Paper Code No- **M 52**

Question Booklet No. 652501

ENTRANCE EXAMINATION-2017

M.Tech. (Electronics & Communication Engineering)

Set A

ROLL NO. | | | | | | | | | |

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Signature of Invigilator

Time: 2 Hours

Total Marks: 85

Instructions to Candidates

1. Do not write your name or put any other mark of identification anywhere in the OMR Answer Sheet. **IF ANY MARK OF IDENTIFICATIONS IS DISCOVERED ANYWHERE IN OMR ANSWER SHEET, the OMR sheet will be cancelled, and will not be evaluated.**
2. This Question Booklet contains this cover page and a total of **85 Multiple Choice Questions of 1mark.** Space for rough work has been provided at the beginning and end. Available space on each page may also be used for rough work.
3. Each correct answer carries one mark.
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CORRECT METHOD
(A) (●) (C) (D)

WRONG METHOD
(A) (✗) (C) (D) (A) (✓) (C) (D) (A) (●) (C) (D) (A) (●) (C) (D) ( ) (●) (C) (D) (A) (●) (C) (●)

SET A

1. Negative feedback in an amplifier
   (A) Reduces gain
   (B) Increases frequency and phase distortions
   (C) reduces bandwidth
   (D) Increases noise

2. An amplifier without feedback has a gain of 1000. What is the gain with a negative feedback of 0.009?
   (A) 900
   (B) 125
   (C) 100
   (D) 10

3. The unit of mobility is
   (A) $m^2V^{-1}s^{-1}$
   (B) $mV^{-1}s^{-1}$
   (C) Vsm^{-1}
   (D) Vms^{-1}

4. If the length of wire of resistance R is uniformly stretched to n times its original value , its new resistance is
   (A) nR
   (B) R/n
   (C) n^2R
   (D) R/n^2

5. A p-n junction diode's dynamic conductance is directly proportional to
   (A) the applied voltage
   (B) the temperature
   (C) it's current
   (D) the thermal voltage

6. Which junction has least junction capacitance?
   (A) Alloy
   (B) Grown
   (C) Diffused
   (D) Point contact

7. As the temperature is increased, the voltage across a diode carrying a constant current
   (A) increases
   (B) decreases
   (C) remains constant
   (D) may increase or decrease depending on doping level in the junction

8. A PIN diode is frequently used as a
   (A) peak clipper
   (B) voltage regulator
   (C) harmonic generator
   (D) switching diode for frequencies up to GHz range

9. An emitter in a bipolar junction transistor is doped much more heavily than the base as it increases the
   (A) emitter efficiency
   (B) base transport factor
   (C) forward current gain
   (D) all the three given above

10. In a junction transistor, recombination of electrons and holes occurs in
    (A) base region only
    (B) emitter region only
    (C) collector region only
    (D) all above three regions

11. In a junction transistor biased for operation at emitter current I_E and collector current I_C, the transconductance g_m is
    (A) KT / qI_E
    (B) qI_E / KT
    (C) I_C/I_E
    (D) I_E/I_C

12. In BJT, if α is changed from 0.9 to 0.99, what will be the % change in β?
    (A) 10%
    (B) 100%
    (C) 1000%
    (D) 9.9%

13. Ebers-model of a transistor represents two diodes
    (A) in series
    (B) in parallel
    (C) back to back
    (D) none of above

14. The early effect in BJT is caused by
    (A) fast turn-on
    (B) fast turn-off
    (C) large collector-base reverse bias
    (D) large emitter base forward bias

15. The dc current gain (β) of BJT is 50.Assuming that the emitter injection efficiency is 0.995,the base transport factor is
    (A) 0.980
    (B) 0.985
    (C) 0.990
    (D) 0.995

16. A FET is a better chopper than a BJT because it has
    (A) lower off-set voltage
    (B) higher series ON resistance
    (C) lower input current
    (D) higher input impedance

17. In a JFET, drain current is primarily controlled by
    (A) size of depletion region
    (B) channel resistance
    (C) gate reverse bias
    (D) voltage drop across channel

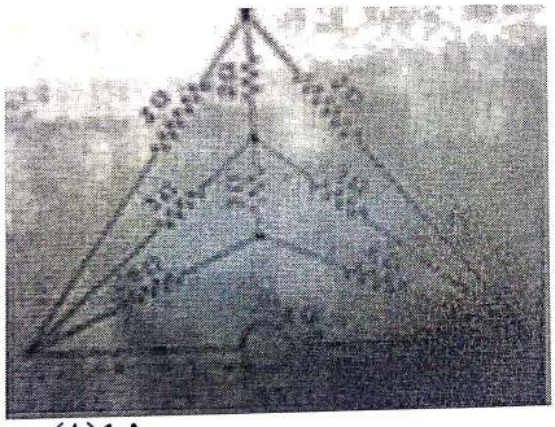
18. The drain-source voltage at which drain current becomes nearly constant, is called
    (A) barrier voltage
    (B) breakdown voltage
    (C) pick-off voltage
    (D) pinch-off voltage

19. MOSFET can be used as a
    (A) current controlled capacitor
    (B) voltage controlled capacitor
    (C) current controlled inductor
    (D) voltage controlled inductor

20. A gate to drain-connected enhancement mode MOSFET is an example of
    (A) an active load
    (B) a switching device
    (C) a three-terminal device
    (D) a diode

21. Twelve 1Ω resistance are used as edges to form a cube. The resistance between two diagonally opposite corners of the cube is
    (A) 5/6 Ω
    (B) 1 Ω
    (C) 6/5 Ω
    (D) 3/2 Ω

22. Consider the following circuit. What is the value of current I in the circuit shown?

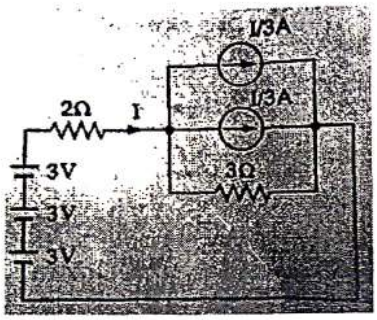


    (A) 1 A
    (B) 2 A
    (C) 3 A
    (D) 4 A

23. A constant current source supplies a current of 300 mA to a load of 1 kΩ. When the load is changed to 100 Ω, the load current will be
    (A) 3 A
    (B) 300 mA
    (C) 30 mA
    (D) 100 mA

24. A network has 7 nodes and 5 independent loops. The number of branches in the network is
(A) 13
(B) 12
(C) 11
(D) 10

25. In the circuit, the voltage across 3 Ω resistance is



(A) 1V
(B) 3V
(C) 6V
(D) 9V

26. Superposition theorem is not applicable for
(A) voltage calculations
(B) bilateral elements
(C) power calculations
(D) passive elements

27. While Thevenizing a circuit between two terminals, V_{TH} is equal to
(A) short-circuit terminal voltage
(B) open-circuit terminal voltage
(C) net voltage available in the circuit
(D) emf of the battery nearest to the terminals

28. When the power transferred to the load is maximum, the efficiency of power transfer is
(A) 25%
(B) 50%
(C) 75%
(D) 100%

29. Two coils have self-inductances of 0.09 H and 0.01 H and a mutual inductance of 0.015 H. The coefficient of coupling between the coils is
(A) 0.06
(B) 0.05
(C) 1.0
(D) 0.5

30. In a purely resistive circuit, the average power P_{av} is _____ the peak power Pmax.
(A) one-half of
(B) double
(C) equal to
(D) one-fourth

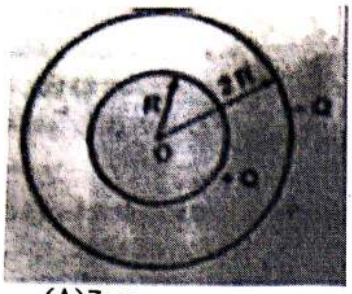
31. A high Q coil has
(A) large bandwidth
(B) high losses
(C) low losses
(D) flat response

32. A current impulse, 5 d(t) is forced through a capacitor C. The voltage, $V_C(t)$, across the capacitor is given by
(A) 5t
(B) 5u(t)-C
(C) 5t/c
(D) 5u(t)/C

33. A charge of 1C is placed near a grounded conducting plate at a distance of 1m.What is the force between them?
(A) $1/4\pi\epsilon_0$ N
(B) $1/8\pi\epsilon_0$ N
(C) $1/16\pi\epsilon_0$ N
(D) $4\pi\epsilon_0$ N

34. The electric field inside a perfectly conducting media is
(A) Infinite
(B) Zero
(C) dependent upon the value of the charge
(D) none of the above

35. Two concentric spherical shells carry equal and opposite uniformly distributed charges over their surfaces as shown in the figure. Electric field on the surface of the inner shell will be



(A) Zero
(B) $Q/4\pi\epsilon_0 R^2$
(C) $Q/8\pi\epsilon_0 R^2$
(D) $Q/16\pi\epsilon_0 R^2$

36. The ratio of charge stored by two metallic spheres raised to same potential is 6. The ratio of surface areas of the sphere is
(A) 36
(B) 1/6
(C) 6
(D) $1/\sqrt{6}$

37. In a cable capacitor, voltage gradient is maximum at the surface of the
(A) Sheath
(B) Earth
(C) Dielectric
(D) Conductor

38. An ideal voltage source will charge an ideal capacitor
(A) in infinite time
(B) exponentially
(C) instantaneously
(D) none of the above

39. The field at any point on the axis of a current carrying coil will be
(A) perpendicular to the axis
(B) parallel to the axis
(C) at an angle of 45° with the axis
(D) zero

40. The unit of flux density is
(A) Tesla
(B) A/mm^2
(C) N/m^2
(D) Wb/m

41. Which of the following is correct?
(A) $B = \mu_0 H + M$
(B) $B = \mu_0 M + H$
(C) $B = \mu_0 (H+M)$
(D) $B = M/\mu_0$

42. In a uniform plane wave, the value of $|E|/|H|$ is
(A) $\sqrt{(\mu/\epsilon)}$
(B) $\sqrt{(\epsilon/\mu)}$
(C) 1
(D) $\sqrt{(\mu\epsilon)}$

43. The depth of penetration of wave in a lossy dielectric increases with increasing
(A) Conductivity
(B) Permeability
(C) Wavelength
(D) Permittivity

44. If the unit step response of a network is $(1-e^{-at})$, then its unit impulse response is
(A) αe^{-at}
(B) $\alpha^{-1} e^{-at}$
(C) $(1-\alpha^{-1})e^{-at}$
(D) $(1-\alpha)e^{-at}$

45. The period of the signal $x(t)=10\sin 12\pi t + 4\cos 18\pi t$ is
(A) $\pi/4$
(B) 1/6
(C) 1/9
(D) 1/3

46. Fourier transform $\delta(t)$ is given as
(A) Zero
(B) 1
(C) $2\pi\delta(\omega)$
(D) $\pi\delta(\omega)$

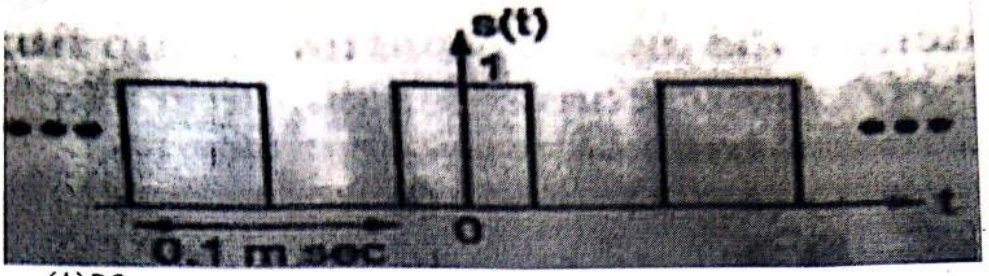
47. The 4-point DFT of a discrete time sequence {1;0,2,3} is
(A) [0,-2+2j,2,-2-2j]
(B) [2,2+2j,6,-2-2j]
(C) [6,1-3j,2,1+3j]
(D) [6,-1+3j,0,-1-3j]

48. A Hilbert transformer is a
(A) non-linear system
(B) non-causal system
(C) time-varying system
(D) low-pass system

49. Convolution of x(t+5) with impulse function $\delta(t-7)$ is equal to
(A) x(t-12)
(B) x(t+12)
(C) x(t+2)
(D) x(t-2)

50. Energy of a power signal is
(A) Finite
(B) Zero
(C) Infinite
(D) between 1 and 2

51. A rectangular pulse train s(t) as shown in the figure is convolved with the signal $\cos^2(4\pi \times 10^3 t)$. The convolved signal will be a



(A) DC
(B) 12 kHz sinusoid
(C) 8 kHz sinusoid
(D) 14 kHz sinusoid

52. 4-bit 2's complement representation of a decimal number is 1000. The number is
(A) +8
(B) 0
(C) -7
(D) -8

53. The octal equivalent of decimal 98 is
(A) 142
(B) 241
(C) 98
(D) 89

54. The hexadecimal representation of 657_8 is
(A) 1AFH
(B) D78H
(C) D71H
(D) 32FH

55. $(1111)_2$ in gray code represents
(A) 9
(B) 15
(C) 16
(D) 10

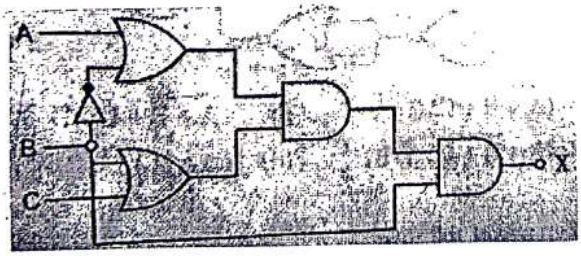
56. The range of signed decimal numbers that can be represented by 6-bit 1's complement number is
(A) -31 to 31
(B) -63 to 64
(C) -64 to 63
(D) -32 to 31

57. A positive logic OR gate is same as a negative logic
(A) NOR gate
(B) OR gate
(C) EX-OR gate
(D) AND gate

58. When one input of an EX-OR gate is connected to logic 1, it functions as
(A) NOT gate
(B) OR gate
(C) EX-OR gate
(D) NOR gate

59. In Boolean algebra, if F=(A+B)(A'+C) then
(A) F= AB+A'C
(B) F=AB+A'B'
(C) F=AC+A'B
(D) F=AA'+A'B

60. The output X of the logic circuit shown in the figure is



(A) A+BC
(B) AB
(C) BC
(D) AB+C

61. Minimal SOP form of $F=\sum m(1,2,3,4,6,8,9,10,11)$ is
(A) x'z'+w'
(B) x'+w'z'
(C) x'+z'+w'
(D) x'w'z

62. To add two m-bit numbers, the required number of half adders is
(A) 2m-1
(B) 2^m-1
(C) 2m+1
(D) 2m

63. The number of select lines needed in a 8 X 1 multiplexer is
(A) 8
(B) 3
(C) 2
(D) 1

64. The race-around condition occurs when
(A) J=0,K=0
(B) J=0,K=1
(C) J=1,K=0
(D) J=1,K=1

65. Which of the following counter results in least delay?
(A) Ring counter
(B) Ripple counter
(C) Synchronous counter
(D) Asynchronous counter

66. The number of comparators required in a 3-bit comparator type ADC is
(A) 2
(B) 3
(C) 7
(D) 8

67. In a 100% amplitude modulated signal, if the total transmitted power is P, then carrier power will be
(A) 2/3 P
(B) 1/2 P
(C) 1/3 P
(D) 1/4 P

68. A 10kW carrier is sinusoidally modulated by two carriers corresponding to a modulation index of 30% and 40% respectively. The total radiated power is
(A) 11.25kW
(B) 12.5 kW
(C) 15kW
(D) 17 kW

69. The ring modulator is generally used for
(A) generating SSB-SC signal
(B) generating ISI signal
(C) generating wideband
(D) generating DSB-SC signal

70. The rms value of the antenna current before modulation is 5 A and it increases to 5.8 A after amplitude modulation. The percentage of modulation index is
(A) 88%
(B) 80%
(C) 83.14%
(D) 81.21%

71. An FM wave uses a 2-5V, 500 Hz modulating frequency and has a modulation index of 50. The deviation is
(A) 500 Hz
(B) 1,000 Hz
(C) 1250 Hz
(D) 25,000 Hz

72. Diversity reception is used to
(A) increase receiver sensitivity
(B) improve receiver sensitivity
(C) fluctuation in signal strength at the receiver end
(D) change in phase only at receiver end

73. In phase modulation, phase deviation is proportional to
(A) carrier amplitude
(B) carrier phase
(C) message signal
(D) message signal frequencies

74. Which one of the following is not a part of typical TV receiver?
(A) Sweep signal generator
(B) Envelope detector
(C) Video amplifier
(D) Pre-emphasis circuit

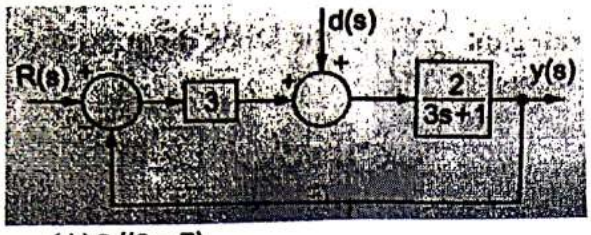
75. The image channel selectivity of superheterodyne receiver depends upon
(A) IF amplifiers only
(B) RF and IF amplifiers only
(C) preselector, RF and IF amplifiers
(D) preselector and RF amplifiers

76. What is the AFC voltage of the FM transmitter VCO?
(A) DC Voltage
(B) Sine wave voltage
(C) Square wave voltage
(D) Ramp voltage

77. In a SSB transmitter, one is most likely to find
(A) class C audio amplifier
(B) tuned modulator
(C) class B RF amplifier
(D) class A RF amplifier

78. The most noise immune system is
(A) SSB
(B) PCM
(C) PDM
(D) PWM

79. The transfer function d(s) to y(s) of the system shown is



(A) 2/(3s+7)
(B) 2/(3s+1)
(C) 6/(3s+7)
(D) 2/(3s+6)

80. For a unity feedback control with G(s) = 16/[s(s+4)], the damping ratio is
(A) 2.0
(B) 1.0
(C) 0.707
(D) 0.5

81. What is the value of k for a unity feedback system with G(s)= k/[s(1+s)] to have a peak overshoot of 50%?
(A) 0.53
(B) 5.3
(C) 0.6
(D) 0.047

82. The sensitivity of a voltmeter using 0 to 5 mA meter movement is
(A) 50 ohm/volt
(B) 100 ohm/volt
(C) 200 ohm/volt
(D) 500 ohm/volt

83. The errors introduced by an instrument fall in which category?
(A) Systematic errors
(B) Random errors
(C) Gross errors
(D) Environmental errors

84. Torque/weight ratio of an instrument indicates
(A) Selectivity
(B) Accuracy
(C) Fidelity
(D) Sensitivity

85. Identify the one which is not a fundamental unit in SI system.
(A) Ampere
(B) Kelvin
(C) Metre
(D) Joule

Paper Code No- M52

Question Booklet No. 652282

[SET-B]
ENTRANCE EXAMINATION-2018
M.TECH.
(Electronics & Communication Engineering)

ROLL NO. | | | | | | | | | |

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CORRECT METHOD
(A) (●) (C) (D)

1. Which one provides more secure communication?
   - A CDMA
   - B FDMA
   - C TDMA
   - D None of the mentioned

2. The capacity relationship is given by
   - A $C = W \log_2 (1+S/N)$
   - B $C = 2W \log_2 (1+S/N)$
   - C $C = W \log_2 (1-S/N)$
   - D $C = W \log_{10} (1+S/N)$

3. For an error free channel, conditional probability should be
   - A Zero
   - B One
   - C Equal to joint probability
   - D Equal to individual probability

4. Calculate power in each sideband, if power of carrier wave is 176W and there is 60% modulation in amplitude modulated signal?
   - A 13.36W
   - B 52W
   - C 67W
   - D 15.84W

5. Noise performance of a square law demodulator of AM signal is?
   - A Better than that of synchronous detector
   - B Weaker than that of synchronous detector
   - C Better than that of envelope detector
   - D Weaker than that of envelope detector

6. An AM signal is represented by $x(t) = [30 + 2\text{Sin}(700\pi t)]\ \text{Cos}(2\pi t \times 10^2 t)V$. The modulation index is
   - A 0.7
   - B 0.066
   - C 0.341
   - D 0.916

7. For attenuation of high frequencies we can use _____
   - A inductance
   - B shunt capacitance
   - C series capacitance
   - D combination on inductor and resistor

8. Which of the following devices is used to generate AM waves?
   - A Square-law modulator
   - B Amplifier
   - C Transmitter
   - D Transducer

9. What can we do to eliminate distortion in the picture?
   - A use a longer transmission line
   - B change the antenna orientation
   - C twist the transmission line
   - D connect a booster

10. What do you understand by the term "carrier"?
   - A voltage with constant frequency, phase and amplitude
   - B voltage for which frequency, amplitude or phase is varied
   - C resultant wave
   - D voltage to be transmitted

11. A voltage amplifier has a voltage gain of 100.What will be gain at 3dB cut-off frequencies
   - A 70.7
   - B 80.7
   - C 45.7
   - D 50

12. -6dB is equivalent to _____ power gain
   - A 0.5
   - B 0.25
   - C 0.75
   - D 0.8

13. The unwanted characteristics of amplifier output apart from desired output is collectively termed as
   - A Inefficiency
   - B damage
   - C Fault
   - D Distortion

14. Unit of power rating of a transistor is expressed in
   - A Watts
   - B KWh
   - C W/s
   - D Wh

15. Which of the following amplifier class have highest linearity and lowest distortion?
   - A Class A
   - B Class B.
   - C Class C
   - D Class B push-pull

16. Flat tops in the output signal is due to
   - A Frequency distortion
   - B Amplitude distortion
   - C Phase distortion
   - D Harmonic distortion

17. Harmonic distortion is caused by nonlinearities of

A Voltage divider circuit
B Resistive elements only
C Passive elements
D Active elements

18. THD+N is a scale used to expressing _____ of an audio amplifier

A Gain
B Sound quality
C Amplification factor
D Distortion

19. What is the major principle behind heat sink action?

A Avogadro's law
B Fourier's law
C Archimedes principle
D Faraday's law

20. For accomplishing negative resistance in oscillator we use

A Voltage divider circuit
B Negative feedback
C Positive feedback
D Current divider circuit

21. At $\theta=\pi/2$, positive portion is _____ negative portion in power cycle.

A greater than
B less than
C equal to
D greater than or equal to

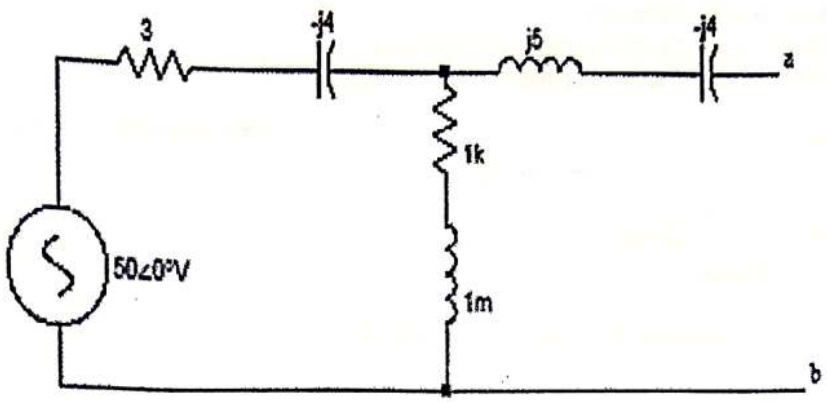
22. If the poles or zeros are not repeated, then the function is said to be having _____ poles or _____ zeros.

A simple, multiple
B multiple, simple
C simple, simple
D multiple, multiple

23. If the number of poles (m) are greater than the number of zeros (n), then there will be _____ number of zeros at $s = \infty$.

A m+n
B m-n
C m
D n

24. In the circuit shown below, find the thevenin's voltage across 'ab' terminals.



A $48.5\angle 40.35^0$
B $48.5\angle -40.35^0$
C $49.5\angle -40.35^0$
D $49.5\angle 40.35^0$

25. For the Reciprocity Theorem to satisfy the ratio of response to excitation before and after the source is replaced should be?
A different
B same
C before source is replaced is greater than after the source is replaced
D before source is replaced is less than after the source is replaced

26. If 1 Ampere current flows in a circuit, the number of electrons flowing through the circuit is
A 0.625×10^{19}
B 1.6×10^{19}
C 1.6×10^{-19}
D 0.625×10^{-19}

27. If V1 is the voltage at port 1 and V2 is the voltage at port 2, then the attenuation in dB is?
A 20 log10 (V1/V2)
B 10 log10 (V1/V2)
C 20 log10 (V2/V1)
D 10 log10 (V2/V1)

28. The voltage after which the diode current exponentially increases with forward bias is NOT known as
A Offset voltage
B Threshold potential
C Firing potential
D Peak forward voltage

29. Emission coefficient of Germanium is
A 1
B 1.1
C 1.5
D 2

30. What happens to cut-in voltage when temperature increases?
    A Cut-in voltage increases
    B Cut-in voltage decreases
    C Cut-in voltage either increases or decreases
    D Cut-in voltage doesn't depend on temperature

31. PDM is generated by _____
    A combination of two series amplifiers
    B Monostable multivibrator
    C Astable multivibrator
    D Schmitt trigger

32. Diameter of antenna is doubled. The maximum range will _____
    A be doubled
    B be halved
    C become four times
    D decrease to one fourth

33. Find VSWR of a line having maximum and minimum value equals to 120mV and 40mV respectively?
    A 3
    B 2
    C 1
    D 4

34. TDR stands for _____
    A Total Distance of Reflection
    B Time Domain Response
    C Time Domain Reflectometer
    D Time Delay Ratio

35. For providing two or more voice circuits on the same carrier, we can use _____
    A SSB
    B ISB systems
    C DSB-SC
    D SSB with pilot carrier

36. Example of spherical system in the following is
    A Charge in space
    B Charge in box
    C Charge in dielectric
    D Uncharged system

37. Given B= (10/r)i+(rcos θ) j+k in spherical coordinates. Find Cartesian points at (-3,4,0)
    A -2i + j
    B 2i + k
    C i + 2j
    D –i – 2k

38. For a dielectric, the condition to be satisfied is
    A $\sigma/\omega\varepsilon > 1$
    B $\sigma/\omega\varepsilon < 1$
    C $\sigma = \omega\varepsilon$
    D $\omega\varepsilon = 1$

39. Calculate the phase constant of a wave with frequency 12 rad/s and velocity 3×10^8 m/s (in 10^{-8} order)
    A 0.5
    B 72
    C 4
    D 36

40. The permittivity is also called
    A Electrostatic energy
    B Dielectric constant
    C Dipole moment
    D Susceptibility

41. The circuit in which current has a complete path to flow is called _____ circuit.
    A short
    B open
    C closed
    D open loop

42. The energy stored in the inductor is?
    A $Li^2/4$
    B $Li^2/2$
    C Li^2
    D $Li^2/8$

43. Pick the incorrect statement among the following
    A Inductor is a passive element
    B Current source is an active element
    C Resistor is a passive element
    D Voltage source is a passive element

44. For a voltage source to be neglected, the terminals across the source should be
    A replaced by inductor
    B short circuited
    C replaced by some resistance
    D open circuited

45. With some initial charge at t = 0+, a capacitor will act as
    A open circuit
    B short circuit
    C a current source
    D a voltage source

46. A constant current source supplies an electric current of 200 mA to a load of 2kΩ. When the load changed to 100Ω, the load current will be

A 9mA
B 4A
C 700mA
D 12A

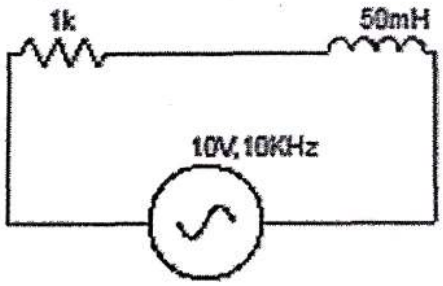
47. The number of branches incident at the node of a graph is called?

A degree of the node
B order of the node
C status of the node
D number of the node

48. Number of twigs in a tree are… (n is the number of nodes)

A n
B n+1
C n-1
D n-2

49. The circuit shown below consists of a 1kΩ resistor connected in series with a 50mH coil, a 10V rms, 10 KHz signal is applied. Find impedance Z in rectangular form.



A (1000+j0.05) Ω
B (100+j0.5) Ω
C (1000+j3140) Ω
D (100+j3140) Ω

50. The time varying part in the equation of instantaneous power has frequency _____ that of the frequency of voltage or current wave forms.

A equal to
B twice
C thrice
D four times

51. Which of the following is not known as transition capacitance?

A Junction capacitance
B Space-Charge capacitance
C Diffusion capacitance
D Barrier capacitance

52. For a diode the transition capacitance was 10pF. The depletion width changed from 1 μm to 10 μm. All other conditions remain unchanged. The new diode capacitance is
A 5pF
B 1.414pF
C 1pF
D 10Pf

53. Using the ideal diode model of a silicon diode and taking E=10 V and R=1k, what is the value of diode voltage at operating point?
A 0.7 V
B 0 V
C 10 V
D None of the mentioned

54. DC average current of a half wave rectifier output is
(Where I_m is the maximum peak current of input)
A $2I_m/\pi$
B I_m / π
C $I_m /2 \pi$
D $1.414 I_m / \pi$

55. In a half wave rectifier, the input sine wave is 250sin100πt. The output ripple frequency of rectifier will be
A 100Hz
B 200Hz
C 50Hz
D 25Hz

56. Transformer utilization factor of a center tapped full wave rectifier is equal to
A 0.623
B 0.678
C 0.693
D 0.625

57. The state amplifier which has zero input is not called
A Zero signal condition
B Non-signal condition
C Quiescent condition
D Empty-signal condition

58. What is the role of input capacitance in the transistor amplifying circuit?
A To prevent input variation from reaching output
B To prevent DC content in the input from reaching transistor
C There isn't any role for input capacitance
D To increase input impedance

59. What is the role of emitter resistance in the transistor amplifying circuit?
A To prevent thermal runaway
B To prevent increase in gain
C To lower the output impedance
D To increase gain

60. Which of the following is a best biasing method for transistor bias?
- A emitter bias
- B voltage divider bias
- C fixed bias
- D collector feedback bias

61. Compared to ceramic oscillator crystal oscillators are
- A Less reliable
- B Less costly
- C More accurate
- D They are same

62. How many different combinations can be made from a n bit value?
- A $2^{(n+1)}$
- B $2^{(n)}$
- C 2^n+1
- D None of the mentioned

63. Source coding block is used for?
- A Compressing
- B Digitizing
- C A/D conversion
- D All of the mentioned

64. Discrete impulse signal is a power or energy signal?
- A Power signal
- B Energy signal
- C Both power and energy signal
- D Neither power or energy signal

65. Spectogram is the graph plotted against?
- A Frequency domain
- B Time domain
- C Both of the mentioned
- D None of the mentioned

66. Nyquist frequency is given by
- A fs
- B 2fs
- C fs/2
- D none of the mentioned

67. Oversampling can completely eliminate
- A Aperture error
- B Non linearity
- C Quantization error
- D All of the mentioned

68. In a delta modulation system, granular noise occurs when the
- A Modulating signal increases rapidly
- B Pulse rate decreases
- C Pulse amplitude decreases
- D Modulating signal remains constant

69. Modulation process includes
- A Analog to digital conversion
- B Digital to analog conversion
- C Both of the mentioned
- D None of the mentioned

70. For which quantization process is used?
- A Amplitude discretization
- B Time discretization
- C Amplitude & Time discretization
- D None of the mentioned

71. Find the susceptibility of a material whose dielectric constant is 2.26.
- A 1.26
- B 3.26
- C 5.1
- D 1

72. Comment on the causality of the discrete time system: $y[n] = x[n+3]$.
- A Causal
- B Non Causal
- C Anti Causal
- D None of the mentioned

73. The convolution of a discrete time system with a delta function gives
- A the square of the system
- B the system itself
- C the derivative of the system
- D the integral of the system

74. If the full-scale deflection current of a multimeter is 50 μA, its sensitivity is
- A 10 kΩ/V
- B 100 kΩ/V
- C 50 kΩ/V
- D 20 kΩ/V

75. The material used to coat inside the face of CRT is
- A Carbon
- B Sulphur
- C Silicon
- D Phosphorous

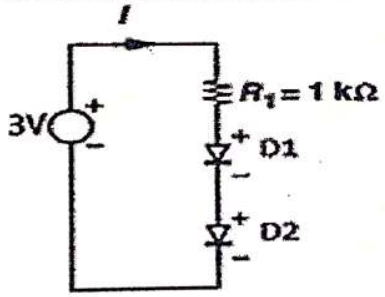
76. When temperature increases reverse saturation current
   A Increases
   B Decreases
   C Doesn't depend on temperature
   D Either increases or decreases

77. Voltage rating of a zener diode denotes
   A Reverse breakdown voltage
   B Forward breakdown voltage
   C Voltage at which current is maximum
   D maximum forward voltage which a diode can withstand

78. Which of the following statement about a Si diode is true?
   A Cut-in voltage is always higher than reverse breakdown voltage
   B Reverse saturation current is in the order of mA
   C Cut-in voltage is 1V
   D Reverse scale current is in the order of Na

79. Calculate the forward bias current of a Si diode when forward bias voltage of 0.4V is applied, using characteristic equation of diode. The reverse saturation current is 1.17×10^{-9} A. Thermal voltage is 25.2 mV.
   A 9.156mA
   B 8.23mA
   C 1.256mA
   D 5.689Ma

80. Find current I through the circuit using characteristic equation of diode. The terminal voltage of each diode is 0.6V. Reverse saturation current is 10-12A.



   A 0.845mA
   B 1.892mA
   C 2.359mA
   D 3.012Ma

81. The reverse saturation current of a diode at 25°C is 1.5×10^{-9}A and what will be reverse current at temperature 30°C?
   A 3×10^{-9}A
   B 2×10^{-9}A
   C 2.12×10^{-9}A
   D 1.5×10^{-9}A

82. Let the V_{in} be -5V and resistance R1 is 5K and the cut-in voltage of the diode is 0.7V. What will be the voltage V_{out}? (Take reverse saturation current as 10^{-8}A and operating temperature as 25°C).
   A. 0V
   B. -4.5V
   C. -5V
   D. -3.2V

83. The reciprocal of slope of current-voltage curve at Q-point gives
   A AC resistance
   B Nominal resistance
   C Maximum dynamic resistance
   D Minimum impedance

84. Voltage drop produced by a diode at forward bias in ideal diode model is equal to
   A 0.7V
   B 0.3V
   C 1V
   D 0V

85. Voltage drop produced by a diode in piecewise linear mode is
   A Constant and equal to knee voltage
   B Varying linearly with voltage
   C Varies exponentially with voltage
   D Constant and equal to twice of knee voltage