PHYSICS

BOOKS - MODERN PUBLICATION PHYSICS (KANNADA ENGLISH)

SOLIDS & SEMICONDUCTOR DEVICES

Multiple Choice Questions Level I

1. The electrical conductivity of a semiconductor increases when

electromagnetic radiation of wavelength shorter than 2480 nm is incident on it. The band gap (in eV) for semi-conductor is

A. 0.9

B. 0.7

C. 0.5

D. 1.1

Answer: C

Watch Video Solution

2. In an npn transistor circuit , the collector current is 10 mA . If 90% of the electrons emitted reach the collector

A. the emitter current will be 9mA

B. the emitter current will be 11 mA

C. the base current will be 10mA

D. the base current will be 0.1 mA.

Answer: B

 Watch Video Solution

3. In an $n-p-n$ transistor, the collector current is 10 mA. If 90% of the electrons emitted reach the collector.

A. the emitter current will be 9mA

B. the emitter current will be 11 mA

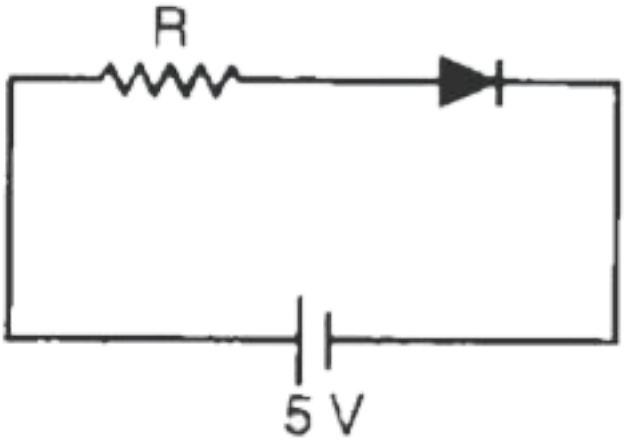
C. the base current will be 1mA

D. the base current will be 0.1 mA.

Answer: D

Watch Video Solution

4. The diode used in figure requires minimum current of 1 mA to be above the knee voltage 0.7 of current versus voltage characteristics. The maximum value of R so that the voltage is above knee point is :



A. $5k\Omega$

B. $5.7k\Omega$

C. $4.3k\Omega$

D. $3.5k\Omega$

Answer: C

Watch Video Solution

5. A piece of copper and another of germanium are cooled from room temperature to 80 K. The resistance of

A. each of them increases

B. each of them decreases

C. copper increases and germanium decreases

D. copper decreases and germanium increases.

Answer: D

 Watch Video Solution

6. An intrinsic semiconductor has $10^8 m^{-3}$ free electrons and is doped with pentavalent impurity atoms of density $10^{24} m^{-3}$. The free electron density will increase by ..... orders of magnitude.

A. $10^8 m^{-3}$

B. $10^{16} m^{-3}$

C. $10^{20} m^{-3}$

D. $10^{24} m^{-3}$

Answer: D

Watch Video Solution

7. In a p-n junction diode, the increase in forward voltage of 0.19V increases the forward current by 37.6 mA, The dynamic resistance of the junction is

A. 2 ohm

B. 3 ohm

C. 4 ohm

D. 5 ohm

Answer: D

Watch Video Solution

8. Given sets of elements are phosphorus , arsenic , indium and bismuth . The addition of which in pure semiconductor will result in p - type semiconductor :

A. phosphorus , arsenic and indium

B. phosphorus , arsenic , indium and bismuth

C. idium and arsenic

D. indium only

Answer: D

Watch Video Solution

9. Van der Waal's crystal are :

A. very hard

B. of high melting point

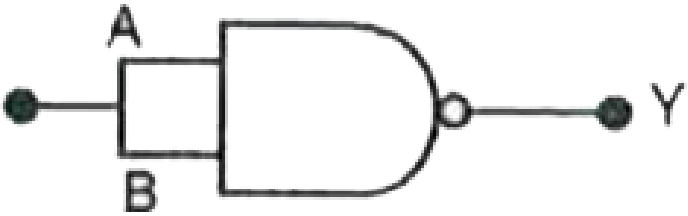
C. non - volatile

D. none of the above .

Answer: D

Watch Video Solution

10. The symbol represents :



A. NOT gate

B. OR gate

C. AND gate

D. NOR gate

Answer: A

Watch Video Solution

11. NAND and NOR gates are called universal gates because they

A. are available universally

B. can be combined to produce OR, AND and NOT gates

C. are widely used in integrated circuit packages

D. are easiest to manufacture.

Answer: B

Watch Video Solution

12. The forbidden energy gap in conductors , semiconductors and insulators are EG_1, EG_2 and EG_3 respectively . The relation among them is :

A. $EG_1 = EG_2 = EG_3$

B. $EG_1 > EG_2 > EG_3$

C. $EG_1 < EG_2 < EG_3$

D. $EG_1 < EG_2 > EG_3$

Answer: C

Watch Video Solution

Watch Video Solution

13. The current gain α of a transistor is 0.95 . The change in emitter current is 10 mA. The change is base current is :

A. $9.5mA$

B. $0.5mA$

C. $10.5mA$

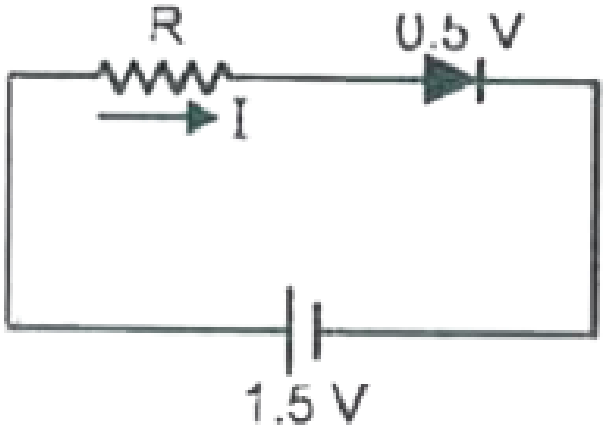
D. $\left(\frac{200}{19}\right)mA$

Answer: B

Watch Video Solution

14. The diode used in the circuit shown in figure has a constant voltage drop at 0.5 V at all currents and a maximum power rating of 100 mW. What should be the value of the resistance R, connected in series with diode

for obtaining maximum current ?



A. 5Ω

B. 5.6Ω

C. 6.7Ω

D. 20Ω

Answer: A

Watch Video Solution

15. Van der Waal's forces between atoms and between molecules arise from :

A. symmetric charge distributions

B. asymmetric charge distributions

C. electron transfer

D. electron sharing .

Answer: B

 Watch Video Solution

16. The coordination number for a simple cubic crystal is :

A. 4

B. 6

C. 8

D. 12

Answer: B

Watch Video Solution

17. In molecular crystals , the force between molecules is

A. Van der Waal's force arising out of electric polarization:

B. due to transfer of electrons

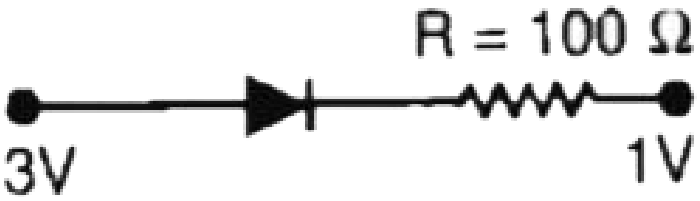
C. due to sharing of electrons

D. none of the above .

Answer: A

Watch Video Solution

18. Assuming that the silicon diode having resistance of 20Ω , the current through the diode is (knee voltage 0.7 V) :



A. 0 mA

B. 10 mA

C. 6.5 mA

D. 13.5 mA

Answer: C

Watch Video Solution

19. In a transistor $(\beta = 45)$, the voltage across $5k\Omega$ load resistance in collector circuit is 5 V. The base current is

A. 0.022 mA

B. 0.978 mA

C. 1.0 mA

D. 2.5 mA

Answer: A

 Watch Video Solution

20. A p -type semiconductor has acceptor level 66 meV above the valence band. The maximum

wavelength of light required to create a hole is very near to :

A. 57Å

B. $57 \times 10^{-3}\text{Å}$

C. 217100Å

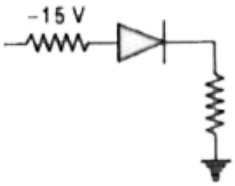
D. $11.61 \times 10^{-33}\text{Å}$

Answer: C

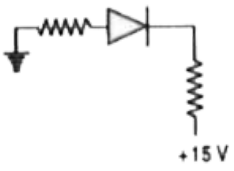
Watch Video Solution

21. In which of the following cases the diode is forward biased ?

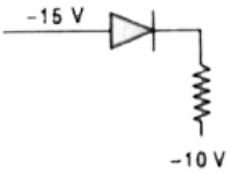
A.



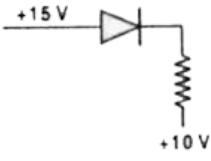
B.



C.



D.



Answer: C

Watch Video Solution

22. n type and p type semiconductors can be obtained by doping pure silicon respectively with

A. arsenic, phosphorus

B. indium aluminium

C. phosphorus, indium

D. aluminium boron

Answer: C

Watch Video Solution

23. The number of terminals in a transistor is :

A. one

B. two

C. three

D. four

Answer: C

Watch Video Solution

24. To produce N - type crystal Ge or Si may be doped with a substance that is :

A. divalent

B. trivalent

C. tetravalent

D. pentavalent.

Answer: D

Watch Video Solution

25. Transistor was invented by :

A. Marconi

B. Shockley

C. Lee - de - Forest

D. Fleming .

Answer: B


Watch Video Solution

26. The forbidden energy gap in Ge in 0.72 eV Given, $hc = 12400 \text{ eV} - \text{Å}$ The maximum wavelength of radiation that will generate electron hole pair is

A. 1722Å

B. 17222Å

C. 172.2Å

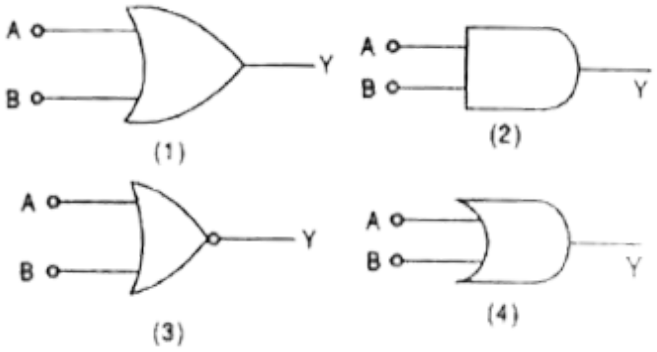
D. 17220Å

Answer: D

Watch Video Solution

27. Given below are four logic gate symbols .

Those for OR, NOR and NAND are respectively



A. 1,4,3

B. 4,1,2

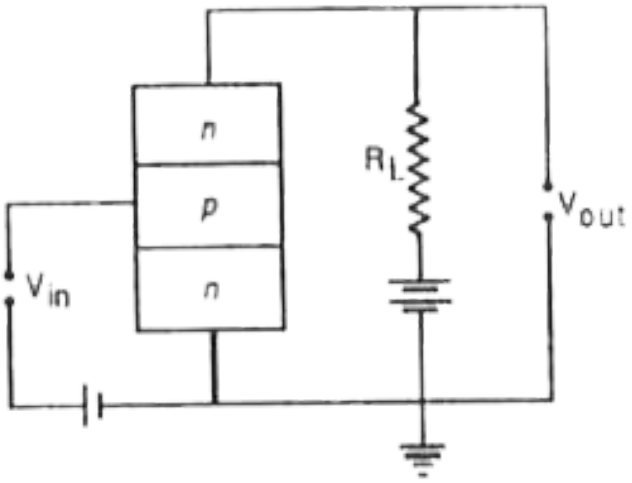
C. 1,3,4

D. 4,2,1

Answer: C

Watch Video Solution

28. An n - p -n transistor circuit is arranged as shown in the figure , it is



A. a common - base amplifier circuit

B. a common - emitter amplifier circuit

C. a common - collector amplifier circuit

D. neither of the above.

Answer: B

 Watch Video Solution

29. If the current gain in CB configuration is 0.95. Then the current gain in CE configuration is

A. 0.95

B. 9.5

C. 19

D. 1.9

Answer: C

Watch Video Solution

30. Write the expression for the frequency of an LC oscilator?

A. $2\pi\sqrt{LC}$

B. $\frac{1}{2\pi}\sqrt{LC}$

C. $\frac{1}{2\pi\sqrt{LC}}$

D. $\frac{2\pi}{\sqrt{LC}}$

Answer: C

Watch Video Solution

31. In the Binary number system the number 100 represents :

A. one

B. three

C. four

D. hundred

Answer: C

Watch Video Solution

32. OR gate operation means :

A. output exists when either of input exists

B. output exists when both inputs exist

C. output exists when no input exists

D. output does not exist when both input exist.

Answer: A

Watch Video Solution

33. Under space charge limited conditions , the plate current in a diode is 10 mA at place

potential of 100 V, If the plate potential is changed to 400 V, what is the plate current ?

A. 100 mA

B. 120 mA

C. 80 mA

D. 60 mA

Answer: C

Watch Video Solution

34. A triode valve has an amplification factor 20 and its plate potential is 300 V . What should be the grid potential to reduce the plate current zero ?

A. $+15$ volt

B. -15 volt

C. $+20$ volt

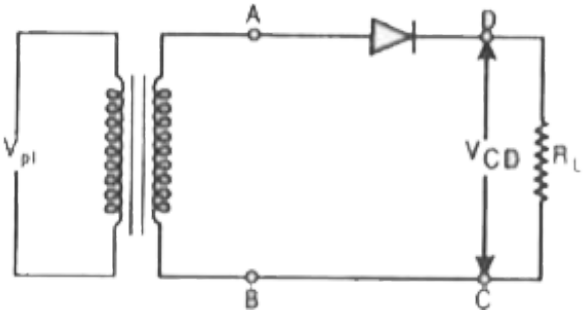
D. -20 volt

Answer: B

Watch Video Solution

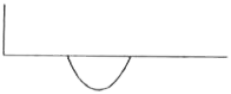
Watch Video Solution

35. In the half - Wave rectifier circuit , which one of the following wave forms is true for V_{CD} , the output across C and D ?



A. 

B. 

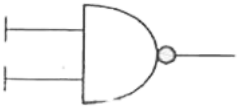
C. 

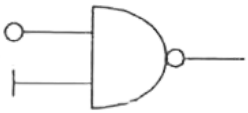
D. 

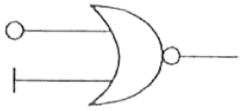
Answer: B

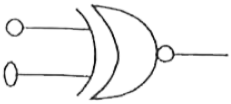
Watch Video Solution

36. Which of the following gates will have an output of 1 ?

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

37. For an electronic value the plate current I_p and the plate voltage V_p in the space charge limited region are related as :

A. $I_p \propto (V_p)^{\frac{3}{2}}$

B. $I_p \propto (V_p)^{\frac{2}{3}}$

C. $I_p \propto V_p$

D. $I_p \propto V_p^2$

Answer: A

Watch Video Solution

38. SrO (strontium oxide) is coated on tungsten for thermionic emission in values because :

A. it can be heated up to high temperature

B. its work function is less

C. its work function is more

D. it maintains the cathode

Answer: B

Watch Video Solution

39. By bringing the grid nearer to the plate in a triode value, the amplification factor :

A. becomes zero

B. increases

C. decreases

D. remains unchanged

Answer: C

Watch Video Solution

40. For a CE transistor amplifier, the audio signal across the collector resistance of $2k\Omega$ is 2V. Suppose the current amplification factor of

the transistor is 100, find the input signal voltage and base current, if the base resistance is 1 kΩ.

A. $5\mu A$

B. $10\mu A$

C. $15\mu A$

D. $20\mu A$

Answer: B

Watch Video Solution

41. Two amplifiers are connected one after the other in series. The first amplifier has a voltage gain of 10 and the second has a voltage gain of 20. If the input signal is 0.01V. Calculate the output ac signal.

A. 1 V

B. 2 V

C. 3 V

D. 4 V

Answer: B

Watch Video Solution

42. A diode valve works in the region of space charge limited current . If the voltage is increased 4 times, how many times the space charge limited current will increase ?

A. will remain same

B. 8

C. 2

D. 4

Answer: B

Watch Video Solution

43. The amplification factor of a triode is 20 . Its plate resistance is $10k\Omega$. Its mutual conductance is :

A. 2×10^5 mho

B. 2×10^4 mho

C. 500 mho

D. 2×10^{-3} mho

Answer: D

Watch Video Solution

44. In NOT operation of Y is output and A and B are inputs then truth table in

A. 0,0,1,0

B. 1,1,1,0

C. 1,1,0,0

D. 1,1,1,1

Answer: A

Watch Video Solution

45. In a common - base circuit of transistor , current amplification factor is 0.95 Calculate the emitter current , if base current is 0.2 mA :

A. 4 mA

B. 0.4 mA

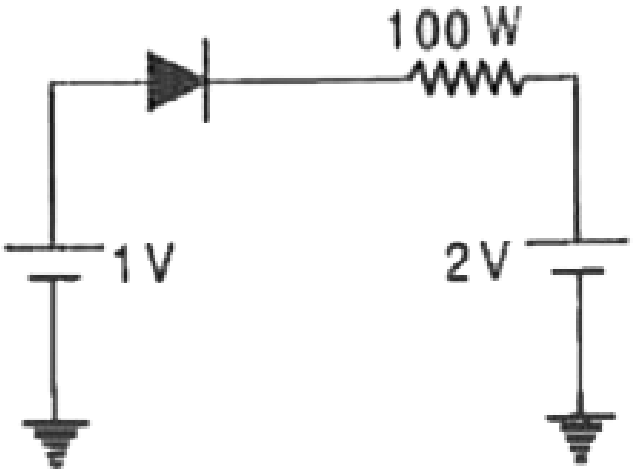
C. 2.1 A

D. 0.21 A

Answer: A

Watch Video Solution

46. Assuming that the junction diode is ideal , in the circuit shown here , the current through the diode is :



A. zero

B. 1 mA

C. 10 mA

D. 30 mA

Answer: A

Watch Video Solution

47. In the study of transistor as amplifier, if $\alpha = \frac{I_C}{I_E}$ and $\beta = \frac{I_C}{I_B}$, where I_C, I_B and I_E

are the collector, base and emitter currents, then

A. $\beta = \frac{(1-\alpha)}{\alpha}$

B. $\beta = \frac{(1+\alpha)}{\alpha}$

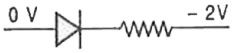
C. $\beta = \frac{\alpha}{(1-\alpha)}$

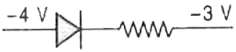
D. $\beta = \frac{\alpha}{(1+\alpha)}$

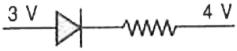
Answer: C

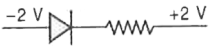
Watch Video Solution

48. The forward biased diode is :

A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

49. The number density of free electrons in the semiconductor is $10^{18}m^{-3}$. It is doped with a pentavalent impurity atoms of number density $10^{24}m^{-3}$. The number density of free electrons m^{-3} increases by a factor of

A. $4/3$

B. 6

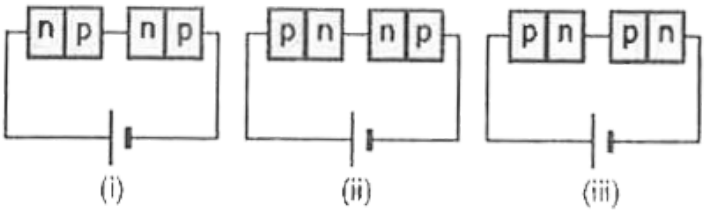
C. 10^{6}

D. 10^{24}

Answer: C

Watch Video Solution

50. Two identical p - junctions may be connected in series with a battery in three ways as shown . The potential drops across the two p - n junctions are equal in :



A. circuit 1 and 2

B. circuit 2 and 3

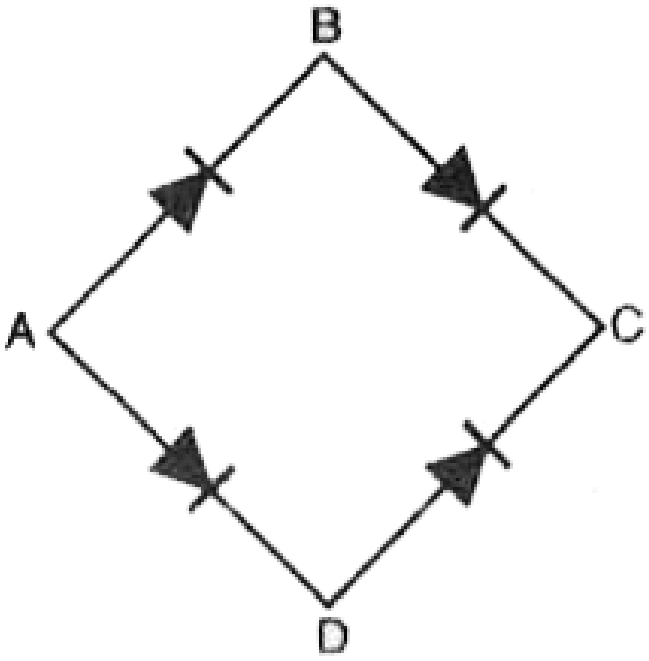
C. circuit 3 and 1

D. circuit 1 only.

Answer: C

Watch Video Solution

51. In the Fig. the input is across A and C and output across B and D . The output is :



A. zero

B. same as input

C. full - wave rectified

D. half wave rectified

Answer: C

Watch Video Solution

52. If the forward bias voltage a $p-n$ junction diode is changed form 0.7 V to 2.2 V, the forward current changes by 1.5 mA, the forward resistance of diode is

A. 100Ω

B. 500Ω

C. 1000Ω

D. $500A$

Answer: C

Watch Video Solution

53. The collector supply in a common emitter amplifier is 8V and the voltage drop across the load of 800Ω is 0.4 V. If the current gain for common base be $\alpha = 0.96$, then the base current is

A. $20\mu A$

B. $21\mu A$

C. $22\mu A$

D. $24\mu A$

Answer: A

Watch Video Solution

54. When NPN transistor is used as an amplifier, then

A. electrons move from base to collector

B. holes move from emitter to base

C. electrons move from collector to base

D. holes move from collector to base.

Answer: A

Watch Video Solution

55. To a germanium sample , pieces of gallium are added as an impurity . The resultant sample would behave like :

A. a conductor

B. a p - type semiconductor

C. an - n type semiconductor

D. an insulator

Answer: B

Watch Video Solution

56. A transistor has $\alpha = 0.95$. The change in emitter current is 100 milliampere , then the change in the collector current is :

A. 95 mA

B. 99.05 mA

C. 100.95 mA

D. 100 mA.

Answer: C

Watch Video Solution

57. Three amplifiers each with a voltage gain of 10 are connected in series. Then overall amplification is :

A. $\frac{10}{3}$

B. 13

C. 1000

D. none of these.

Answer: C

Watch Video Solution

58. For common emitter circuit of a transistor , when the base current changes by $80\mu A$, the

collector current change by 4.8 mA. Then the current amplification factor will be :

A. 120

B. 30

C. 60

D. none of these

Answer: C

 Watch Video Solution

59. What is the voltage gain in a common emitter amplifier, where input resistance is 3Ω and load resistance 24Ω, $\beta = 0.6$?

A. `1.2

B. 2.4

C. 4.8

D. 8.16

Answer: C

Watch Video Solution

60. The source voltage is 9 volt and source resistance is $1k\Omega$ The current through the silicon diode is (knee voltage of silicon is 0.7 volt):

A. 8.3 mA

B. 0.38 mA

C. 4.2 mA

D. 3.8 mA

Answer: A

Watch Video Solution

61. If l_1, l_2, l_3 are the lengths of the emitter, base and collector of a transistor, then

A. $l_3 < l_2 < l_1$

B. $l_1 = l_2 = l_3$

C. $l_3 > l_1 > l_2$

D. $l_3 < l_1 < l_2$

Answer: C

Watch Video Solution

62. In an $n-p-n$ transistor, the current gain for common emitter configuration is 80. If the emitter current be 8.1 mA, then base current is

A. $0.1\mu A$

B. $0.01mA$

C. $0.1mA$

D. $0.01mA$

Answer: B

Watch Video Solution

63. The transfer ratio β of a transistor is 50. The input resistance of the transistor when used in the common-emitter configuration is $1k\Omega$. The peak value of the collector ac current for an ac input voltage of 0.01 V peak is

A. $0.25\mu A$

B. $0.01\mu A$

C. $500\mu A$

D. $100\mu A$

Answer: C

 Watch Video Solution

64. Decimal number 53 is equal to binary number

A. 110101

B. 101101

C. 101010

D. 111111

Answer: A

Watch Video Solution

65. The energy gap is max in :

A. metals

B. super conductors

C. insulators

D. semiconductors

Answer: C

Watch Video Solution

66. Formation of covalent bonds in compounds exhibits :

A. wave nature of electron

B. particle nature of electron

C. both wave and particle nature of electron

D. none of these

Answer: A

 Watch Video Solution

67. A transistor is connected in common emitter configuration . The collector emitter voltage is 8 V and a load resistance of 800Ω is connected in the collector circuit . The voltage drop across the load resistance is 0.5 V . If the current gain be 0.96 , the base current is :

A. $5\mu A$

B. $8\mu A$

C. $9.6\mu A$

D. None of the above.

Answer: D

Watch Video Solution

68. In a common emitter amplifier output resistance is 5000 ohm and input resistance is 2000 ohm. If peak value of signal voltage is 10

mV and $\beta = 50$, then the peak value of output voltage is :

A. 5×10^{-6} volt

B. 2.5×10^{-4} volt

C. 1.25 volt

D. 125 volt

Answer: C

Watch Video Solution

69. Copper and germanium are cooled to 70K from room temperature, then

A. each of them decreases

B. each of them increases

C. of Cu decreases and Ge increases

D. of Cu increases and Ge increases

Answer: C

Watch Video Solution

70. Manifestation of band structure in solids is due to :

A. Pauli's exclusion principle

B. Uncertainty principle

C. Boltzmann's law

D. Bohr's correspondence principle.

Answer: C

Watch Video Solution

71. The current gain of a transistor is 100. If the base current changes by $200\mu A$, what is the change in collected current ?

A. 200 mA

B. 20 mA

C. 2 mA

D. 0.2 mA.

Answer: B

Watch Video Solution

72. What is the voltage gain of a transistor with load resistance 100Ω and internal resistance 200Ω ? Given that $\beta = 90$.

A. 400

B. 450

C. 800

D. 900

Answer: B

Watch Video Solution

73. A solid which is not transparent to visible light and whose conductivity increases with temp is formed by

A. metallic bonding

B. ionic bonding

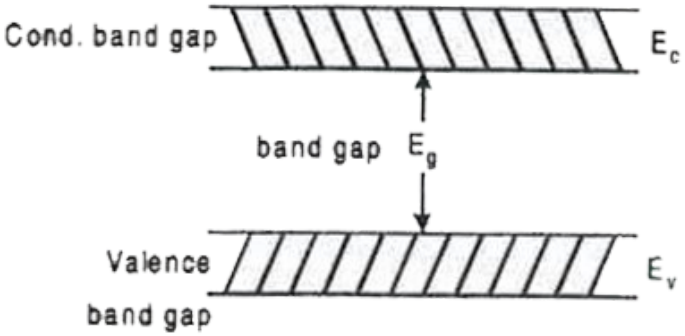
C. covalent bonding

D. Van der Waals binding

Answer: C

Watch Video Solution

74. If the lattice constant of this semiconductor is decreased , then which of the following is correct ?



A. All E_c, E_g, E_v decrease

B. All E_c, E_g, E_v increase

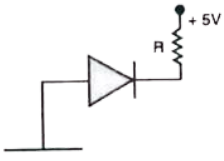
C. $E_c \& E_v$ increase , E_g decrease

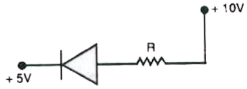
D. $E_c \& E_v$ decrease but E_g increase.

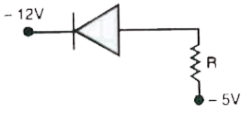
Answer: A

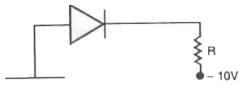
Watch Video Solution

75. Which diode is reverse biased ?

A. 

B. 

C. 

D. 

Answer: A

 Watch Video Solution

76. Carbon, silicon and germanium have four valence electrons each . At room temperature which one of the following statements is most appropriate ?

A. The number of free electrons for conduction is significant only in Si and Ge but small in C.

B. The number of free conduction electrons is significant in C but small in Si and Ge.

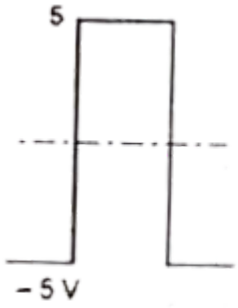
C. The number of free conduction electrons is negligibly small in all the three.

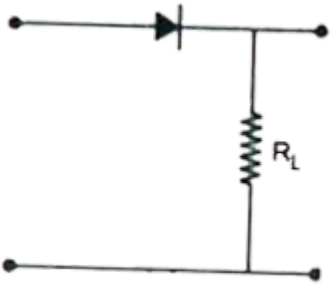
D. The number of free electrons for conduction is significant in all the three .

Answer: B

Watch Video Solution

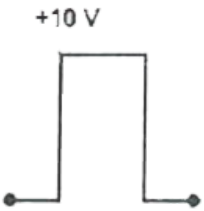
77. If in a p - n junction diode , a square input signal of 10 V is applied as shown :

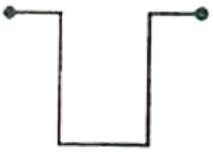


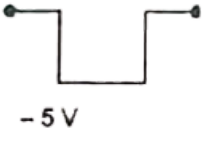


Then the output signal across R_L will be :

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

78. A working transistor with its three legs marked , P Q and R is tested using a multimeter . No conduction is found between P and Q . By connecting the common (negative

) terminal of the multimeter to R and the other (positive) terminal to P or Q. some resistance is seen on the multimeter. Which of the following is true for the transistor ?

A. It is an npn transistor with R as collector

.

B. It is an npn transistor with R as base.

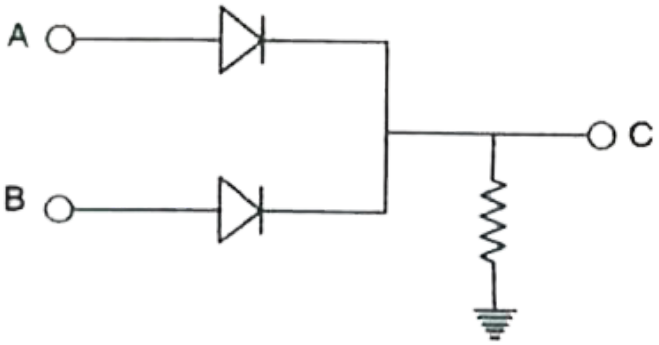
C. It is a pnp transistor with R as collector .

D. It is a pnp transistor with R as emitter.

Answer: B

Watch Video Solution

79. In the circuit below , A and B represent two inputs and C represents the output . The circuit represents



A. OR gate

B. NOR gate

C. AND gate

D. NAND gate.

Answer: A

Watch Video Solution

Multiple Choice Questions Level I Assertion

1. Statement I : In N - type semiconductor , the free electron concentration approximately equals the density of donor atoms .

Statement II : In a forward biased P - N - region is proportional to the change Q of the injected minority carrier holes.

A. Statement I is true , statement II is false.

B. Statement I is false , statement II is true

C. Statement I is true , statement II is true . Statement II is correct explanation of statement I.

D. Statement I is true, statement II is true and statement II is not correct

explanation of statement II.

Answer: D

Watch Video Solution

2. Statement : Two P - N junction diodes placed back to back work as a P - N - P transistor.

Statement II : A transistor is current operated device while a triode value is a voltage operated device.

A. Statement I is true , statement II is false.

B. Statement I is false , statement II is true

C. Statement I is true , statement II is true . Statement II is correct explanation of statement I.

D. Statement I is true, statement II is true and statement II is not correct explanation of statement II.

Answer: B

 Watch Video Solution

3. Statement I : Electrons in the conduction band have higher energy than those in valence bond.

Statement II : The mobility of electrons is equal to mobility of holes .

A. Statement I is true , statement II is false.

B. Statement I is false , statement II is true

C. Statement I is true , statement II is true . Statement II is correct explanation of statement I.

D. Statement I is true, statement II is true and statement II is not correct explanation of statement II.

Answer: A

 Watch Video Solution

4. Statement I : A signal which can have either O level or level is called a digital signal.

Statement II : A signal which does not continuously vary with time is analog signal.

A. Statement I is true , statement II is false.

B. Statement I is false , statement II is true

C. Statement I is true , statement II is true . Statement II is correct explanation of statement I.

D. Statement I is true, statement II is true and statement II is not correct explanation of statement II.

Answer: A

Watch Video Solution

5. Statement I : Common base amplifiers give voltage gain with phase change .

Statement II : When reverse bias in P - N junction is increased , the width of depletion layer increases.

A. Statement I is true , statement II is false.

B. Statement I is false , statement II is true

C. Statement I is true , statement II is true .

Statement II is correct explanation of

statement I.

D. Statement I is true, statement II is true and statement II is not correct explanation of statement II.

Answer: A

Watch Video Solution

Multiple Choice Questions Level I Paragraph

1. In a triode value for a grid voltage $V_g = -1.2V$, the phase current I_p and plate voltage V_p are given $I_p = (-5 + 0.1V_0)$, I_p in mA and V_p in volt . When grid voltage is changed to - 3.2 V at constant plate voltage of 150 V , a plate current of 5 mA is observed , then

Plate resistance R_p is

A. $10^2\Omega$

B. $10^3\Omega$

C. $10^4\Omega$

D. $10^5\Omega$

Answer: C

Watch Video Solution

2. In a triode value for a grid voltage $V_g = -1.2V$, the phase current I_p and plate voltage V_p are given $I_p = (-5 + 0.1V_0), I_p$ in mA and V_p in volt . When grid voltage is changed to - 3.2 V at constant plate voltage of 150 V , a plate current of 5 mA is observed ,

then

Tran conductance inductance g_m is

A. $1.5 \times 10^3 ohm^{-1}$

B. $2.5 \times 10^3 ohm^{-1}$

C. $3.0 \times 10^3 ohm^{-1}$

D. $3.5 \times 10^3 ohm^{-1}$

Answer: B

Watch Video Solution

3. In a triode value for a grid voltage $V_g = -1.2V$, the phase current I_p and plate voltage V_p are given $I_p = (-5 + 0.1V_0)$, I_p in mA and V_p in volt . When grid voltage is changed to - 3.2 V at constant plate voltage of 150 V , a plate current of 5 mA is observed , then

Amplification factor μ is

A. 25

B. 5.5

C. 10.5

D. 16.67

Answer: D

Watch Video Solution

4. In a triode value for a grid voltage $V_g = -1.2V$, the phase current I_p and plate voltage V_p are given $I_p = (-5 + 0.1V_0), I_p$ in mA and V_p in volt . When grid voltage is changed to - 3.2 V at constant plate voltage of 150 V , a plate current of 5 mA is observed ,

then

Voltage amplification for $20k\Omega$ load in plate circuit is

A. 5.5

B. 10.5

C. 16.67

D. 20.2

Answer: C

 Watch Video Solution

5. In a common base transistor amplifier the input resistance is 200 ohm and output resistance is 20,000 ohms. If $\alpha = 0.95$

Then voltage gain is

A. 50

B. 75

C. 95

D. 105

Answer: C

Watch Video Solution

6. In a common base transistor amplifier the input resistance is 200 ohm and output resistance is 20,000 ohms. If $\alpha = 0.95$

Then power gain is

A. 50

B. 75

C. 100

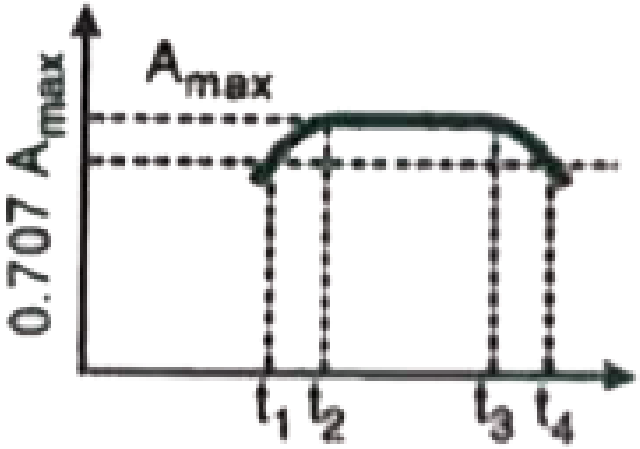
D. 90.25

Answer: D

Watch Video Solution

Multiple Choice Questions Level Ii

1. The frequency response curve of RC coupled amplifier is shown in figure . The band width of the amplifier will be :



A. $f_3 - f_2$

B. $f_4 - f_1$

C. $\frac{f_4 - f_2}{2}$

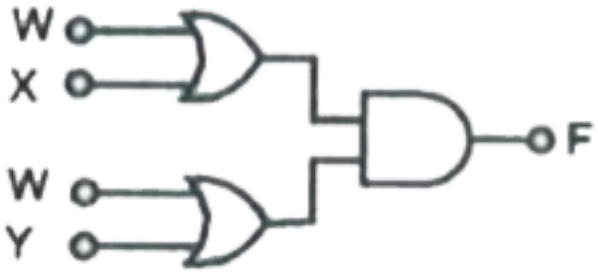
D. $f_3 - f_1$

Answer: B

Watch Video Solution

2. The diagram of a logic circuit is given below

. The output F of the circuit is represented by :



A. $W.(X+Y)$

B. $W.(X.Y)$

C. $W+(X.Y)$

D. $W+(X+Y)$

Answer: C

Watch Video Solution

3. If A is the atomic mass number of an element , N is the Avogardro number and a is the lattice parameter, then the density of the element , if it has crystal structure , is :

A. $\frac{A}{Na^3}$

B. $\frac{2A}{Na^3}$

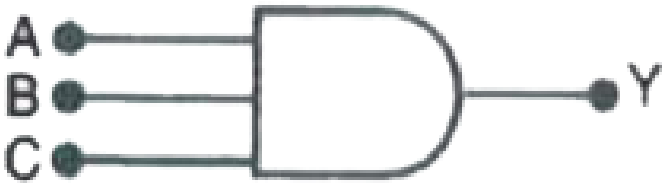
C. $\frac{\sqrt{3}A}{Na^3}$

D. $\frac{2\sqrt{2}A}{Na^3}$

Answer: B

Watch Video Solution

4. The output from a logic gate is 1 when inputs A, B and C are such that



A. $A = 1, B = 0, C = 1$

B. $A = 1, B = 1, C = 0$

C. $A = B = C = 0$

D. $A = B = C = 1$

Answer: A

Watch Video Solution

5. An n - type semiconductor has resistivity $0.1\Omega m$. The number of donor atoms which must be added to achieve this is ($\mu = 0.05m^2V^{-1}s^{-1}$) :

A. 1.25×10^{17}

B. 1.25×10^{23}

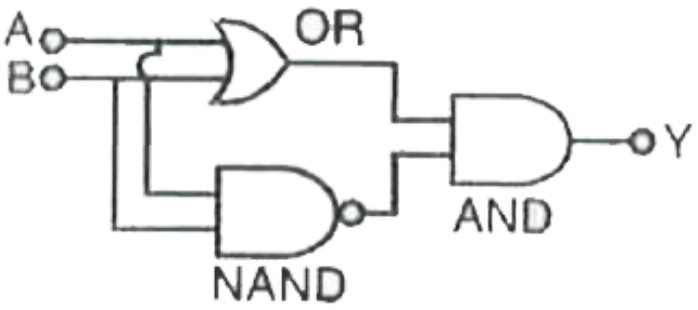
C. 1.25×10^{21}

D. 1.25×10^{22}

Answer: C

Watch Video Solution

6. The following configuration of gate is equivalent to :



A. NAND

B. XOR

C. OR

D. NOR

Answer: B

Watch Video Solution

7. The binary number corresponding to the decimal number 49 is :

A. 1101

B. 11001

C. 110001

D. 10001

Answer: C

Watch Video Solution

8. In AND operation if Y is output and A and B are inputs the truth table is :

A. 0,0,1,0

B. 1,1,1,0

C. 1,1,0,0

D. 1,1,1,1

Answer: A

Watch Video Solution

9. The slope of $i_p - V_g$ curve is 2 mA/V and slope of $i_p - V_p$ curve is 0.25 mA/V . If anode resistance is $12K\Omega$ what amplification the

triode value would produce across the load resistance ?

A. 12

B. 18

C. 36

D. 6

Answer: D

View Text Solution

10. With 448 mW power used the number of electrons reaching the anode/sec is 1.4×10^{16} , then plate voltage is :

A. 150 V

B. 200 V

C. $14 \times 484V$

D. 32 volts

Answer: B

Watch Video Solution

11. Two triodes A and B have plate amplifications factor of 40 . The plate resistance are $4k\Omega$ and $8k\Omega$ respectively. If an amplifier circuit is made using any one of them with a load with a load resistance of $8k\Omega$, the ratio of voltage gain obtained from them will be :

A. $\frac{4}{3}$

B. $\frac{2}{3}$

C. $\frac{4}{9}$

D. $\frac{5}{1}$

Answer: A

 Watch Video Solution

12. Keeping the grid voltage constant a change in the plate potential of 50 V, changes the plate current by 10 mA. And keeping the plate potential constant a change in the grid potential of 2V changes the plate current by

10 ma again , the amplification factor of the triode will be :

A. 100

B. 25

C. 5

D. 20

Answer: B

View Text Solution

13. For a transistor the current amplification factor is 0.8 . If the transistor is now in common emitter configuration , the change in collector current when the base current changes by 6 mA is :

A. 6 mA

B. 4.8 mA

C. 24 mA

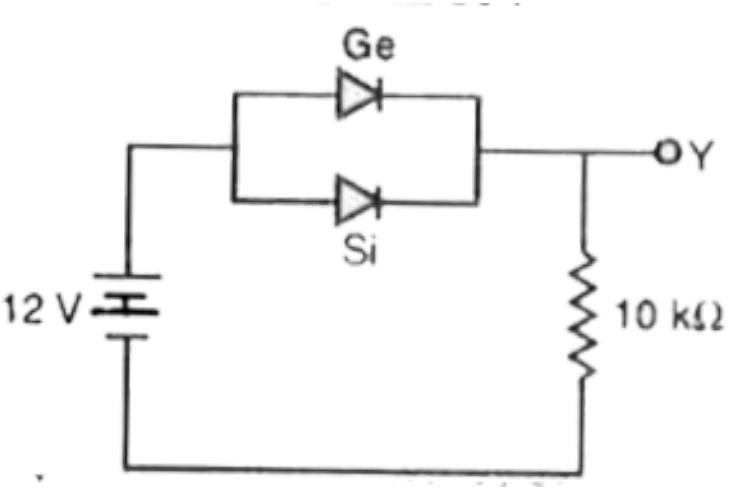
D. 8 mA

Answer: C

Watch Video Solution

14. Two junction diodes one of germanium (Ge) and other of silicon (Si) are connected as shown in fig to a battery of e.m.f. 12 V and a load resistance $10k\Omega$ The germanium diode conducts at 0.3V and silicon diode at 0.7 V When a current flows in the circuit , the

potential of terminal Y will be :



A. 12 V

B. 11 V

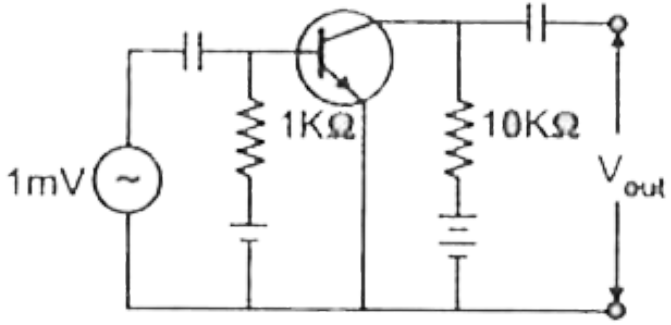
C. 11.3 V

D. 11.7 V

Answer: C

Watch Video Solution

15. In the following common emitter configuration an NPN transistor with current gain $\beta = 100$ is used . The output voltage of the amplifier will be



A. 10 V

B. 0.1 V

C. 1.0 V

D. 10 V

Answer: B

Watch Video Solution

16. A Ge specimen is doped with Al. The concentration of acceptor atoms is ~10^{21} atoms/ m^3 . Given that the intrinsic concentration of electron hole Paris is

$\sim 10^{19}/m^3$, the concentration of electrons in the specimen is :

A. $10^{17}/m^3$

B. $10^{15}/m^3$

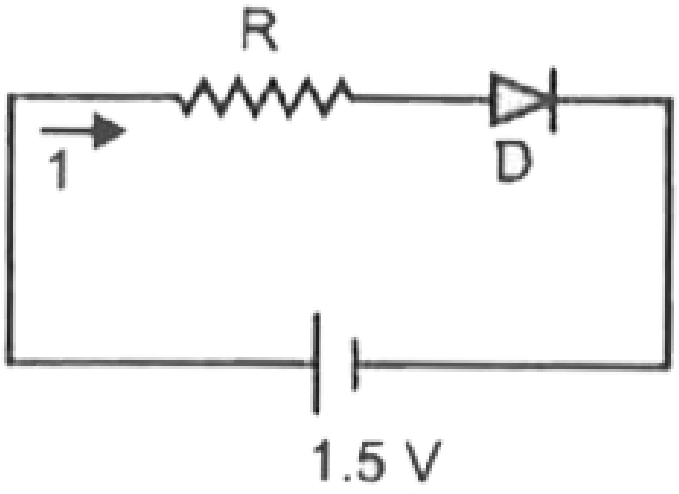
C. $10^4/m^3$

D. $10^2/m^3$

Answer: A

Watch Video Solution

17. The diode used in the circuit shown in figure has a constant voltage drop at 0.5 V at all currents and a maximum power rating of 100 mW. What should be the value of the resistance R, connected in series with diode for obtaining maximum current ?



A. 200Ω

B. 6.67Ω

C. 5Ω

D. 1.5Ω

Answer: C

 Watch Video Solution

18. In an n-p-n transistor circuit, the collector current is 10mA. If 90% of the electrons emitted reach the collector, the emitter

current (I_E) and base current (I_B) are given by

A. $I_e = 9mA, I_b = -1mA$

B. $I_e = -1mA, I_b = 9mA$

C. $I_e = 1mA, I_b = 11mA$

D. $I_e = 11mA, I_b = 1mA$

Answer: D

Watch Video Solution

19. A transistor with $\alpha = 0.98$ is operated in common emitter circuit with a load resistance of $5k\Omega$. If the dynamic resistance of the base emitter junction is 7Ω , the voltage gain and power gain will be :

A. $3500, 1.715 \times 10^5$

B. $4000, 2.715 \times 10^5$

C. $2500, 1.215 \times 10^5$

D. none of these

Answer: A

Watch Video Solution

20. In a common emitter amplifier output resistance is 2000 ohm and input resistance is 5000 ohm. The input signal is of 10 mV and $\beta = 50$,

Then output voltage is

A. 1.25 V

B. 2.25 V

C. 2.50 V

D. 3.0V

Answer: A

Watch Video Solution

21. In a common emitter amplifier output resistance is 2000 ohm and input resistance is 5000 ohm. The input signal is of 10 mV and $\beta = 50$,

Then power gain is

A. 5000 V

B. 5500 V

C. 6250 V

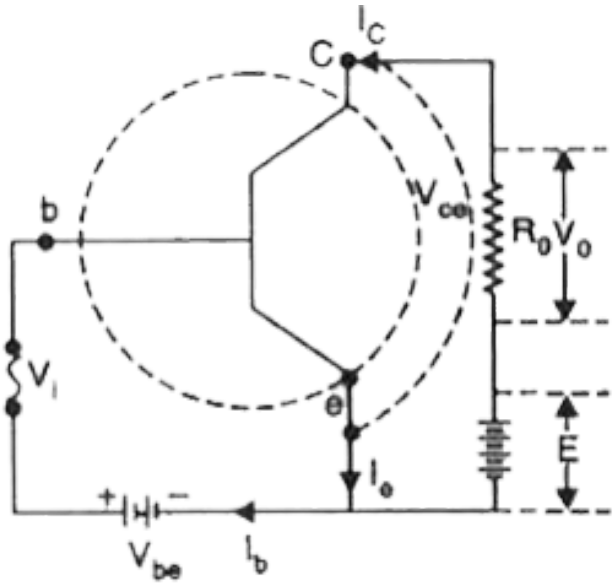
D. 7500 V

Answer: C

Watch Video Solution

22. A n-p-n transistor is connected in C - E configuration Collector supply is 8 V . The voltage drop across the load resistor of 800Ω , connected to collector circuit is 0.8 volt . If

$$\alpha = \frac{25}{26}$$



Then collector emitter voltage (V_{ce}) is

A. 5.2 V

B. 6.2 V

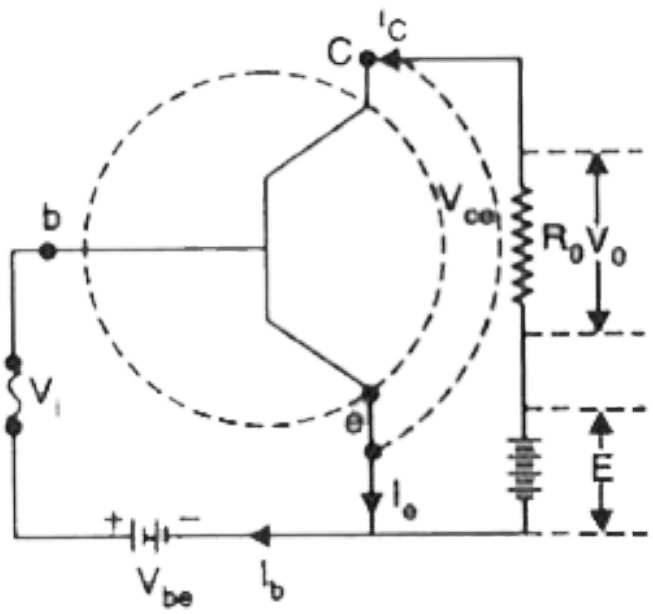
C. 7.2 V

D. 8.2 V

Answer: C

Watch Video Solution

23. A n-p-n transistor is connected in C - E configuration Collector supply is 8 V . The voltage drop across the load resistor of 800Ω , connected to collector circuit is 0.8 volt . If $\alpha = \frac{25}{26}$



If input resistance of transistor is 200Ω , then power gain is

A. 1000 V

B. 1500 V

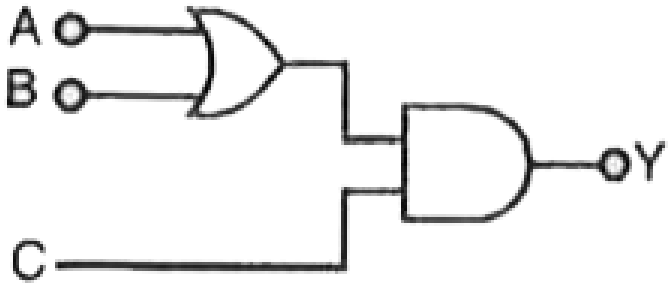
C. 2500 V

D. 3000 V

Answer: C

Watch Video Solution

24. To get an output Y = 1 from circuit of figure, the inputs must be :



A. $\begin{matrix} A & B & C \\ 0 & 1 & 0 \end{matrix}$

B.
A	B	C
1	0	0

C.
A	B	C
1	0	1

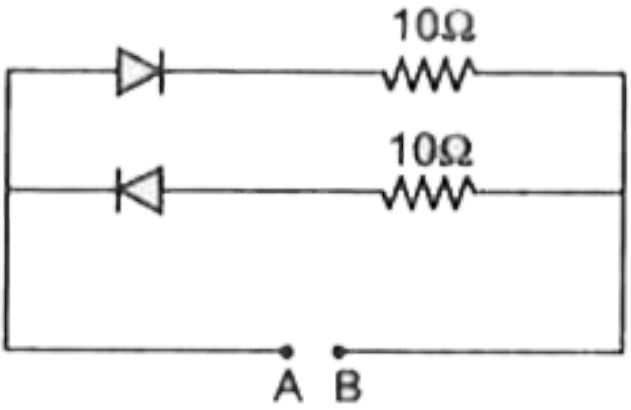
D.
A	B	C
1	1	0

Answer: D

Watch Video Solution

25. A 2V battery is connected across the points A and B as shown in the figure given below . Assuming that the resistance of each diode is zero in forward bias and infinity in reverse bias

, the current supplied by the battery when its positive terminal is connected to A is



A. 0.2 A

B. 0.4 A

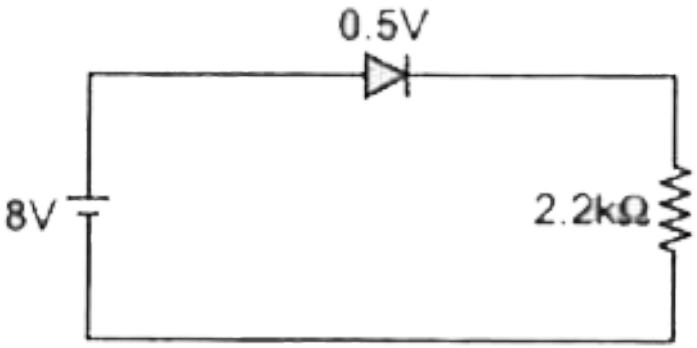
C. Zero

D. 0.1 A

Answer: A

Watch Video Solution

26. In the circuit , if the forward voltage drop for the diode is 0.5 V , the current will be



A. 3.4 mA

B. 2 mA

C. 2.5 mA

D. 3 mA

Answer: A

Watch Video Solution

27. A P - type semiconductor has acceptor level 57 meV above the valence band. The maximum wavelength of light required to create a hole is (Planck's constant $h = 6.6 \times 10^{-34} J - s$)

A. $57 Å$

B. 57×10^{-3}Å

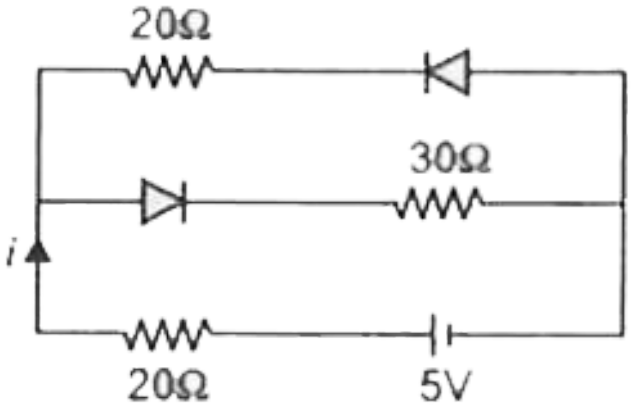
C. 217100Å

D. 11.61×10^{-33}Å

Answer: C

Watch Video Solution

28. Current in the circuit will be :



A. $\frac{5}{40}A$

B. $\frac{5}{50}A$

C. $\frac{5}{10}A$

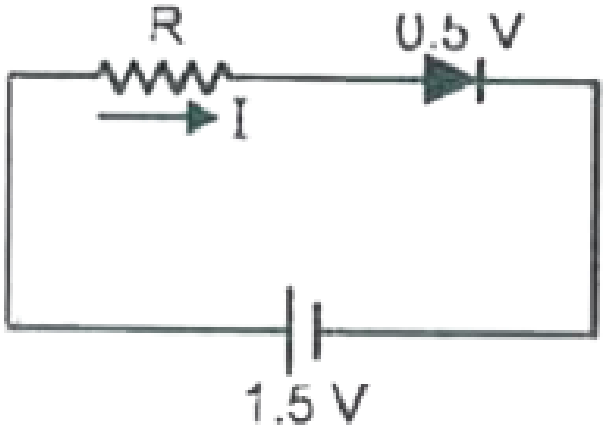
D. $\frac{5}{20}A$

Answer: B

Watch Video Solution

29. The diode used in the circuit shown in figure has a constant voltage drop at 0.5 V at all currents and a maximum power rating of 100 mW. What should be the value of the resistance R, connected in series with diode

for obtaining maximum current ?



A. 1.5Ω

B. 5Ω

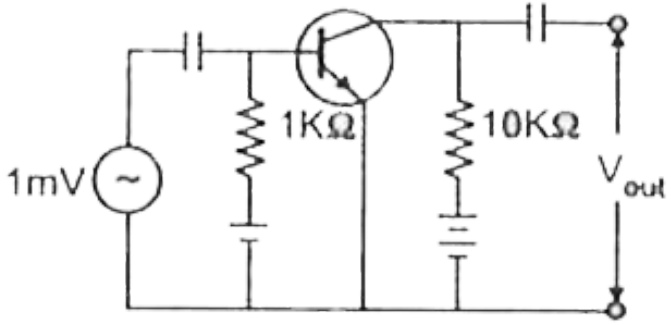
C. 6.67Ω

D. 200Ω

Answer: B

Watch Video Solution

30. In the following common emitter configuration an NPN transistor with current gain $\beta = 100$ is used . The output voltage of the amplifier will be



A. 10 mV

B. 0.1 V

C. 1.0 V

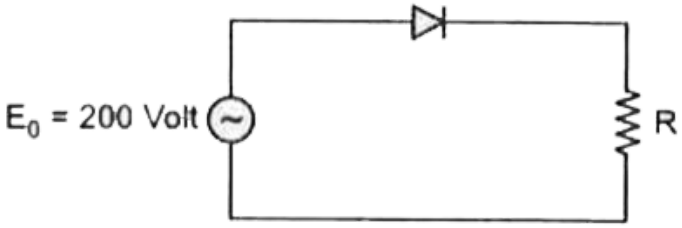
D. 10 V

Answer: C

Watch Video Solution

31. A sinusoidal voltage of Peak value 200 volt is connected to a diode and resistor R in the circuit shown so that half wave rectification

occurs . If the forward resistance of the diode is negligible compared to R the rms (in volt) across R is approximately



A. 200

B. 100

C. $\frac{200}{\sqrt{2}}$

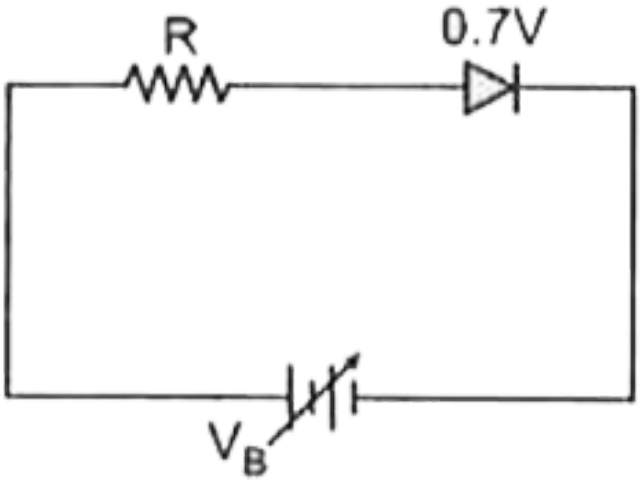
D. 280

Answer: B

Watch Video Solution

32. The junction diode in the following circuit requires a minimum current of 1 mA to be above the knee point (0.7V) of its 1-V characteristic curve . The voltage across the diode is independent of current above the knee point . If $V_B = 5V$, then the maximum value of R so that the voltage is above the

knee point will be



A. $4.3k\Omega$

B. $5.5k\Omega$

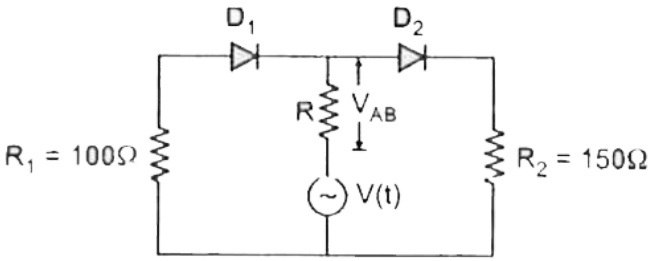
C. $4.8k\Omega$

D. $8.6k\Omega$

Answer: A

Watch Video Solution

33. In the circuit given below , V(t) is the sinusoidal voltage source , voltage drop $V_{AB}(t)$ across the resistance R is



A. Is half wave rectified

B. Is full wave rectified

C. Has the same peak value in the positive and negative half cycles

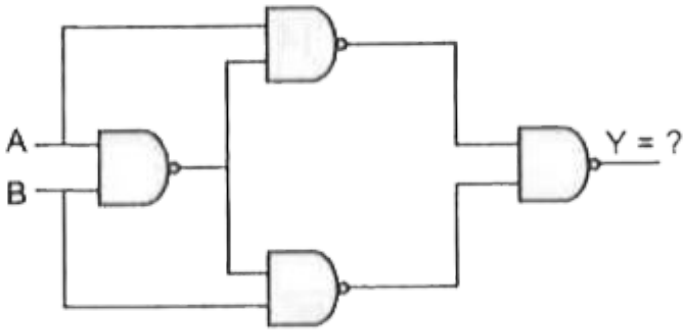
D. Has the same peak value in the positive and negative half cycles

Answer: D

Watch Video Solution

34. Select outputs Y of the combination of gates shown below for inputs A = 1 , B = 0 , A =

1 , B = 1 and A = 0 , B = 0 respectively.



A. $(0 \quad 1 \quad 1)$

B. $(0 \quad 0 \quad 1)$

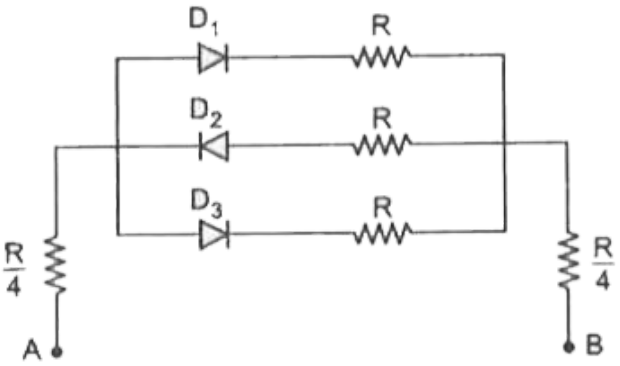
C. $(1 \quad 0 \quad 0)$

D. $(1 \quad 1 \quad 1)$

Answer: C

Watch Video Solution

35. In the following circuits PN - junction diodes D_1, D_2 and D_3 are ideal for the following potentials of A and B. The correct increasing order of resistance between A and B will be



(i) $-10V,\ -5V$

(ii) $-5V, \ -10V$

(iii) $-4V, \ -12V$

A. $(i) < (ii) < (iii)$

B. $(iii) < (ii) < (i)$

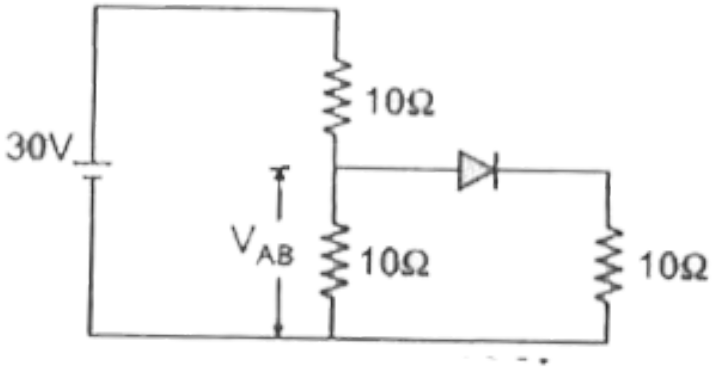
C. $(ii) = (iii) < (i)$

D. $(i) = (iii) < (ii)$

Answer: C

Watch Video Solution

36. Find V_{AB}



A. 10 V

B. 20 V

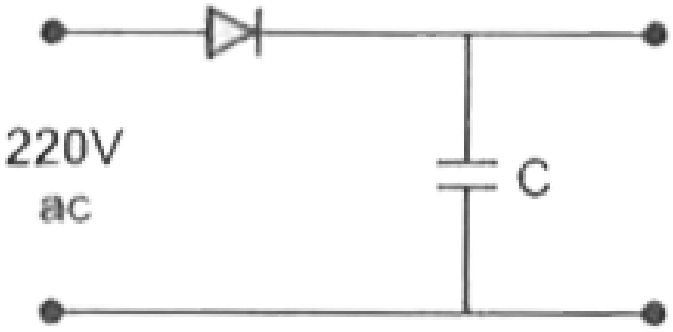
C. 30 V

D. None of these

Answer: A

Watch Video Solution

37. A diode is connected to 200 V (rms) ac in series with a capacitor as shown in figure. The voltage across the capacitor is



A. 220 V

B. 110 V

C. 311.1 V

D. $\frac{200}{\sqrt{2}}V$

Answer: D

Watch Video Solution

38. A potential difference of 2V is applied between the opposite faces of a Ge crystal of area $1cm^2$ and thickness 0.5 mm . If the concentration of electrons in Ge is $2 \times 10^{19}/m^3$ and mobilities of electrons and

holes are $0.36\frac{m^2}{\text{volt}-s}$ and $0.14\frac{m^2}{\text{volt}-s}$ respectively , then the current flowing through the plate will be

A. 0.25 A

B. 0.45 A

C. 0.56 A

D. 0.64 A

Answer: D

Watch Video Solution

39. The contribution in the total current flowing through a semiconductor due to electrons and holes are $\frac{3}{4}$ and $\frac{1}{4}$ respectively . If the drift velocity of electrons is $\frac{5}{2}$ times that of holes at this temperature, then the ratio of concentration of electrons and holes is

A. $6:5$

B. $5:6$

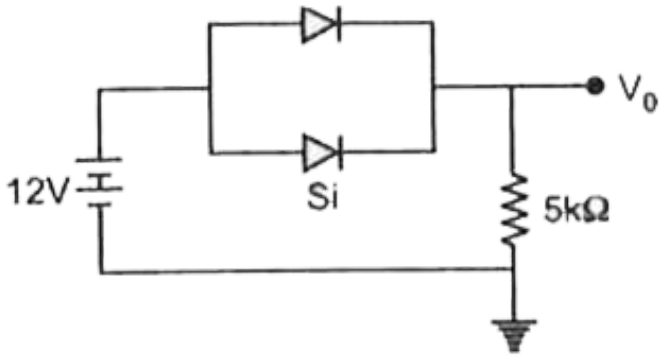
C. $3:2$

D. $2:3$

Answer: A

Watch Video Solution

40. Ge and Si diode conduct at 0.3 V and 0.7respectively . In the following figure if Ge diode connection is reversed, the value of V_0 changes by



A. 0.2 V

B. 0.4 V

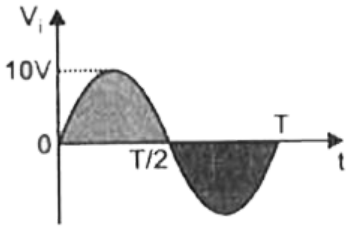
C. 0.6 V

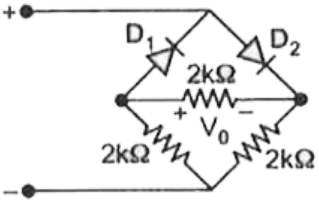
D. 0.8 V

Answer: B

Watch Video Solution

41. In the circuit shown in figure the maximum output voltage





A. 0 V

B. 5 V

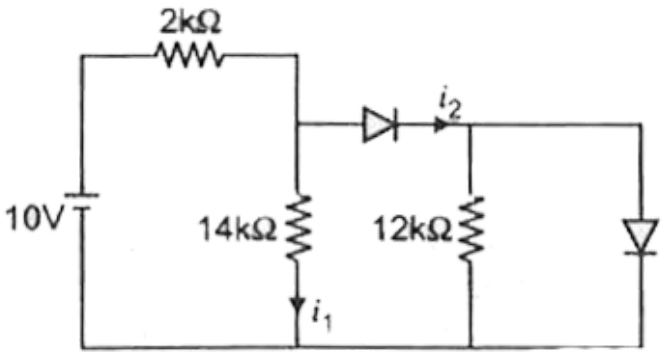
C. 10 V

D. $\frac{5}{\sqrt{2}}V$

Answer: B

Watch Video Solution

42. In the following circuit find I_1 and I_2



A. 0,0

B. 5 mA, 5mA

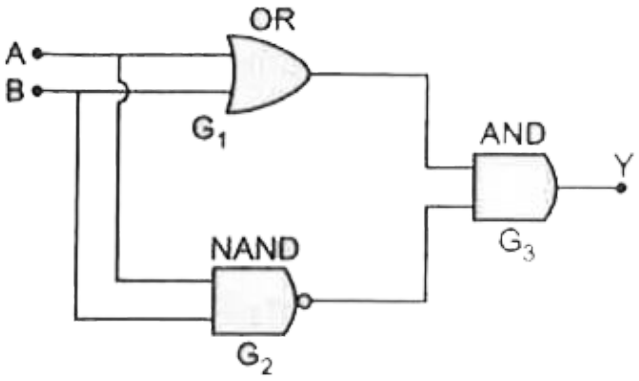
C. 5 mA,0

D. 0,5 mA

Answer: D

Watch Video Solution

43. The following configuration of gate is equivalent to :



A. NAND

B. XOR

C. OR

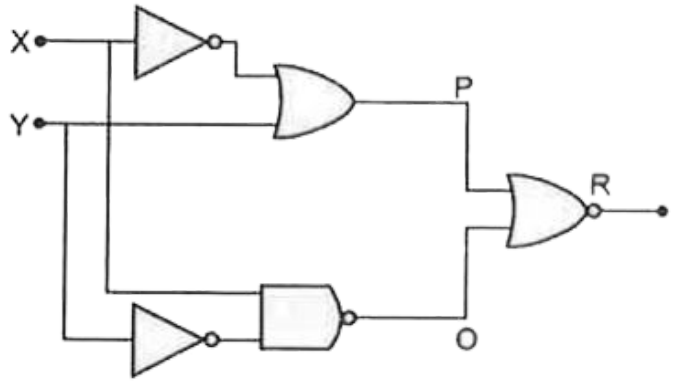
D. none of these

Answer: B

Watch Video Solution

44. Figure gives a system of logic gates . From the study of truth table it can be found that to

produce a high output (1) at R , we must have



A. X = 0 , Y = 1

B. X = 1, Y = 1

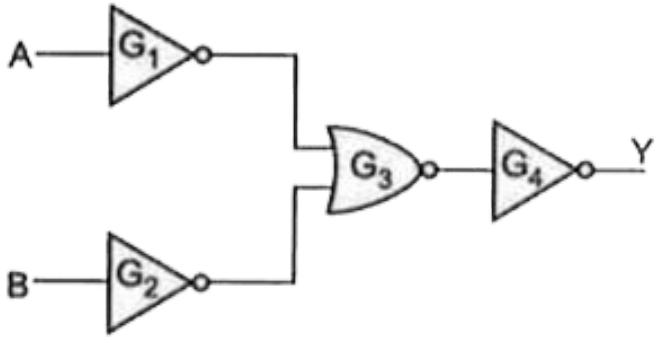
C. X = 1, Y = 0

D. X = 0 , Y = 0

Answer: C

Watch Video Solution

45. The combination of gates shown below produces



A. AND gates

B. XOR gates

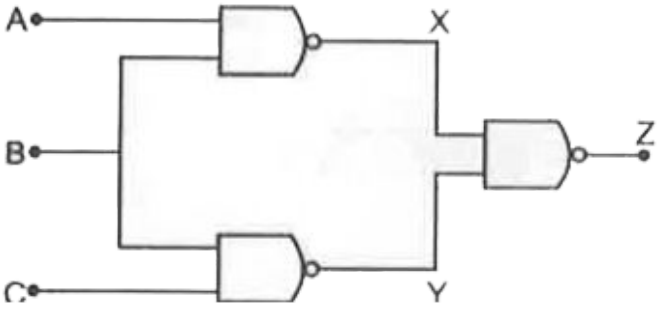
C. NOR gates

D. NAND gate.

Answer: D

Watch Video Solution

46. The figure shows NAND gates followed by a NOR gate . The system is equivalent to the following logic gate .



A. OR

B. AND

C. NAND

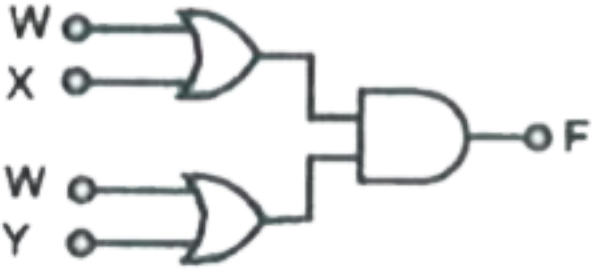
D. None of these

Answer: B

Watch Video Solution

47. The diagram of a logic circuit is given below . The output F of the circuit is

represented by :



A. $W.(X+Y)$

B. $W.(X.Y)$

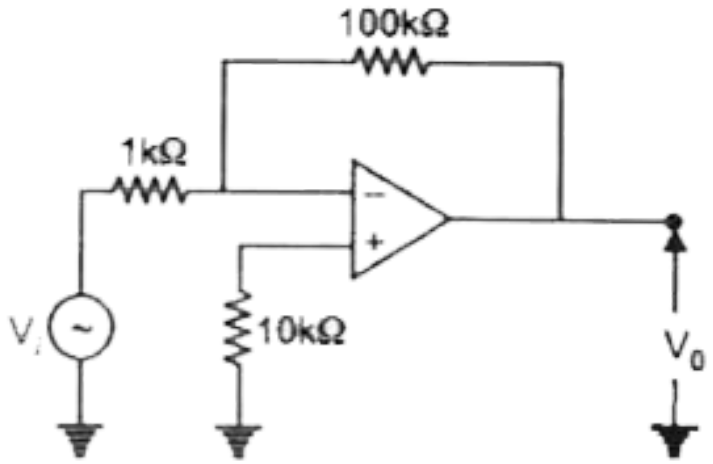
C. $W+(X.Y)$

D. $W+(X+Y)$

Answer: C

Watch Video Solution

48. The voltage gain of the following amplifier is



A. 10

B. 100

C. 1000

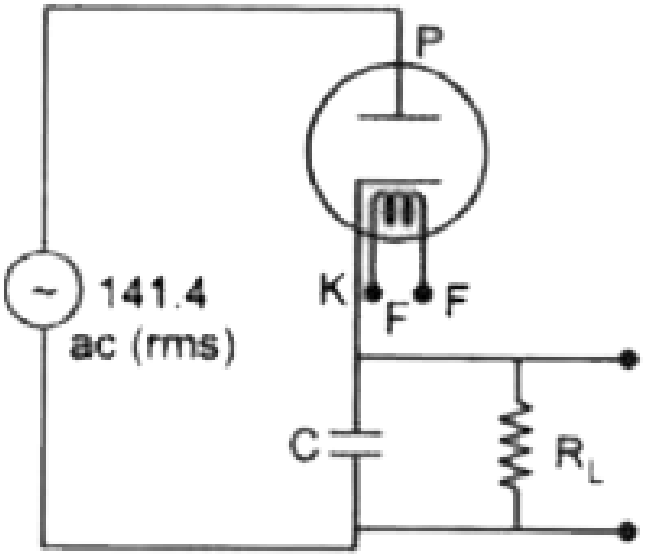
D. 9.9

Answer: B

Watch Video Solution

49. An alternating voltage of 141.4 V (rms) is applied to a vacuum diode as shown in the figure. The maximum potential difference

across the condenser will be



A. $100V$

B. $200V$

C. $100\sqrt{2}V$

D. $200\sqrt{2}V$

Answer: B

Watch Video Solution

50. The plate current in a triode is given be $I_p = 0.004\left(V_p + 10V_g\right)^{3/2} mA$ where I_p, V_p and V_g are the values of plate current , plate voltage and grid voltage , respectively. What are the triode parameters μ, r_p and g_m for the operating point at $V_p = 120$ volt and $V_g = -2$ volt

A. $10, 16.7k\Omega, 0.6$ m mho

B. $15, 16.7k\Omega, 0.06$ m mho

C. $20, 6k\Omega, 16.7$ m mho

D. None of these

Answer: A

Watch Video Solution

51. For an amplifier in C.E. configuration for load $1k\Omega\left(h_{fe} = 50\right)$ and $\left(h_{cc} = 25 \times 10^{-6}\right)$, the current gain is :

A. -48.78

B. -24.8

C. -15.7

D. -5.2

Answer: A

 Watch Video Solution

52. In a full wave rectifier with input frequency 50 Hz the ripple in the output is mainly of the frequency (in Hz)

A. 100 Hz

B. 70.7 Hz

C. 50 Hz

D. 25 Hz

Answer: A

Watch Video Solution

53. The electrical conductivity of a semiconductor increases when electromagnetic radiation of wavelength

shorter than 2480 nm is incident on it. The band gap (in eV) for semi-conductor is

A. 0.5

B. 0.7

C. 1.1

D. 2.5

Answer: A

 Watch Video Solution

54. If ratio of concentration of electrons to that of holes in a semiconductor is 7/5 and the ratio of currents is 7/4 , what is the ratio of their drift velocities ?

A. $\frac{4}{7}$

B. $\frac{5}{8}$

C. $\frac{4}{5}$

D. $\frac{5}{4}$

Answer: D

Watch Video Solution

Watch video solution

55. In a common base mode of a transistor, the collector current is 5.488 mA for an emitter current of 5.60 mA. The values of the base - current amplification factor (β) will be :

A. 48

B. 49

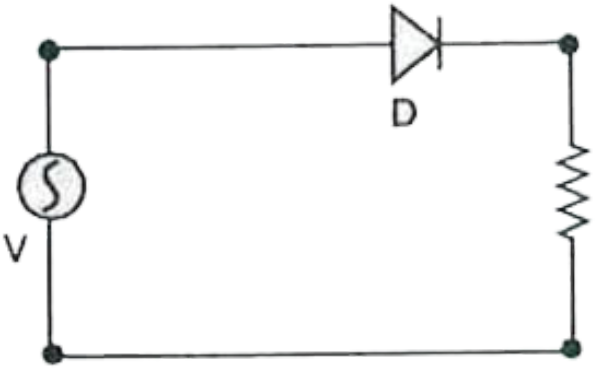
C. 50

D. 51

Answer: B

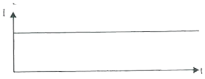
Watch Video Solution

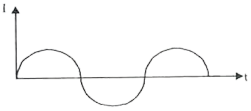
56. A p - n junction (D) shown in the figure can act as a rectifier . An alternating current source (V) is connected in the circuit.



The current (I) in the resistor (R) can be shown by :

A. 

B. 

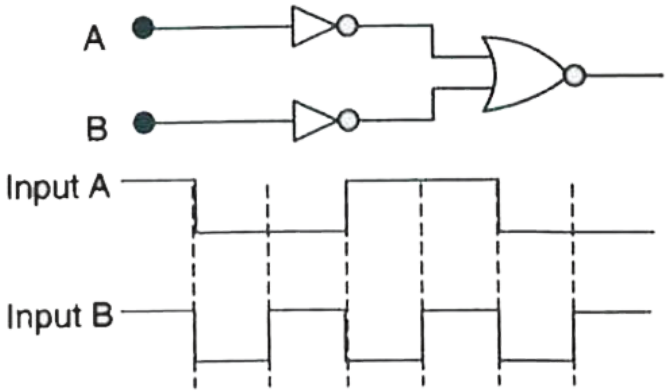
C. 

D. 

Answer: A

Watch Video Solution

57. The logic circuit shown below has the input waveform 'A' and 'B' as shown . Pick out the correct output waveform .



output is :

A. 

B. 

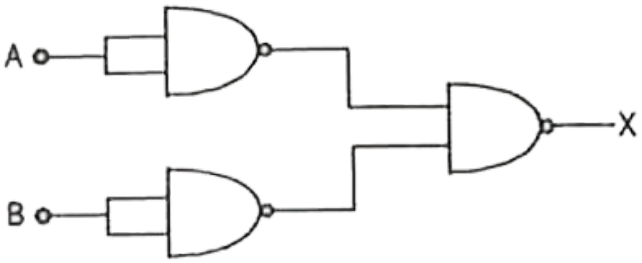
C. 

D. 

Answer: C

Watch Video Solution

58. The combination of gates shown below yields :



A. NAND gate

B. OR gate

C. NOT gate

D. XOR gate

Answer: B

Watch Video Solution

Multiple Choice Questions Level Iii Questions From Aieee Jee Examination

1. Statement - 1 : Sky wave signals are used for long distance radio communication. These signals are in general, less stable than ground wave signals. Statement - 2 : The state of ionosphere varies from hour to hour, day to day and season to season.

A. Statement -1 is true , Statement -2 is true , Statement -2 is the correct explanation of Statement -1.

B. Statement -1 is true , Statement -2 is true , Statement -2 is not the correct explanation of Statement -1 .

C. Statement -1 is false, Statement -2 is true .

D. Statement -1 is true , Statement -2 is false.

Answer: A

 Watch Video Solution

2. The output of an OR gate is connected to both the inputs of a NAND gate. The combination will serve as

A. NOT gate

B. NOR gate

C. AND gate

D. OR gate

Answer: B

Watch Video Solution

3. Truth table for system of four NAND gates as shown in figure is :

A.

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

B.

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

C.

A	B	Y
0	0	0
0	1	0
1	0	1
1	1	1

D.

A	B	Y
0	0	1
0	1	1
1	0	0
1	1	0

Answer: B

View Text Solution

4. A dipole detector is used to detect an amplitude modulated wave of 60% modulation by using a condenser of capacity 250 pico farad in parallel with a load resistance 100 kilo ohm. Find the maximum

modulated frequency which could be detected by it.

A. 10.62 kHz

B. 5.31 MHz

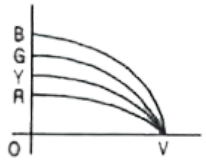
C. 5.31 kHz

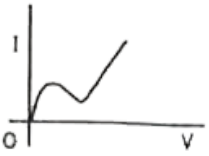
D. 10.62 MHz

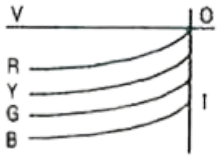
Answer: D

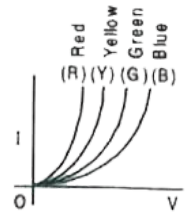
 Watch Video Solution

5. The I - V characteristic of an LED is :

A. 

B. 

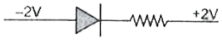
C. 

D. 

Answer: D

Watch Video Solution

6. The forward biased diode connection is :

A. 

B. 

C. 

D. 

Answer: B

View Text Solution

7. The current voltage relation of diode is given by $I = \left(e^{1000V/T} - 1\right)$ mA , where the applied voltage V is in volts and the temperature T is in degree Kelvin . If a student makes an error measuring ± 0.01 V while measuring the current of 5 mA at 300K, what will be the error in the error in the value of current in mA ?

A. 0.5 mA

B. 0.05 mA

C. 0.2 mA

D. 0.02 mA

Answer: C

8. A red LED emits light at 0.1 watt uniformly around it. The amplitude of the electric field of the light at a distance of 1 m from the diode is :

A. 1.73 V/m

B. 2.45 V/m

C. 5.48 V/m

D. 7.75 V/m

Answer: B

9. A signal of 5 kHz frequency is amplitude modulated on a carrier wave of frequency 2 MHz. The frequencies of the resultant signal is/are :

A. 2 MHz only

B. 2005 kHz, and 1995 kHz

C. 2005 kHz,2000 kHz and 1995 kHz

D. 200 kHz and 1995 kHz.

Answer: C

Watch Video Solution

Recent Competitive Questions

1. The forbidden energy gap in Ge in 0.72 eV Given, $hc = 12400 \text{ eV} - \text{Å}$ The maximum wavelength of radiation that will generate electron hole pair is

A. 172220Å

B. 172.2Å

C. 17222Å

D. 1722Å

Answer: C

Watch Video Solution

Watch video solution

2. In a p - n junction diode , not connected to any circuit

A. the potential is the same everywhere

B. the p - type side has a higher potential than the n - type side

C. there is an electric field at the junction directed from the n - type side to p - type side.

D. there is an electric field at the junction directed from the p-type side to n - type side .

Answer: C

Watch Video Solution

3. Identify the logic operation performed by the circuit given here

A. OR

B. NOR

C. NOT

D. NAND

Answer: A

View Text Solution

4. An n-p-n transistor can be considered to be equivalent to two diodes, connected Which of the following figures is the correct one ?

A. 

B. 

C. 

D. 

Answer: B

View Text Solution

5. In the case of forward biasing of a p - n junction diode, which one of the which one of the following figures correctly depicts the

direction of conventional current (indicated by an arrow mark) ?

A. 

B. 

C. 

D. 

Answer: D

View Text Solution

6. The output of given logic circuit is :

A. $A.(B+C)$

B. $A.(B.C)$

C. $(A+B).(A+C)$

D. $A+B+C$

Answer: C

View Text Solution

7. Copper and Germanium are cooled from room temperature to 100 K . Then the resistance of

A. germanium increases , copper increases

B. germanium decreases , copper increases

C. germanium decreases , copper decreases

D. germanium increases , copper decreases

Answer: D

 Watch Video Solution

8. For a transistor , $\beta = 100$. The value of α is

A. 0.01

B. 1.01

C. 0.99

D. 100

Answer: C

Watch Video Solution

9. The following truth table with A and B as inputs is for ....., gate .

A	B	Output
1	0	1
1	1	0
0	1	1
0	0	0

A. NOR

B. AND

C. OR

D. XOR

Answer: D

Watch Video Solution

10. In which of the following statements, the obtained impure semiconductor is of p-type?

A. Germanium is doped with bismuth

B. Silicon is doped with antimony

C. Gemanium is doped with gallum

D. Silicon is doped with phosphorus.

Answer: C

Watch Video Solution

11. The width of the depletion region in a P-N junction diode is

A. increased by reverse bias

B. increased by forward bias

C. decreased by reverse bias independent of the bias voltage

D.

Answer: A

Watch Video Solution

12. When the transistor is used as an amplifier

A. Emitter - base junction must be reverse biased, Collector - base junction must be forward biased,

B. Emitter - base junction must be forward biased, Collector base junction must be forward biased,

C. Emitter - base junction must be reverse , Collector - base junction must be reverse biased,

D. Emitter - base junction must be forward, Collector - base junction must be reverse biased,

Answer: D

Watch Video Solution

13. Which one of the following is not correct?

A. In forward biased condition diode conducts

B. If the packing fraction is negative , the element is stable

C. Binding energy is the energy equivalent to mass defect

D. Radioactive element can undergo spontaneous fission.

Answer: D

Watch Video Solution

14. The output of an OR gate is connected to both the inputs of a NAND gate. The combination will serve as

A. AND gates

B. NOT gate

C. NAND gate

D. NOR gate

Answer: D

Watch Video Solution

15. in n type semiconductor, electrons are majority charge carriers but does not show any negative charge, the reason is

A. electrons are stationary

B. electrons neutralize with holes

C. mobility of electrons is extremely small

D. atom is electrically neutral.

Answer: D

Watch Video Solution

16. For the gives digital circuit write the truth table and identify the logic gates it represents

A. OR gate

B. NOR gate

C. NAND gate

D. AND gate

Answer: D

View Text Solution

17. If α-current gain of a transistor is 0.98 . What is the value of β-current gain of the transistor ?

A. 0.49

B. 49

C. 4.9

D. 5

Answer: B

Watch Video Solution

18. The circuit has two oppositely connected ideal diodes in parallel . What is the current

following in the circuit ?

A. 2.0 A

B. 1.33 A

C. 1.71 A

D. 2.31 A

Answer: C

View Text Solution

19. An LED is constructed from a pn junction based on a certain semi-conducting material whose energy gap is 1.9 eV. Then the wavelength of the emitted light is

A. $1.6 \times 10^{8} m$

B. $9.1 \times 10^{-5} m$

C. $2.9 \times 1^{-9} m$

D. $6.5 \times 10^{-7} m$

Answer: D

Watch Video Solution

Watch video solution

20. The given table is for

Input		Output
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

A. OR gate

B. NOR gate

C. AND

D. NAND gate.

Answer: D

Watch Video Solution

21. The input characteristics of a transistor in CE mode is the graph obtanied by plotting

A. I_B against V_{CE} at constant V_{BE}

B. I_B against I_C at constant V_{BE}

C. I_B against V_{BE} at constant V_{CE}

D. I_B against I_C at constant V_{CE}

Answer: C

Watch Video Solution

22. In a transistor connected in a common emitter mode, $R_o - 4kW, R_i = 1W, I_c = 1\mu A$ and $I_b = 20\mu A$. The voltaged gain is :

A. 100

B. 200

C. 300

D. 400

Answer: B

Watch Video Solution

23. In a semi conductor diode, the reverse biased current is due to drift of the free electrons and holes caused by

A. Thermal explansion only

B. Impurity atoms only

C. Both a and b

D. Neither by a nor by b.

Answer: C

 Watch Video Solution

24. In case of $p-n$ junction diode at high value of reverse bias, the current rises sharply without damaging the diode. The value of reverse bias is known as :

A. Cut - in

B. Zener voltage

C. Inverse Voltage

D. Critical Voltage.

Answer: B

Watch Video Solution

25. The given table is for

Input		Output
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

A. OR Gate

B. AND Gate

C. NOR Gate

D. NAND Gate.

Answer: D

Watch Video Solution

26. In a transistor connected in a common emitter mode, $R_o - 4k\Omega, R_i = 1\Omega, I_c = 1mA$ and $I_b = 20mA$. The voltaged gain is :

A. 100

B. 200

C. 300

D. 400

Answer: B

Watch Video Solution

Revision Test

1. Choose the forward biased p-n junction :

A. 

B. 

C. 

D. 

Answer: B

View Text Solution

2. Choose the reverse biased p-n junction :

A. 

B. 

C. 

D. 

Answer: A

View Text Solution

3. The forward biased characteristics of a p - n junction are :

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

4. If I_e is emitter current , I_b is base current and I_c is the collector current then :

A. $I_e = I_b - I_c$

B. $I_b + I_c + I_e = 0$

C. $I_e - I_b = -I_c$

D. $I_e - I_b = I_c$

Answer: D

Watch Video Solution

5. Zener diode is :

A. lightly doped

B. heavily doped

C. always forward biased

D. None of these

Answer: B

Watch Video Solution

6. The reverse biased characteristics of a p-n junction are :

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

7. The advantage of BJT (Bipolar junction transistor) over vacuum tube triode is :

A. BJT is cheap

B. It is less bulky

C. there is no heating element in it

D. all of the above

Answer: D

Watch Video Solution

8. For an unknown element , the thickness of forbidden band is 4.97 eV and its resistivity is found to be of the order of 10^{-1} ohm metre . This element should be :

A. conductor

B. insulator

C. semiconductor

D. may be conductor or semiconductor

Answer: B

Watch Video Solution

9. At abosolute zero, a metal will behave as :

A. conductor

B. semiconductor

C. insulators

D. superconductor

Answer: D

Watch Video Solution

10. A piece aluminium and germanium each, are cooled from T_1 K to T_2 K . The resistance of :

A. each of them decreases

B. each of them increases

C. aluminium increases and that of germanium decreases

D. aluminium decreases and that of germanium increases

Answer: D

Watch Video Solution

11. One speaks of mutual characteristics in connection with L :

A. an inductance

B. a tangent galvanometer

C. a transformer

D. a transistor

Answer: B

Watch Video Solution

12. In a frequency modulated wave :

A. amplitude varies with time

B. frequency varies with time

C. Amplitude and frequency both vary with time

D. Amplitude and frequency both are constants.

Answer: B

Watch Video Solution

13. A small portion of Indium is incorporated is germanium . The crystal will be :

A. n - type

B. p - type

C. half n - type and half p - type

D. none of the above .

Answer: B

 Watch Video Solution

14. In a transistor the base is made very thin and a very hightly doped with an impurity :

A. to enable the collector to collect side .

B. to enable the emitter to emit small number of holes or electrons .

C. to save the transistor from high current effects.

D. none of the above .

Answer: A

 Watch Video Solution

15. The safety limit of temperature for germanium and silicon are :

A. $80^{\circ}C, 200^{\circ}C$

B. $200^{\circ}C, 80^{\circ}C$

C. $800^{\circ}C, 200^{\circ}C$

D. $80^{\circ}C, 2000^{\circ}C$

Answer: A

Watch Video Solution

16. A semiconductor diode designed to operate in breakdown region is called :

A. tunnel diode

B. metal diode

C. Zener diode

D. Grid diode

Answer: C

Watch Video Solution

17. Power consumed by an ideal diode is :

Watch Video Solution

18. A conductor at very high temperature becomes :

A. insulator

B. semiconductor

C. superconductor

D. p - type extrinsic semiconductor

Answer: A

Watch Video Solution

19. Zenor breakdown semiconductor

A. forward bias only

B. reverse bias only

C. both (a) and (b)

D. None of these

Answer: B

Watch Video Solution

20. Conduction - electron have more mobility than holes because these electrons :

A. are lighter

B. have negative charge

C. need less energy to move them

D. experience collisions less frequently.

Answer: C

Watch Video Solution

21. At higher forward voltages , a junction diode is likely to :

A. burn out

B. become noisy

C. suffer breakdown

D. get saturated

Answer: A

Watch Video Solution

22. Antimony in silicon matrix provides a free :

A. hole

B. electron

C. hole or electron

D. neither hole not electron

Answer: B

 Watch Video Solution

23. The value of barrier potential depends on :

A. doping density

B. temperature

C. both

D. none

Answer: C

Watch Video Solution

24. Avalanche breakdown is initiated by :

A. minority carriers

B. majority carriers

C. both

D. None

Answer: A

Watch Video Solution

25. If I_c is collector current , I_b in the base current and I_e is emitter current then current gain α is given as :

A. $\alpha = \frac{I_b}{I_c}$

B. $\alpha = \frac{I_c}{I_b}$

C. $\alpha = \frac{I_c}{I_e}$

D. $\alpha = I_e + I_c$

Answer: C

Watch Video Solution

26. Current gain β is

A. $\beta = \frac{I_e}{I_c}$

B. $\beta = \frac{I_c}{I_e}$

C. $\beta = \frac{I_b}{I_c}$

D. $\beta = \frac{I_c}{I_b}$

Answer: D

Watch Video Solution

27. The relation between α and β is :

A. $\beta = \frac{\alpha}{1+\alpha}$

B. $\beta = \frac{\alpha}{1-\alpha}$

C. $\beta = \frac{1-\alpha}{\alpha}$

D. $\alpha = \frac{\beta}{1-\beta}$

Answer: B

Watch Video Solution

28. The input characteristics of common emitter n - p - n transistor

A. 

B. 

C. 

D. 

Answer: C

View Text Solution