$
  - 2)  $\frac{\mu R_H}{\sigma} = \text{constant}$
  - 3)  $\mu \sigma R_H = \text{constant}$
  - 4)  $\frac{\sigma R_H}{\mu} = \text{constant}$
70. The value of an  $\alpha$  in a transistor
- 1) is always equal to 1
  - 2) is less than 1 but more than 0.9
  - 3) is about 0.4
  - 4) is about 0.1
71. A JFET
- 1) is a current controlled device
  - 2) has low input resistance
  - 3) has high gate current
  - 4) is a voltage controlled device
72. Compared to bipolar junction transistor, a JFET has
- 1) lower input impedance
  - 2) high input impedance and high voltage gain
  - 3) higher voltage gain
  - 4) high input impedance and low voltage gain
73. In the transfer characteristic of an n-channel MOSFET, the region of  $V_{GS} > 0$  corresponds to ----- region.
- 1) constant current
  - 2) enhancement
  - 3) depletion
  - 4) saturation
74. The main advantage of using crystal oscillator is
- 1) constant frequency of oscillation
  - 2) suitable for low voltages
  - 3) high efficiency
  - 4) high output voltage
75. Kirchhoff's laws are applicable to -----
- 1) dc only
  - 2) ac sinusoidal wave only
  - 3) dc and ac sinusoidal waves
  - 4) all wave shapes
76. In case of surface wave, the frequency range propagation is
- 1) upto 2MHz
  - 2) 3 – 30 MHz
  - 3) 30 – 300 MHz
  - 4) upto 20 KHz
77. The lower cut-off frequency of N cascade stages is given by
- 1)  $f_1(2^{1/n} - 1)^{1/2}$
  - 2)  $\frac{f_1}{\sqrt{2^{1/n} - 1}}$
  - 3)  $nf_1$
  - 4)  $\frac{nf_1}{\sqrt{2^{1/n} - 1}}$
78. If the electric field of a wave is given by  $\vec{E} = C_1 e^{-j\beta z} \hat{Y}$ , it implies propagation along
- 1) +Z direction
  - 2) -Z direction
  - 3) +Y direction
  - 4) -Y direction

79. An RLC series circuit is excited by 200V, 100Hz supply. The current is 20A. If  $R = 10\Omega$ ,  $X_L = 50\Omega$ , then  $X_C$  is  
 1)  $10\Omega$                       2)  $14.14\Omega$                       3)  $7.07\Omega$                       4)  $50\Omega$
80. ----- is not a reserved word of standard Pascal  
 1) Record                      2) Packed                      3) Repeat                      4) Subroutine
81. Characteristic impedance  $Z_0$  for a lossless line is  
 1)  $\frac{1}{\sqrt{LC}}$                       2)  $\sqrt{\frac{C}{L}}$                       3)  $\sqrt{LC}$                       4)  $\sqrt{\frac{L}{C}}$
82. Long distance short wave radio broadcasting uses  
 1) ground wave                      2) direct wave                      3) ionosphere wave                      4) space wave
83. If a square wave is applied as an input to a differentiator its output is  
 1) positive and negative spikes                      2) negative spikes  
 3) triangular wave                      4) sinusoidal wave
84. The capacity of the channel is  
 1) number of digits used in coding                      2) volume of information it can take  
 3) maximum rate of information transmission                      4) bandwidth required for information
85. Which of the following is taken as a reference antenna for directive gain?  
 1) Half wave dipole                      2) Elementary doublet  
 3) Isotropic                      4) Infinitesimal dipole
86. Which of the following configurations can be used as a constant current source?  
 1) CE                      2) CB                      3) CC                      4) None of the above
87. Inclusion of a resistor in an emitter circuit  
 1) has no effect on stability                      2) worsens stability  
 3) stability will become less than 1                      4) improves stability
88. A reflex Klystron oscillator uses  
 1) one cavity resonator                      2) two cavity resonator  
 3) three cavity resonator                      4) None of the above
89. In Pascal,  $X^Y$  is evaluated as  
 1)  $X * * Y$                       2)  $X \wedge Y$                       3)  $X \text{ pred } (Y)$                       4) None of the above
90. The Laplace transform of unit ramp function starting at  $t = a$  is  
 1)  $\frac{1}{(s+a)^2}$                       2)  $\frac{e^{-as}}{(s+a)^2}$                       3)  $\frac{e^{-as}}{(s)^2}$                       4)  $\frac{a}{(s)^2}$
91.  $(23.625)_{10} = (?)_8$   
 1) 28.5                      2) 27.5                      3) 26.5                      4) 26.75
92. Which of the following is not a proper Fortn expression?  
 1)  $B+A/C - D$                       2)  $(A+C)/(B+D)$                       3)  $B + *A/C$                       4)  $A**(B + 2)$

93. Gain bandwidth product of an amplifier, after inclusion of negative feedback,  
 1) decreases                                      2) increases  
 3) remains constant                              4) can change significantly
94. Wave guide may be considered as  
 1) high pass filter              2) low pass filter              3) band pass filter              4) band stop filter
95. Cassegrain feed is used with a parabolic reflector to  
 1) increase the beam width of the system              2) increase the gain of the system  
 3) allow the feed to be placed at a convenient point  
 4) reduce the size of the main reflector
96. For a fixed bias circuit the stability factor is  
 1)  $\frac{1}{\beta+1}$                       2)  $\beta - 1$                       3)  $\frac{1}{\beta-1}$                       4)  $1 + \beta$
97. Most commonly used bias in BJT amplifier circuit is  
 1) fixed bias                                      2) emitter bias  
 3) collector to base bias                      4) collector feedback bias
98. Which of the following is not a travelling wave?  
 1)  $e = E_m \sin(\beta x - \omega t)$                       2)  $e = E_m \cos(\beta x - \omega t)$   
 3)  $e = E_m \sin(\omega t - \beta x)$                       4)  $e = E_m \sin(\beta x)$
99. The major advantage of a TWT over a Klystron lies in its  
 1) higher bandwidth              2) higher gain                      3) higher frequency              4) higher output
100. An energy signal has  $F(\omega) = 5$ . Its energy spectral density is  
 1) -25                      2) 5                      3) 25                      4) 1
101. The depletion layer in a reverse biased p-n junction is due to the present of  
 1) electrons              2) holes                      3) both electrons and holes              4) immobile ions
102. What is the value of the FORTRAN integer variable  $M = 2 + 6 ** 2/3**3$ ?  
 1) 1                      2) 2                      3) 3                      4) 4
103. The  $h_{12}$  parameter of a T-network, with series arm resistances of  $2\Omega$  (i/p size) and  $3\Omega$  (o/p size), and shunt arm of  $6\Omega$  is  
 1) 4                      2)  $2/3$                       3)  $-2/3$                       4) 6
104. An amplifier having noise figure of 3 dB and available power gain of 20 dB is followed by a mixer circuit having noise figure of 10 dB. The overall noise figure is numerically equal to  
 1) 2.09                      2) 3.45                      3) 2.90                      4) 4.5
105. While calculating  $R_{th}$  in Thevenin's theorem  
 1) only current sources are made dead  
 2) only voltage sources are made dead  
 3) all voltage and current sources are made dead  
 4) all independent sources are made dead



106. In Boolean Algebra, Idempotency property refers to the following expression :  
1)  $X + 1 = 1$                       2)  $XY = YX$                       3)  $XX = X$                       4)  $X + XY = X$
107. The resonant frequency of an RF amplifier is 1 MHz and its bandwidth is 10 kHz. The Q factor will be  
1) 10                      2) 100                      3) 5                      4)  $\sqrt{10}$
108. The loop gain in phase shift oscillator is  
1)  $45^\circ$                       2)  $90^\circ$                       3)  $180^\circ$                       4)  $360^\circ$
109. An AM wave is given by  $e_{AM} = 10 (1 + 0.4 \cos 10^3 t + 0.3 \cos 10^4 t) \cos 10^6 t$ .  
The modulation index of the envelope is  
1) 0.4                      2) 0.5                      3) 0.3                      4) 0.9
110. Limiter is **not** essential in the following detector:  
1) Foster-Seeley                      2) Balanced slope                      3) Ratio detector                      4) None
111. A geostationary satellite completes one orbit in  
1) one hour                      2) five hours                      3) 24 hours                      4) 28 days
112. The purpose of impedance matching in an amplifier is to achieve  
1) high efficiency                      2) reduced distortion  
3) maximum power transfer                      4) None of the above
113. When  $r$  is the radius of a circular orbit of a satellite, then orbital period of the satellite is proportional to  
1)  $r$                       2)  $r^{3/2}$                       3)  $r^2$                       4)  $r^3$
114. Which of these has semiconductor – metal junction?  
1) Pin diode                      2) Photo diode                      3) Tunnel diode                      4) Schottky diode
115. The complement of  $A + BC + AC$  will be  
1)  $\bar{A} (\bar{B} + \bar{C})$                       2)  $\bar{A} \bar{B} \bar{C}$                       3)  $A \bar{B} \bar{C}$                       4)  $A (\bar{B} + \bar{C})$
116. Maximum effective aperture of a  $\lambda/2$  dipole is  
1)  $0.013 \lambda^2$                       2)  $0.13 \lambda^2$                       3)  $1.3 \lambda^2$                       4)  $13 \lambda^2$
117. Uniform excitation of a Linear Array results in  
1) maximum gain, minimum side lobe  
2) minimum beam width, maximum side lobe  
3) minimum beam width, minimum side lobe                      4) maximum gain, no side lobe
118. The value of the resistor creating thermal noise is doubled. The noise power generated is  
1) doubled                      2) quadrupled                      3) unchanged                      4) halved

119. Indicate which one of the following types of noise does not occur in transistors.  
1) Shot noise    2) Partition noise    3) Resistance noise    4) Flicker noise
120. Noise figure of a receiver is given by  
1) the ratio of input to output signal power  
2) the ratio of input to output noise powers  
3) the ratio of input to output, signal to noise ratio  
4) the ratio of output to input, signal to noise ratio
121. In the integer expression – A \* B DIV C + D, which operation is done first in Pascal?  
1) –                                  2)\*                                  3) DIV                                  4) +
122. In an ideal transmission line with matched load, the VSWR and reflection coefficient are respectively  
1) 1 and 1                          2) 0 and 1                          3) infinity and 0                          4) 1 and 0
123. The junction capacitance of a varactor diode is 5 pF with a reverse bias of 4 V. If this bias is increased to 16 V, the capacitance would become  
1) 20 pF                          2) 10 pF                          3) 2.5pF                          4) 1.25 pF
124. The approximate value of input impedance of a common emitter amplifier with emitter resistance  $R_e$  is given by  
1)  $h_{ic} + A_i R_e$                           2)  $h_{ie} + (1 + h_{fe}) R_e$                           3)  $h_{ie}$                           4)  $(1 + h_{fe}) R_e$
125. If a resistor is connected from the o/p to i/p of a CE amplifier stage, it results in a \_\_\_\_\_ feedback.  
1) voltage – shunt                          2) voltage – series                          3) current – shunt                          4) current – series
126. Barkhausen criterion for oscillation stability is  
1)  $A\beta = 0$                           2)  $A\beta = 1$                           3)  $-A\beta = 1$                           4) None of the above
127. In a common emitter amplifier, the unbypassed emitter resistance provides  
1) voltage shunt feedback                          2) current series feedback  
3) negative voltage feedback                          4) positive current feedback
128. Which of the following is a valid real variable in Fortran 77?  
1) IT                          2) GURGAON                          3) 6 JUNE                          7) SUNDAY
129. In a multistage RC coupled amplifier, the coupling capacitor  
1) limits the low frequency response  
2) limits the high frequency response  
3) does not affect frequency response  
4) blocks the DC component without affecting the frequency response

130. A BJT is said to be operating in the saturation region if
- 1) both the junctions are reverse biased
  - 2) base-emitter junction is reverse biased and base-collector junction is forward biased
  - 3) base-emitter junction is forward biased and base-collector junction is reverse biased
  - 4) both the junctions are forward biased
131. Stokes theorem is expressed as
- 1)  $\oint \vec{E} \cdot d\vec{l} = \int_{\text{vol}} (\nabla \cdot \vec{D}) \, dv$
  - 2)  $\oint \vec{E} \cdot d\vec{l} = \int_S (\nabla \times \vec{H}) \cdot d\vec{S}$
  - 3)  $\oint \vec{E} \times d\vec{l} = \int_{S1} (\nabla \cdot \vec{E}) \, d\vec{S}$
  - 4)  $\oint \vec{E} \cdot d\vec{l} = \int d\vec{S}$
132. An ideal diode
- 1) should have zero resistance in the forward bias as well as reverse bias
  - 2) should have zero resistance in forward bias and an infinitely large resistance in reverse bias
  - 3) should have an infinitely large resistance in forward bias and zero resistance in reverse bias
  - 4) should have infinitely large resistance in forward bias as well as reverse bias
133. Which configuration is suitable for impedance matching?
- 1) CB
  - 2) CE
  - 3) CB and CE
  - 4) CC
134. When analyzing Two-port Networks in cascade, it is more convenient to use
- 1) Z-Parameters
  - 2) h-Parameters
  - 3) T-Parameters
  - 4) Y-Parameters
135. The envelope detector is a
- 1) Synchronous detector
  - 2) Asynchronous detector
  - 3) Product demodulator
  - 4) Coherent detector
136. The instantaneous value of the Poynting vector is
- 1) EH
  - 2)  $\sqrt{E \times H}$
  - 3)  $E \times H$
  - 4)  $E \cdot H$
137. For a signal amplitude modulated to a depth of 100% by a sinusoidal signal, the total transmitted power is \_\_\_\_\_ the carrier power.
- 1) same as
  - 2) twice as
  - 3) 3/2 times
  - 4) 2/3 times
138. Which of the following is the fastest switching device?
- 1) J-FET
  - 2) BJT
  - 3) MOSFET
  - 4) TRIODE
139. A clamper
- 1) adds a DC component to the input signal
  - 2) removes signal voltages above or below a specified value
  - 3) both (1) and (2)
  - 4) is a non-linear comparator

140. The velocity of electromagnetic waves in free space is given by  
 1)  $\sqrt{\left(\frac{\mu_0}{\epsilon_0}\right)}$     2)  $\sqrt{(\mu_0 \epsilon_0)}$     3)  $\frac{1}{\sqrt{\left(\frac{\mu_0}{\epsilon_0}\right)}}$     4)  $\sqrt{\left(\frac{\epsilon_0}{\mu_0}\right)}$
141. The intrinsic impedance of free space is  
 1)  $60\pi$  ohms    2)  $4\pi$  ohms    3)  $120\pi$  ohms    4) infinity
142. De-emphasis circuit is used  
 1) to attenuate higher frequencies at receiver  
 2) to attenuate lower frequencies at receiver  
 3) to attenuate lower frequencies at transmitter  
 4) to amplify higher frequencies at receiver
143. The three J-FET parameters are related as  
 1)  $\mu = \frac{r_d}{g_m}$     2)  $\mu = r_d + g_m$     3)  $\mu = r_d g_m$     4)  $\mu = \frac{g_m}{r_d}$
144. If a square wave is applied as an input to an integrator, its output is  
 1) Positive spikes    2) Negative spikes    3) Sine wave    4) Triangular wave
145. In MOSFETs N-channel is more preferred than P-channel because  
 1) it has better noise immunity    2) it has better drive capability  
 3) it is faster    4) it is cheaper
146. A super heterodyne radio receiver with an intermediate frequency of 455 KHz is tuned to a station operating at 1200 KHz. The associated image frequency is  
 1) 555 KHz    2) 1110 KHz    3) 2110 KHz    4) 4220 KHz
147. Which of these are allowed in Basic?  
 1) Arithmetic operation +, -, \*, /    2) Logical operation AND, OR, NOT  
 3) Relational operations =, <, >    4) All the above
148. \_\_\_\_ Radar cannot be used for range measurement.  
 1) Pulsed    2) CW    3) MTI    4) FM-CW
149. Type A scope in RADAR systems displays  
 1) Target azimuth angle and range    2) Target range alone  
 3) Target azimuth angle alone    4) None of the above
150. At room temperature, the dynamic resistance of a Germanium diode can be calculated using the formula  
 1)  $\frac{0.026 \text{ mV}}{I}$     2)  $\frac{26 \text{ mV}}{I}$     4)  $26 I$     5)  $0.026 I$

**KEY :**

1-2	2-3	3-1	4-4	5-2	6-3	7-3	8-3	9-3	10-2
11-1	12-1	13-3	14-2	15-3	16-1	17-4	18-1	19-1	20-4
21-2	22-1	23-2	24-3	25-1	26-3	27-4	28-2	29-3	30-4
31-2	32-3	33-4	34-2	35-3	36-3	37-2	38-4	39-2	40-3
41-2	42-1	43-1	44-3	45-2	46-3	47-3	48-1	49-2	50-3
51-1	52-2	53-2	54-2	55-3	56-4	57-3	58-1	59-1	60-2
61-4	62-3	63-1	64-1	65-1	66-2	67-1	68-2	69-1	70-2
71-4	72-2	73-4	74-1	75-3	76-2	77-2	78-3	79-4	80-3
81-1	82-3	83-1	84-3	85-3	86-2	87-4	88-1	89-2	90-1
91-2	92-4	93-2	94-3	95-1	96-4	97-3	98-4	99-2	100-3
101-4	102-4	103-3	104-3	105-4	106-4	107-2	108-3	109-2	110-1
111- 4	112- 3	113- 2	114- 4	115- 1	116- 2	117- 4	118- 1	119- 2	120- 4
121-3	122- 3	123- 4	124- 2	125- 3	126- 2	127- 2	128- 3	129- 4	130- 2
131- 1	132- 2	133- 4	134- 2	135- 1	136 - 3	137- 3	138- 3	139- 1	140 - 3
141- 3	142- 1	143- 3	144- 4	145- 3	146- 1	147- *	148- *	149- 3	150- 2

