## Comprehension Question

1.Electron-hole pairs are produced by
(a) Recombination
(b) Thermal energy
(c) Ionization
(d) Doping
**Ans: (b)**

2. The area within a semiconductor diode where no mobile current carriers exist when it is formed is called ..... region.
(a) Depletion
(b) Saturation
(c) Potential barrier
(d) Space charge.
**Ans: (a)**

3.Electronic components which are made of a semiconductor material are often called ..... devices.
(a) Solid-state
(b) Silicon
(c) Germanium
(d) Intrinsic.
**Ans: (a)**

4.The process of adding impurities to a pure semiconductor is called
(a) Mixing
(b) Doping
(c) Diffusing
(d) Refining.
**Ans: (b)**

5. Semiconductor materials have ..... bonds.
(a) Ionic
(b) Covalent
(c) Mutual
(d) Metallic.
**Ans: (b)**

6. In a transistor push pull amplifier
(a) There is no dc present at the output
(b) There is no distortion in the output
(c) There are no even harmonics in the output
(d) There are no odd harmonics in the output
Ans: c

7. In an intrinsic semiconductor, the number of free electrons ……
(a)Equals the number of holes
(b)Is greater than the number of holes
(c)Is less than the number of holes
(d)None of these
**Ans: (a)**

8.The impurity level in an extrinsic semiconductor is about ….. of pure semiconductor.
(a)10 atoms for 108 atoms
(b)1 atom for 108 atoms
(c)1 atom for 104 atoms
(d)1 atom for 100 atoms

**Ans: (b)**

9. In a semiconductor, current conduction is due to ……..

(a)Only holes
(b)Only free electrons
(c)Holes and free electrons
(d)None of these
**Ans: (c)**

10.Find the mobility of the electrons when the drift velocity is 23 units and the electric field is 11 units. a)1.1
b)2.2
c)3.2
d)0.9

Explanation: The mobility is defined as the drift velocity per unit electric field. Thus μe = vd/E = 23/11 = 2.1 units.
**Ans: (b)**

11. What type of material is obtained when an intrinsic semiconductor is doped with trivalent impurity?
a)Extrinsic-semiconductor
b)Insulator
c)N-type-semiconductor
d)P-type-semiconductor

Explanation: P-type semiconductor is obtained by doping an intrinsic semiconductor with trivalent impurity.

**Ans: (d)**

12.Fermi energy level for intrinsic semiconductors lies
(a) At middle of the band gap
(b) Close to conduction band
(c) Close to valence band
(d) None of these
**Ans: (a)**

13. Fermi energy level for *p*-type extrinsic semiconductors lies
(a) At middle of the band gap
(b) Close to conduction band
(c) Close to valence band
(d) None of these
**Ans: (c)**

14. Fermi energy level for *n*-type extrinsic semiconductors lies
(a) At middle of the band gap
(b) Close to conduction band
(c) Close to valence band

(d) None of these

**Ans: (b)**

15.Impurities like boron, aluminum, gallium or indium are added to intrinsic semiconductor to form
a. N-type doped semiconductor
b. P-type doped semiconductor
c. A junction diode
d. All of these

**Ans: (a)**

16 Calculate the electric field when the conductivity is 20 units, electron density is 2.4 units and the velocity is 10m/s. Assume the conduction and convection current densities are same. a)2.4
b)4.8
c)3.6
d)1.2
Explanation: The conduction current density is given by J = σE and the convection current density is J = ρe v. When both are equal, ρe v = σE. To get E, put σ = 20, ρe = 2.4 and v = 10, E = 2.4 x 10/20 = 1.2 units.

**Ans: (d)**

17. continuity equation is…….

$$) - \frac{\rho}{t} = \mu\rho\nabla V + D\nabla\rho$$

$$) \frac{\rho}{t} = -(\mu\rho\nabla V + D\nabla\rho$$

$$) \frac{\rho}{t} = -\mu\rho\nabla V + D\nabla\rho$$

$$) \frac{\rho}{t} = \mu\rho\nabla V - D\nabla\rho$$

**Ans:a**

18.Possion equation is……

$$) - \nabla^2 V = \frac{\rho}{\in}$$

$$) \nabla^2 V = -\frac{\rho}{\in}$$

$$) \nabla^2 + V = -\frac{\rho}{\in}$$

$$) \nabla^2 + V = \frac{\rho}{\in}$$

**Ans:a**

19. Compute the conductivity when the current density is 12 units and the electric field is 20 units. Also identify the nature of the material.

a)1.67,dielectric

b)1.67,conductor

c)0.6,dielectric

d)0.6,conductor

**Ans:c**
Explanation: The current density is the product of conductivity and electric field intensity. J = σE.

20. Resistance to current flow along length L is
a) R=ρL/A
b)R=L/ρA
c)R=L/A

d) None of these

**Ans: (a)**

21) Drift current for semiconductor device is

**Ans: A**

J=qρμE

J=-qρμE$\mu$

J=-qμE

J=μρE

Answer: a

22) Diffusion Current for P type Semi conductor device is

J=-eDp (dp/dx)

J=-Dp (dp/dx)
J=-p (dp/dx)
J=(dp/dx)

**Ans: A**

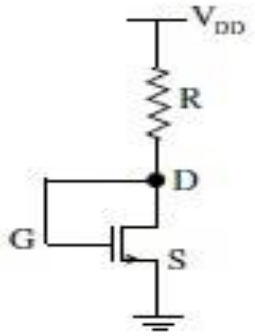
23) Energy band gap size for insulators is in the range _____ eV.
(a)1-2 (b) 2-3 (c) 3-4 (d) > 4

24) Most commonly used semiconductor material is
a) Silicon
b) Germanium
c) Mixture of silicon and germanium
d) None of these.
**Ans: (a)**

25) Which is a donor atom?
a) Trivalent Atom
b) Aluminium
c) Boron
d) Pentavalent Atom

**Ans: d**

26. For an n-channel MOS shown in Fig., the threshold voltage Vth is 0.8V. Neglect channel length modulation effects. When the drain voltage VD = 1.6V, the drain current ID was found to be 0.5 mA. If VD is adjusted to 2V, by changing R and VDD, the new value of ID in mA is -----




a) 1.125 mA

b) 1.25 mA

c) 1 mA

d) 0 mA

**Ans: (a)**

27. In MOSFET operating in saturation region, the channel length modulation effect causes

a) An increase in gate source capacitance

b) A decrease in Transconductance

c) A decrease in unity gain bandwidth product

d) A decrease in output resistance

**Ans: (d)**

28. For an N channel MOSFET, if the source is connected at a higher potential than that of the bulk (i.e. VSB > 0 volts), the threshold voltage VT of the MOSFET will

a) Remain unchanged

b) Decrease

c) Change polarity

d) Increase

**Ans: (d)**

29. The level of doping of source and drain in MOSFET is

a) Lightly doped

b) Moderately doped

c) Heavily doped

d) No doping (instrinsic)

**Ans: (c)**

30. With source and body grounded, if both the gate and drain of the MOSFET is connected to VDD, then the MOSFET's region of operation is

a) Cut-off

b) Linear

c) Saturation

d) Does not work

**Ans: (c)**

31. In p-channel enhancement MOSFET, the threshold voltage is

a) Negative

b) Positive

c) Zero

d) undefined

**Ans: (a)**

32. On the application of positive gate voltage in PMOS, _____ is accumulated in the Si/SiO2 interface.

a) Acceptor ions

b) Electrons

c) Donor ions

d) Holes

**Ans: (b)**

33. The drain current in MOSFET depends on

a) Carrier Mobility

b) Distance between source and drain

c) Dielectric constant of the gate insulator

d) All of these

**Ans: (d)**

34. In saturation region, if the drain voltage is increased, the drain current of the MOSFET

a) Increases

b) Decreases

c) Remain constant

d) None of these

**Ans: (c)**

35. The threshold voltage of the MOSFET does not depend on

a) Gate conductor material

b) Gate insulation material

c) Channel doping

d) Source and Drain doping

**Ans: (d)**

36. Calculate the flatband voltage of a silicon nMOS and pMOS capacitor with a substrate doping $N_a = 10^{17}$ $cm^{-3}$ and an aluminum gate ( $\Phi_M = 4.1$ V). Assume there is no fixed charge in the oxide or at the oxide-silicon interface

a) -0.93 V & -0.09 V

b) -0.55 V & 0.14 V

c) -0.98 V & -0.14 V

d) -1.5 V & -0.98 V

**Ans: (a)**

37. For a MOS capacitor fabricated on a P-type semiconductor, strong inversion occurs when

a) Surface potential is equal to Fermi level

b) Surface potential is zero

c) Surface potential is negative and equal to Fermi potential in magnitude

d) Surface potential is positive and equal to twice the Fermi potential

**Ans: (d)**

38. Consider the following statements S1 and S2.

S1: the threshold voltage ($V_T$) of a MOS capacitor decreases with increase in gate oxide thickness

S2: the threshold voltage ($V_T$) of a MOS capacitor decreases with increase in substrate doping concentration

Which of the following is correct?

a) S1 is FALSE and S2 is TRUE

b) Both S1 and S2 are TRUE

c) S1 is TRUE AND S2 is FALSE

d) Both S1 and S2 are FALSE

**Ans: (d)**

39. At room temperature MOS capacitor with $N_a = 10^{18}$ $cm^{-3}$ and an oxide thickness of 2 nm with $K_O = 3.9$ . What is $\phi_F = ( E_i - E_F)/q$

a) 0.383

b) 0.479

c) 0.521

d) 0.347

**Ans: (b)**

40. At room temperature MOS capacitor with $N_a = 10^{18}$ $cm^{-3}$ and an oxide thickness of 2 nm with $K_O = 3.9$ . What is the depletion layer thickness, W, when $\phi_S = 2\phi_F$

a) 40.23 nm

b) 35.4 nm

c) 21.5 nm

d) 42.54 nm

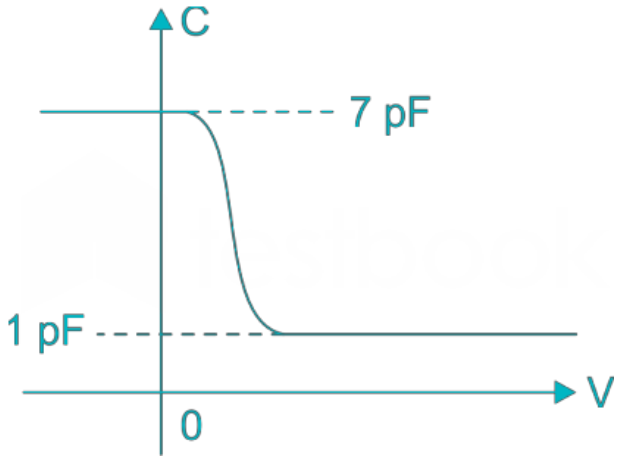
**Ans: (b)**

41 In an n – channel JFET, $V_{GS}$ is held constant. VDS is less than the breakdown voltage. As $V_{DS}$ is increased

(a) Conducting cross – sectional area of the channel 'S' and the channel current density 'J' both increase
(b) 'S' decrease and 'J' decreases
(c) 'S' decrease and 'J' increases
(d) 'S' increases and 'J' decreases

Ans: c

42. The figure shows the high-frequency capacitance–voltage (C-V) characteristics of a Metal/$SiO_2$/silicon (MOS) capacitor having an area of $1\times10^{-4}$ $cm^2$. Assume that the permittivity ($\varepsilon_0\varepsilon_r$) of silicon and $SiO_2$ are $1\times10^{-12}$ F/cm and $3.5\times10^{-13}$ F/cm respectively. The gate oxide thickness in the MOS capacitor is ---.




a) 50 nm

b) 143 nm

c) 350 nm

d) 1um

**Ans: (a)**

43. In a CMOS inverter, when Vin = 0, the source to gate voltage($V_{sg}$) of a PMOS transistor is

a) $V_{DD}/2$

b) $V_{DD}$ c)

$2V_{DD}$ d)

$V_{DD}/4$

**Ans: (b)**

44. In the region where inverter exhibits gain, the two transistors are in _____ region.
a) linear
b) cut-off
c) non-saturation
d) saturatiom

**Ans: (d)**

45. In CMOS inverter, increasing the fan-out, _____ the propogation delay
a) increases
b) decreases
c) does not affect
d) exponentially decreases

**Ans: (a)**

46. The CMOS inverter acts as amplifier when

a) both the transistors are in linear region

b) both the transistors are in saturation region

c) NMOS transistor is in cutoff and PMOS transistor is in linear region

d) NMOS transistor is in saturation and PMOS transistor is in cutoff region

**Ans: (b)**

47. In CMOS inverter, transistor is a switch having
a) infinite on resistance
b) finite off resistance
c) infinite off resistance
d) buffer

**Ans: (c)**

48. Threshold voltages of PMOS and NMOS in CMOS inverter are
a) equal in magnitude
b) opposite in magnitude
c) infinite in magnitude
d) zero
**Ans: (a)**

49. In CMOS logic circuit the p-MOS transistor acts as:
a) Pull down network
b) Pull up network
c) Load
d) Short to ground

**Answer: (B)**

50. In a CMOS inverter, Mn(NMOS) is in cutoff region and Mp(PMOS) is in Triode region when _____.

a) Vin < Vtn

b) Vin < Vtp

c) Vin > Vtn

d) Vtn = Vtp

**Ans: (a)**

51. Doubling the voltage gain causes a _____ dB _____.

a) 10, increase

b) 6, increase

c) 10, decrease

d) 6, decrease

**Ans: (b)**

52. _____ frequencies are values of frequency at which the RC circuits reduce the voltage gain to 70.7% of its midrange value.

a) Critical

b) Cutoff

c) Corner

d) All of these

**Ans: (d)**

53. A roll-off of 20 dB per decade is equivalent to a roll-off of _____ per octave.

a) 3dB

b) 13dB

c) 12dB

d) 6dB

**Ans: (d)**

54. An amplifier has an Rin = 1.2 kΩ. The coupling capacitor is 1 μF. Determine the approximate lower cutoff frequency.

a) 133Hz

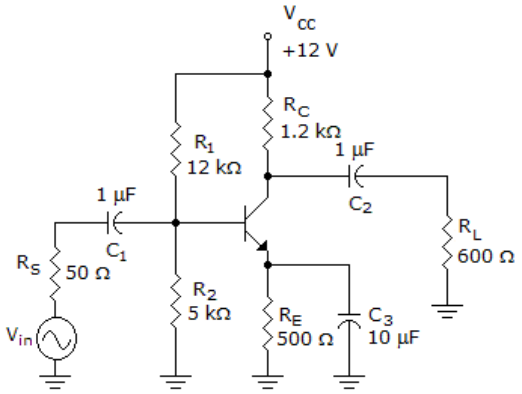
b) 1.33kHz

c) 13.3kHz

d) 133kHz

**Ans: (a)**

55. Refer to this figure. The output voltage at fcl = 12 mV. What is the output voltage at the midpoint frequency?




a) 12 mV

b) 12mVp-P

c) 16.97mV

d) 8.48mV

**Ans : (c)**

56. Internal transistor junction capacitances affect the high-frequency response of amplifiers by

a) reducing the amplifier's gain

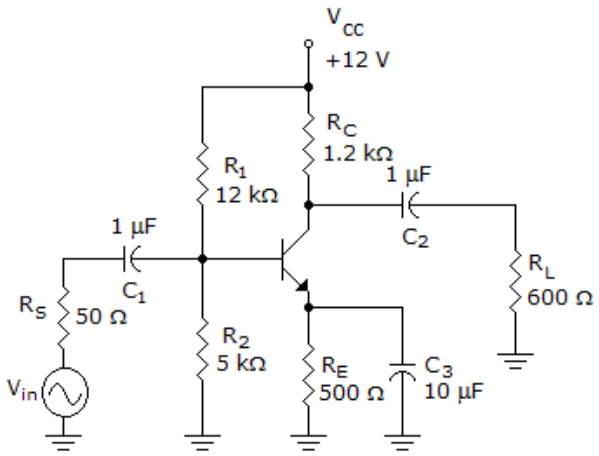
b) Introducing phase shift as the signal frequency increases.

c) having no effect

d) Reducing the amplifier's gain and introducing phase shift as the signal frequency increases.

**Ans : (d)**

57. Refer to this figure. The capacitor $C_3$ affects




a) high-frequency response.
b) low-frequency response.
c) midrange response.
d) nothing.

**Ans: (b)**

58. An amplifier has an output voltage of 7.6 V p-p at the midpoint of the frequency range. What is the output at fc?

a) 3.8Vp-p

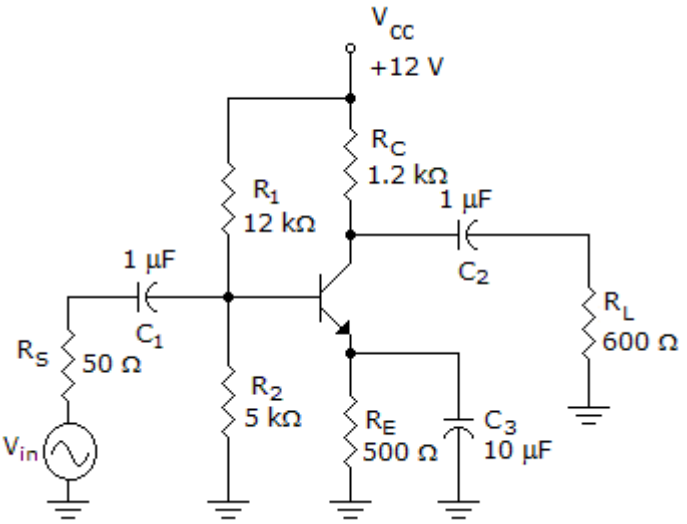
b) 3.8Vrms

c) 5.4Vrms

d) 5.4Vp-P

**Ans: (d)**

59. Refer to this figure. The upper cutoff frequency of this amplifier is 22 kHz. The output at that frequency is 6.71 V p-p. What is the output voltage at 220 kHz?




a) 9.49 V p-p

b) 6.71Vp-p

c) 0.671Vp-p

d) 0.0671Vp-p

Ans: (c)

60. In a LC filter, the ripple factor,

(a) Increases with the load current
(b) increases with the load resistance
(c) remains constant with the load current
(d) has the lowest value

Ans: c

61. An RC network has values of R = 1.2 kΩ and C = 0.22 µF. Find fc

a) 3.79 kHz

b) 1.89 kHz

c) 603Hz

d) 60Hz

**Ans : (c)**

62. Channel length modulation is taken into consideration in the small signal model by:

a) Placing a resistor between gate and source

b) Placing a capacitor between gate and drain

c) Placing a resistor between source and drain

d) None of these.

**Ans: (c)**

63. Output resistance of a MOSFET is:

a) Directly proportional to VGS

b) Independent of VGS

c) Inversely proportional to VGS

d) None of these.

**Ans: (c)**

64. For low frequency operations, input impedance at the gate of the MOSFET can be approximated to be:

a) Zero

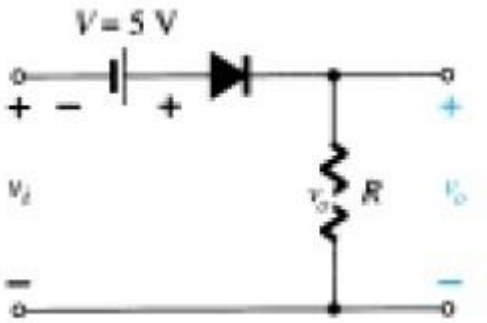
b) Of the order of ohms

c) Directly proportional to frequency

d) infinity.

**Ans: (d)**

65. For a sinusoidal input of 20 Vpeak to the given circuit, what is the peak value of the output waveform?




a) 20 V

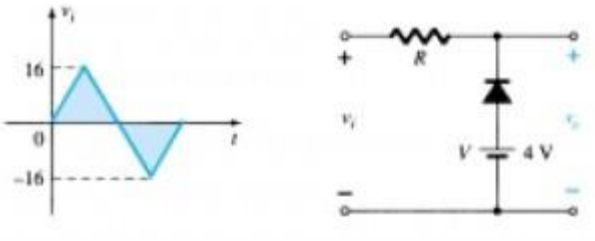
b) 25 V

c) 0 V

d) -25 V

**Ans: (d)**

66. For the given input waveform to the given circuit, what is the minimum value of the output waveform?




a) 0 V

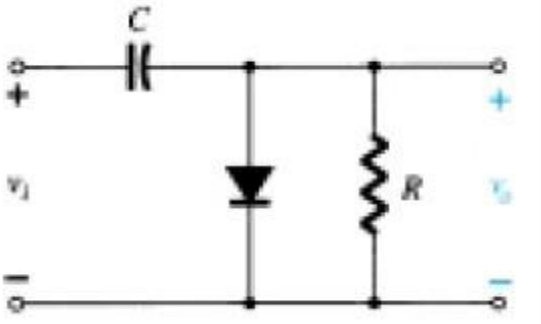
b) 16 V

c) 12 V

d) None of these

**Ans: (a)**

67. For the given circuit, what is the minimum peak value of the output waveform if the input waveform is 10V square wave with switching time of 1 second?
Assume that the input switches between +10V and -10V DC levels.




a) 0 V b)

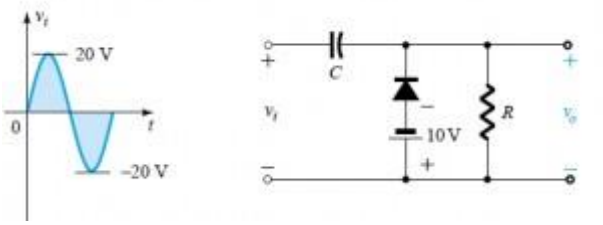
-5 V c) -

20 V d)

-10 V

**Ans: (c)**

68. For the given circuit and input waveform, the peak value of the output is +30V.




a) True

b) False

**Ans: (a)**

69. In a positive clipper, the diode conducts when

a) Vin < Vref
b) Vin = Vref
c) Vin > Vref
d) None of these

**Ans: (b)**

70. A circuit with a predetermined dc level is added to the output voltage of the op-amp is called

a) Clamper

b) Positive clipper

c) Halfwave rectifier

d) None of these

**Ans: (a)**

71. In a center tap full wave rectifier, if Vm is the peak voltage between center tap and one end of the secondary, the maximum voltage coming across the reverse bias diode is

a) Vm

b) 2 Vm

c) Vm/2

d) Vm/√2

**Ans: (a)**

72. To get a peak load voltage of 40V out of a bridge rectifier. What is the approximate rms value of secondary voltage?

a) 0 V

b) 14.4 V

c) 28.3 V

d) 56.6 V

**Ans: (c)**

73. If the line frequency is 50 Hz, the output frequency of bridge rectifier is

a) 25 Hz

b) 50 Hz

c) 100 Hz

d) 200 Hz

**Ans: (c)**

74. The voltage across the Zener resistance is usually

a) Small

b) Large

c) Measured in volts

d) Subtracted from the breakdown voltage

**Ans: (a)**

75. When the source voltage increases in a Zener regulator, which of these currents remain approximately constant?

a) Series current

b) Zener current

c) Load current

d) None of these

**Ans: (c)**

76. At room temperature what will be voltage equivalent of temperature.

a) 10 mV

b) 4.576 mV

c) 26 mV

d) 98 V

**Ans: (c)**

77. Zener diodes are also known as

a) Voltage regulators

b) Forward bias diode

c) Breakdown diode

d) None of these

**Ans: (c)**

78. The thermal runway is avoided in a collector to base bias because_____

a) of its independence on β

b) of the positive feedback produced by the base resistor

c) of the negative feedback produced by the base resistor

d) of its dependence on β

**Ans: (c)**

79. When the power dissipation increases in a transistor, the thermal resistance_____

a) increases

b) cannot be predicted

c) decreases

d) remains same

**Ans: (c)**

80. The absence of _____ in LEDs limits the internal quantum efficiency.

a) Proper semiconductor

b) Adequate power supply

c) Optical amplification through stimulated emission

d) Optical amplification through spontaneous emission

**Ans: (c)**

81. The excess density of electrons Δn and holes Δp in an LED is

a) Equal

b) Δp more than Δn

c) Δn more than Δp

d) Does not affects the LED

**Ans: (a)**

82. The phenomenon leading to avalanche breakdown in reverse-biased diodes is known as _____

a) Auger recombination

b) Mode hopping

c) Impact ionization

d) Extract ionization

**Ans: (c)**

83. _____ is fully depleted by employing electric fields.

a) Avalanche photodiode

b) P-I-N diode

c) Varactor diode

d) P-n diode

**Ans: (a)**

84. The amount of photo generated current increases slightly with increase in _____

a) Temperature

b) Photons

c) Diode current

d) Shunt current

**Ans: (a)**

85. _____ is a direct band gap material.

a) Copper Indium Gallium Selenide

b) Copper Selenide

c) Copper Gallium Telluride

d) Copper Indium Gallium Diselenide

**Ans: (a)**

86. The dc output polarity from a half-wave rectifier can be reversed by reversing
    (a) the diode
    (b) transformer primary
    (c) transformer secondary
    (d) both (b) and (c)

Ans: a

87. Find out the integrating type analog to digital converter?

a) Flash type converter

b) Tracking converter

c) Counter type converter

d) Dual slope ADC

**Ans: (d)**

88. Which A/D converter is considered to be simplest, fastest and most expensive?

a) Servo converter

b) Counter type ADC

c) Flash type ADC

d) All of these

**Ans: ©**

89. In a D-A converter with binary weighted resistor, a desired step size can be obtained by

a) Selecting proper value of VFS

b) Selecting proper value of R

c) Selecting proper value of Rf

d) All of these

**Ans: (C)**

90. The smallest resistor in a 12 bit weighted resistor DAC is 2.5kΩ, what will be the largest resistor value?

a) 40.96MΩ

b) 10.24MΩ

c) 61.44 MΩ

d) 18.43MΩ

**Ans: (b)**

91. How to overcome the limitation of binary weighted resistor type DAC?

a) Using R-2R ladder type DAC

b) Multiplying DACs

c) Using monolithic DAC

d) Using hybrid DAC

**Ans: (a)**

92. A function generator can produce

a) Many identical waves

b) Square and sine waves only

c) Different types of waves simultaneously

d) None of these

**Ans: ©**

93. An IC function generator can allow the signals for

a) Amplitude Modulation (AM)

b) Frequency Modulation (FM)

c) Frequency Shift Keying (FSK)

d) All of these

**Ans: (d)**

94. The value of current and frequency of the output waveform are 5A and 13.33kHz. Find the capacitance value in function generator?

a) 250µF

b) 120µF

c) 850µF

d) 370µF

**Ans: (b)**

95. Usually circuit producing sine waves are called as

a) Oscillators

b) Generators

c) Multivibrators

d) All of these

**Ans: (a)**

96. The value of series resistance in the square wave generator should be 100kΩ or higher in order to

a) Prevent excessive differential current flow

b) Increase resistivity of the circuit

c) Reduce output offset voltage

d) All of these

**Ans: (a)**

97. Why zener diode is used at the output terminal of square wave generator?

a) To reduce both output and capacitor voltage swing

b) To reduce output voltage swing

c) To reduce input voltage swing

d) To reduce capacitor voltage swing

**Ans: b & d**

98. The output voltage of phase detector is

a) Phase voltage

b) Free running voltage

c) Error voltage

d) None of these

**Ans: (c)**

99. At which state the phase-locked loop tracks any change in input frequency?

a) Free running state

b) Capture state

c) Phase locked state

d) All of these

**Ans: ©**

100. What is the need to generate corrective control voltage?

a) To maintain the lock

b) To track the frequency change

c) To shift the VCO frequency

d) All of these

**Ans: (d)**

101. An ideal OP-AMP is an ideal

a) current controlled current source

b) current controlled voltage source

c) voltage controlled voltage source

d) voltage controlled current source

**Ans: (c)**

102. An OP-AMP has a slew rate of 5 V/uS The largest sinewave output voltage possible at a frequency of 100 kHz

a) 2 V

b) 4 V

c) 8 V

d) 12 V

**Ans: (c)**

103. A 741 type OP-AMP has a gain-bandwidth product of 1 MHz. A non-inverting amplifier using this OP-AMP and having voltage gain of 40 dB will exhibit -3 dB bandwidth of

a) 10 kHz

b) 20 kHz

c) 30 kHz

d) 40 kHz

**Ans: (a)**

104. A differential amplifier has differential gain of 10,000 and CMRR= 70 dB. The common mode gain is given by

a) 0.25

b) 0.32

c) 0.4

d) 0.5

**Ans: (b)**

105. For an ideal OP-AMP which one is not true

a) Output resistance is zero

b) The differential voltage across the input terminal is zero

c) The current from output terminal is zero

d) slew rate is infinity

**Ans: (c)**

106. When a step input given to an OP-AMP integrator , the output will be

a) A ramp

b) Impulse

c) A parabolic

d) A triangular wave

**Ans: (a)**

107. The center frequency of a band-pass filter is always equal to the

a) Bandwidth

b) bandwidth divided by Q

c) cut-off frequency

d) geometric average of the critical frequencies

**Ans: (d)**

108. A digital-to-analog converter is an application of the

a) scaling adder

b) voltage-to-current converter

c) noninverting amplifier

d) adjustable bandwidth circuit

**Ans: (A)**

109. Initially, the closed-loop gain (Acl) of a Wien-bridge oscillator should be

a) > 3

b) < 3

c) 0

d) =1

**Ans: (a)**

110. A two pole single zero band-pass filter would have a net roll-off rate

a) 20 dB/dec

b) 40 dB/dec

c) -20 dB/dec

d) -40 dB/dec

**Ans: (c)**

111. A triangular-wave oscillator can consist of an op-amp comparator, followed by

a) Amplifier

b) Differentiator

c) Summer

d) Integrator

**Ans: (d)**

112. CMRR value of 741 type OP-AMP

a) 60 dB

b) 70 dB

c) 80 dB

d) 90 dB

**Ans: (d)**

113. Which is not the internal circuitry of a OP-AMP

a) differential amplifier

b) level translator

c) output driver

d) clamper

**Ans: (d)**

114. The purpose of level shifter the OP-AMP internal circuit is to

a) adjust DC voltage

b) increase impedance

c) provide high gain

d) increase bandwidth

**Ans: (a)**

115. The large signal bandwidth of a OP-AMP is limited by its

a) slew rate

b) loop gain

c) output impedance

d) input impedance

**Ans: (a)**

116. For generating  1 kHz signal, the most suitable circuit is

a) colpitts oscillator

b) Hartly Oscillator

c) Wien Bride oscillator

d) Tuned Oscillator

**Ans: (c)**

117. When a sinusoidal voltage wave is fed to a Schmitt trigger, the output will be

a) triangular wave

b) rectangular wave

c) sine wave

d) asymmetrical square wave

**Ans: (d)**

118. Pulse stretching, time-delay, and pulse generation are all easily accomplished with which type of multivibrator circuit?

a) Astable

b) Monostable

c) Multistable

d) Bistable

**Ans: (b)**

119. An astable multivibrator requires

a) balanced time constants

b) a pair of matched transistors

c) no input signal

d) dual J-K flip-flops

**Ans: (c)**

120. An astable 555 timer has the following number of stable states

a) 0

b) 1

c) 2

d) 3

**Ans: (a)**

121. If the resistor in the Schmitt trigger astable multivibrator is a variable resistor, what part of the output voltage waveform will change when the resistance is changed?

a) the shape of the waveform

b) the amplitude of the waveform

c) the period of the waveform

d) none of these

**Ans: (c)**

122. Butterworth sallen-key LPF has

a) multiple real poles

b) complex conjugate poles

c) simple poles

d) purely imaginary poles

**Ans: (b)**

123. The Transfer function of all pass filter is

a) Proper

b) biProper

c) imProper

d) none of these

**Ans: (b)**

124. At which state the phase-locked loop tracks any change in input frequency?

a) Free running state

b) Capture state

c) Phase locked state

d) All of these

**Ans: (c)**

125. Negative feedback in an amplifier

a) increase noise

b) reduce noise

c) increase bandwidth

d) both b and c

**Ans: (d)**

126. An ideal OPAMP should have

(a) Low gain at low frequencies and high gain at high frequencies

(b) High gain at low frequencies and low gain at high frequencies

(c) High gain at all frequencies.

**Ans: (c)**

127. Drift of an amplifier means

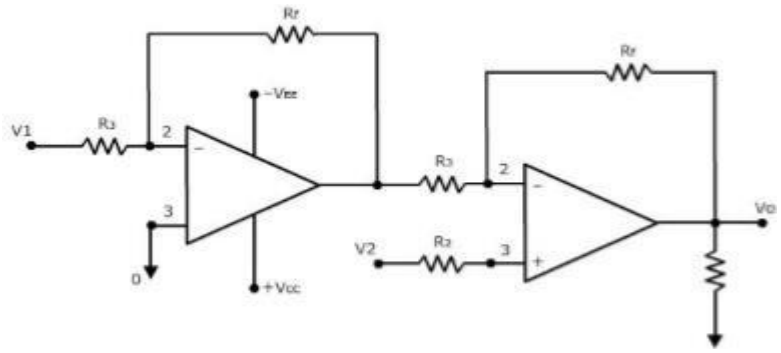
(a) Variation of gain with load

(b) Variation of gain with frequency

(c) Change in sensitivity with temperature

**Ans: (c)**

128. Identify the following circuit:




(a)Adder

(b) Subtractor

(c) Differentiator

**Ans: (b)**

129. In a linear OPAMP circuit, the

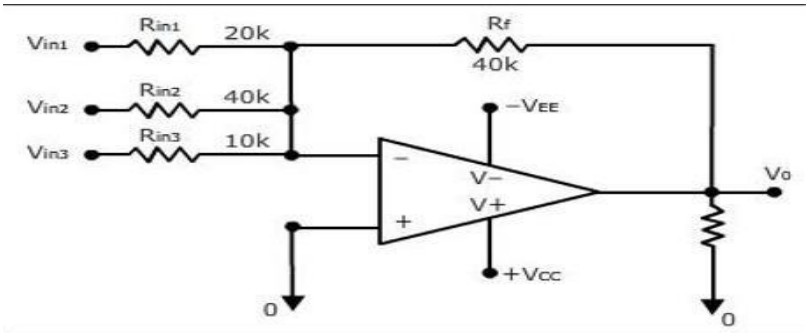
(a) Gain band width is constant.

(b) Op- amp does not go into saturation

(c) Op- amp goes into saturation

Ans: (b)

130.




(a) voltage output is -2 vin1+vin2+4vin3

(b) voltage output is +2 vin1-vin2+4vin3

(c) voltage output is -2 vin1+vin2-4vin3

**Ans: (a)**

131. What is Slew Rate and what causes slew rate?

(a) Maximum change in output with respect to a change in the step input voltage, C

(b) Maximum change in output with respect to a change in frequency ,C

(c) Increases speed ,Temperature

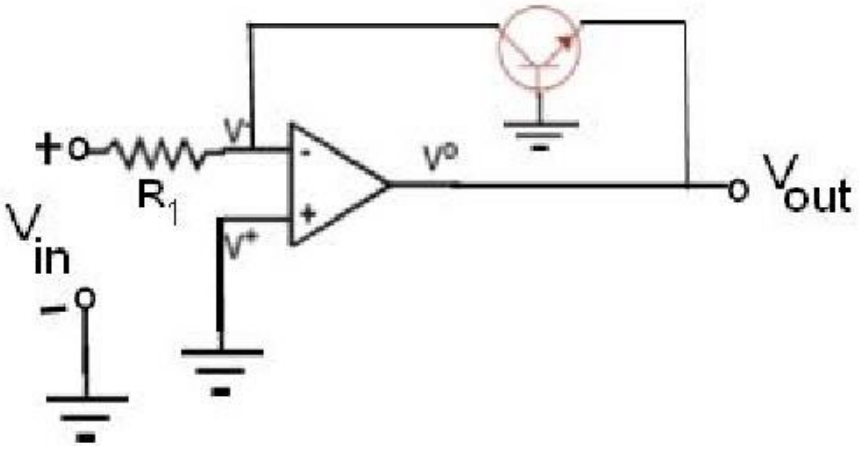
**Ans: (a)**

132. Identify this amplifier:

a) Diode Log Converter

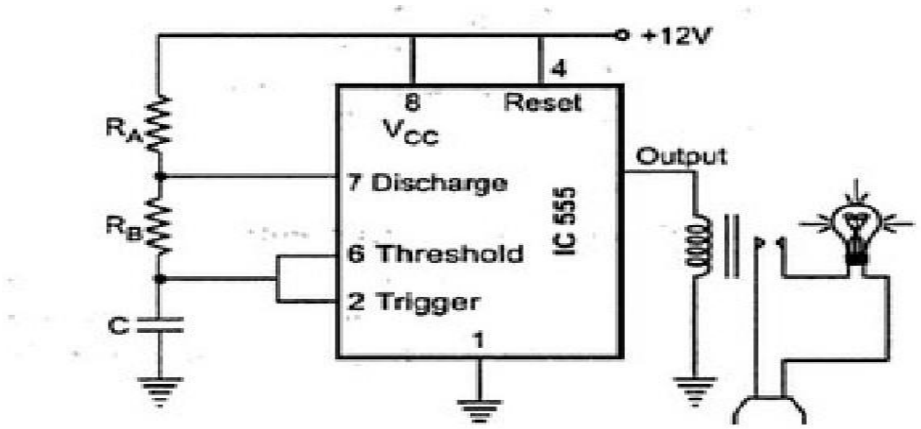
(b) Logarithmic Amplifier

(c) Anti –Logarithmic Amplifier




**Ans: (b)**

133. Identify the circuit




Monostable Multivibrator

(b) Astable Multivibrator

(c) Bistable Multivibrator

**Ans: (b)**

134. An 8 bit successive approximation ADC is driven by a 1 MHz clock . Find its conversion time.

(a)1µsec

(b) 8 µsec

(c) 9 µsec

**Ans: (c)**

135. One input terminal of high gain comparator circuit is connected to ground and a sinusoidal voltage is applied to the other input. The output of comparator will be

(a) A sinusoid

(b) Inverted Sinusoid

(c) Square waveform

**Ans: (c)**

136. A comparator is an example for a

(a) Linear Circuit

(b) Non-Linear circuit

(c) Active filter

**Ans: (b)**

137. A zero-level detector is a

(a) Comparator with a trip point referenced to zero

(b) Peak detector

(c) Limiter

**Ans: (a)**

138. A basic series regulator is a

(a) Reference voltage

(b) Reference voltage

(c) Error detector and reference voltage

**Ans: (c)**

139. A triangular-wave oscillator can consist of an op-amp comparator, followed by an

(a) Multivibrator

(b)Integrator

(c)Amplifier

**Ans: (b)**

140. The time for which the output is active divided by the total period of the output signal.

(a) ON time

(b) Active Ratio

(c) Duty cycle

**Ans: (c)**

141. Voltage regulators keep a constant _____ output voltage when the input or load varies within limits.

(a)DC

(b)AC

(c)Ripple

**Ans: (a)**

142. What is the range of the voltage level of the LM317 adjusted voltage regulator?

(a) 0 to 5 V

(b)1.2 V to 37 V

(c) –5 V to –24 V

**Ans: (b)**

143. A voltage regulator with a no-load output dc voltage of 12 V is connected to a load with a resistance of 10 . If the load resistance decreases to 7.5 , the load voltage will decrease to 10.9 V. The load current will be _____, and the percent load regulation is _____.

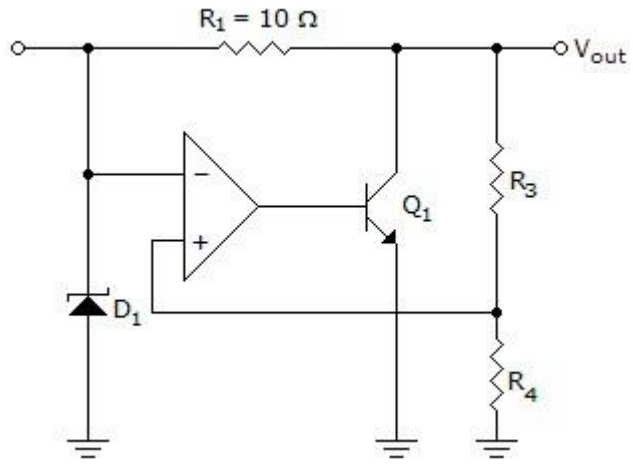
(a) 1.45 A, 90.8%

(b) 1.45 A, 10.09%

(c)1.2 A, 90.8%

**Ans: (b)**

144.Identify the circuit:




a) a series-pass voltage regulator.
b) a shunt voltage regulator.
c) a step-up switching regulator.

**Ans: (b)**

145. The current gain of BJT

a. $g_m r_0$
b. $g_m \backslash r_0$
c. $g_m r_\pi$
d. $g_m \backslash r_\pi$

Ans: c

146. What is the purpose of an additional RC filter section in a power supply circuit?

(a) Increase the dc voltage component

(b) Increase the ac voltage component

(c) Decrease the ac voltage component

**Ans: (c)**

147. The _____ regulator is less efficient than the _____ type, but offers inherent short-circuit protection.

(a)series,shunt

(b) shunt, series

(c)series,series

**Ans: (b)**

148. In which of the following applications is a pulsating dc voltage suitable?

(a) Battery charger

(b)Computer

(c)Radio

**Ans: (a)**

149. Which component(s) set(s) the voltage across the load in a basic transistor shunt regulator?

(a) Zener diode

(b) Transistor base-emitter voltage

(c) Both the Zener diode and the transistor base-emitter voltage

**Ans: (c)**

150. What type of regulator offers inherent short-circuit protection?

(a) Shunt Regulators

(b) series regulators

(c) switching regulators

**Ans: (a)**