



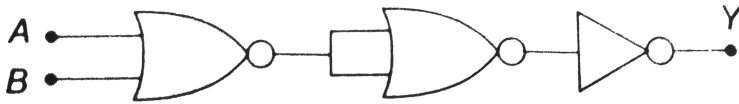
# PHYSICS

## BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

### SOLID AND SEMICONDUCTOR DEVICES

**Exercise**

1. The given electrical network is equivalent to:



A. AND gate

B. OR gate

C. NOR gate

D. NOT gate

**Answer: C**



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2. In a common emitter transistor amplifier, the audio signal voltage across the collector is  $3k\Omega$ . If current gain is 100 and the base resistance is  $2k\Omega$ , the voltage and power gain of the amplifier are

A. 200 and 100

B. 15 and 200

C. 150 and 15000

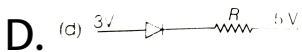
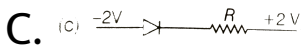
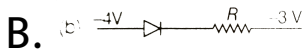
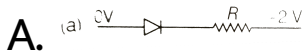
D. 20 and 2000

**Answer: C**



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3. Which one of the following represents forward bias diode?



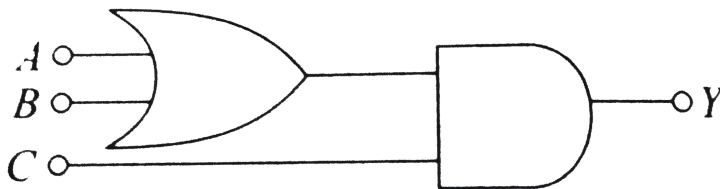
**Answer: A**



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4. To get output 1 for the following circuit, the correct choice for the input is :



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

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

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

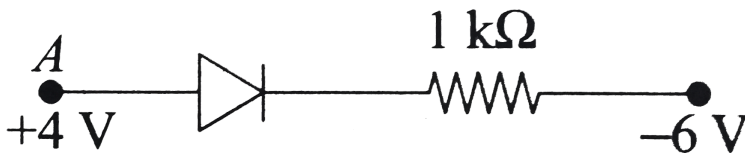
D.  $A = 0, B = 1, C = 0$

**Answer: C**



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5. Consider the junction diode as ideal. The value of current flowing through  $AB$  is:



A.  $10^{-2}\text{ A}$

B.  $10^{-1}\text{ A}$

C.  $10^{-3}\text{ A}$

D. 0

**Answer: A**



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6. A n-p-n transistor is connected in common emitter configuration in a given amplifier. A load resistance of  $800\Omega$  is connected in the collector circuit and the voltage drop across it is  $0.8V$ . If the current amplification factor is  $0.96$  and the input resistance of the circuits is

192 $\Omega$ , the voltage gain and the power gain of the amplifier will respectively be

A. 3.69, 3.84

B. 4,4

C. 4,3.69

D. 4, 3.84

**Answer: D**



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7. For CE transistor amplifier, the audio signal voltage across the collector resistance of  $2k\Omega$  is 4V. If the current amplification factor of the transistor is 100 and the base resistance is  $1k\Omega$ , then the input signal voltage is

A.  $10mV$

B.  $20mV$

C.  $30mV$

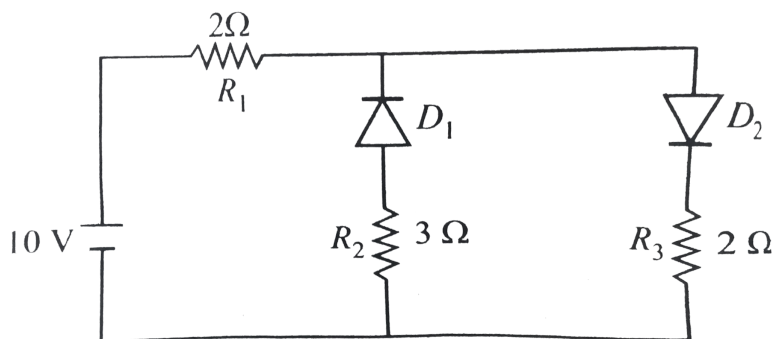
D.  $15mV$

**Answer: B**



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8. The given circuit has two ideal diodes connected as show in the figure. The current flowing through the resistance  $R_1$  will be



A.  $2.5A$

B.  $10.0A$

C.  $1.43A$

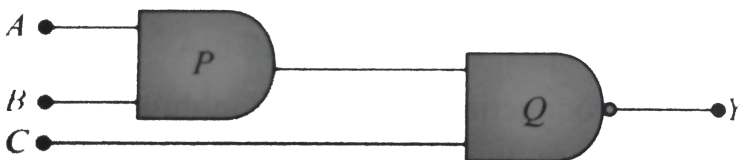
D.  $3.13A$

**Answer: A**



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9. What is the output  $Y$  in the following circuit, when all the three output  $A, B, C$  are first 0 and then 1?



A. 0, 1

B. 0, 0

C. 1, 0

D. 1, 1

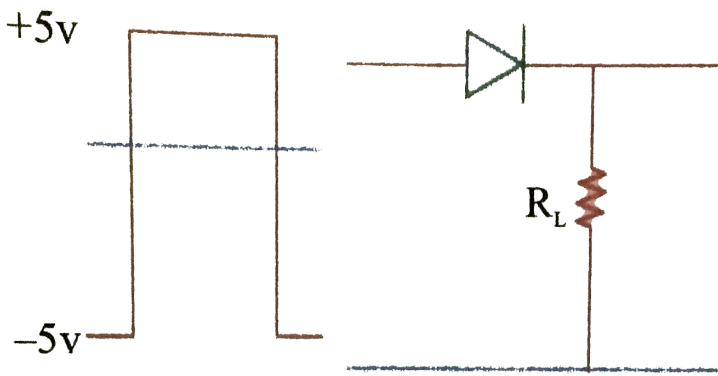
**Answer: C**



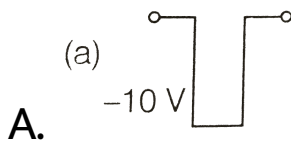
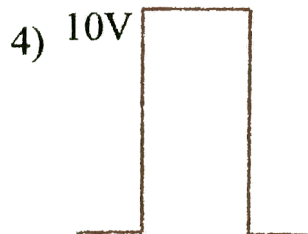
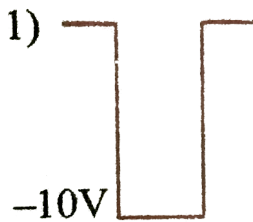
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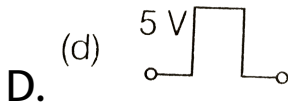
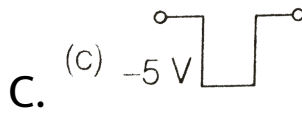
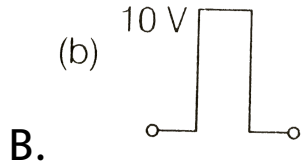
**10.** If a  $p - n$  junction diode, a square input signal of  $10V$  is applied as shown.





Then the out put signal across  $R_L$  will be



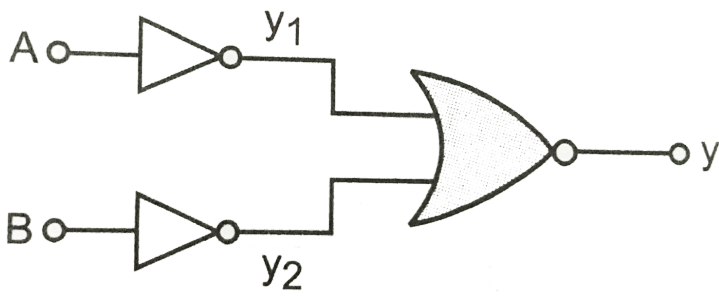


**Answer: D**



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**11.** Which logic gate is represented by the following combination of logic gates



A. OR

B. NAND

C. AND

D. NOR

**Answer: C**



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12. The input signal given to a  $CE$  amplifier having a voltage gain of 150 is  $V_i = 2 \cos\left(15t + \frac{\pi}{3}\right)$ . The corresponding output signal will be

A.  $300 \cos\left(15t + \frac{\pi}{3}\right)$

B.  $75 \cos\left(15t + \frac{2\pi}{3}\right)$

C.  $2 \cos\left(15t + \frac{5\pi}{3}\right)$

D.  $300 \cos\left(15t + \frac{4\pi}{3}\right)$

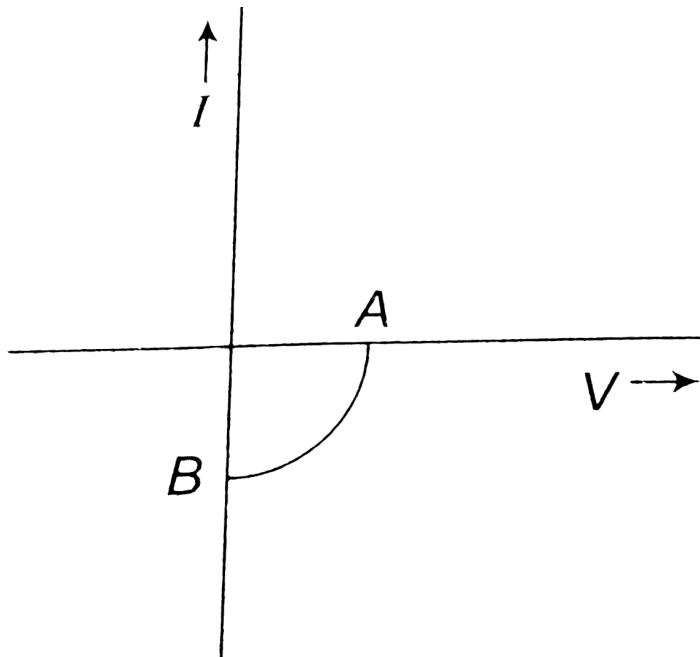
**Answer: D**



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13. The given graph represents  $V - I$  characteristic for a semiconductor device.

which of the following statement is correct?



A. It is V- I characteristic for solar cell where point A represents open circuit voltage and point B short circuit current

B. It is for a solar cell and points A and B represent open circuit voltage and current, respectively

C. It is for a photodiode and points A and B represents open circuit voltage and current respectively

D. It is for a LED and points A and B represent open circuit voltage and short circuit current respectively

**Answer: A**



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**14.** The barrier potential of a p-n junction depends on : (i) type of semiconductor material (ii) amount of doping (iii)

temperature.

Which is one of the following is correct?

A. (i) and (ii) only

B. (ii) only

C. (ii) and (iii) only

D. (i), (ii) and (iii)

**Answer: D**



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**15.** In a  $n$ -type semiconductor, which of the following statement is true?

A. Electrons are majority carriers and

trivalent atoms are dopants

B. Electrons are minority carriers and

pentavalent atoms are dopants

C. Holes are minority carriers and

pentavalent atoms are dopants

D. Holes are majority carriers and trivalent atoms are dopants

**Answer: C**



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**16.** In a common emitter (CE) amplifier having a voltage gain  $G$ , the transistor used has transconductance  $0.03 \text{ mho}$  and current gain  $25$ . If the above transistor is replaced with

another one with transconductance  $0.02 \text{ mho}$   
and current gain 20, the voltage gain will

A.  $\frac{2}{3}G$

B.  $1.5G$

C.  $\frac{1}{3}G$

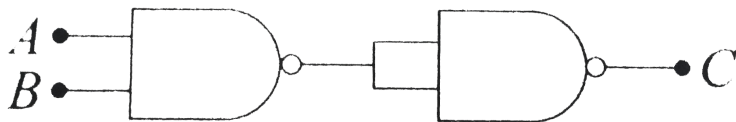
D.  $\frac{5}{4}G$

**Answer: A**



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17. The output ( $X$ ) of the logic circuit shown in figure will be



A.  $X = \overline{\overline{A}} . \overline{\overline{B}}$

B.  $X = \overline{A . B}$

C.  $X = A . B$

D.  $A = \overline{A + B}$

**Answer: C**



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**18.** In a CE transistor amplifier, the audio signal voltage across the collector resistance of  $2k\Omega$  is  $2V$ . If the base resistance is  $1k\Omega$  and the current amplification of the transistor is 100, the input signal voltage is:

A.  $0.1V$

B.  $1.0V$

C.  $1mV$

D.  $10mV$

**Answer: D**



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**19.**  $C$  and  $Si$  both have same lattice structure, having 4 bonding electrons in each. However,  $C$  is insulator whereas  $Si$  is intrinsic semiconductor. This is because

A. In case of  $C$ , the valence bond is not completely filled at absolute zero temperature

B. in case of C, the conduction band is partly filled even at absolute zero temperature

C. the four bonding electrons in the case of C lie in the second orbit, whereas in the case of Si they lie in the third

D. the four bonding electrons in the case of C lie in the third orbit, whereas for Si they lie in the fourth orbit

**Answer: C**

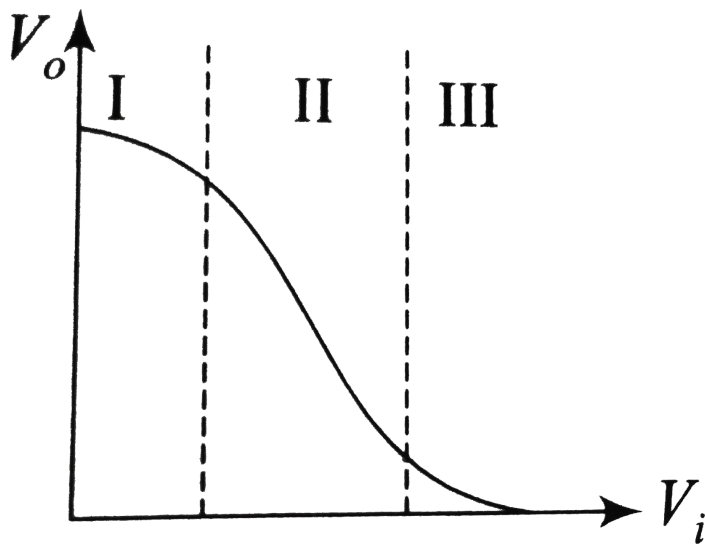


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**20.** Transfer characteristics [output voltage ( $V_o$ ) vs. input voltage ( $V_i$ )] for a base biased transistor in  $CE$  configuration is as shown in the figure. For using transfer as a which, it is



used



- A. in region III
- B. both in region (I) and (III)
- C. in region II
- D. in region I

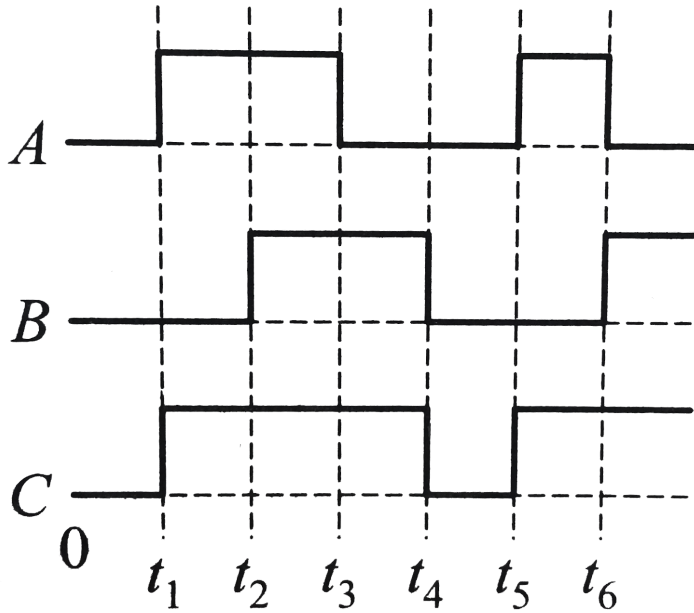
**Answer: B**



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**21.** The figure shows a logic circuit with two inputs  $A$  and  $B$  and the output  $C$ . The voltage wave forms across  $A$ ,  $B$  and  $C$  are as given.

The logic circuit gate is



A. OR gate

B. NOR gate

C. AND gate

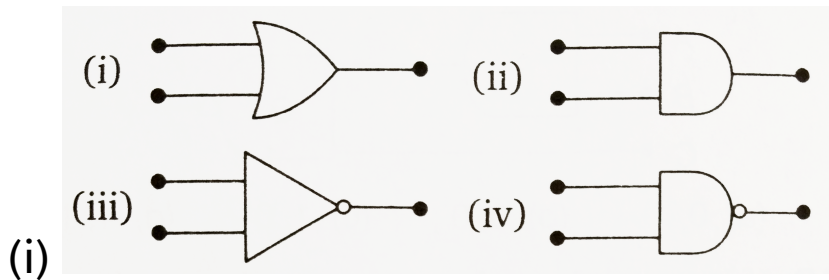
D. NAND gate

**Answer: A**



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**22.** Symbolic representation of four logic gates are shown as



Pick out which ones are for AND, NAND and NOT gates, respectively.

**A. (iii), (ii) and (i)**

B. (iii), (ii) and (iv)

C. (ii), (iv) and (iii)

D. (ii), (iii) and (iv)

**Answer: C**



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**23.** If a small amount of antimony is added to germanium crystal

A. the antimony becomes an acceptor atom

- B. there will be more free electrons than holes in the semiconductor
- C. its resistance is increased
- D. it becomes a p-type semiconductor

**Answer: B**



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**24.** In forward biasing of the p-n junction:

A. the positive terminal of the battery is connected to n-side and the depletion region becomes thin

B. the positive terminal of the battery is connected to n-side and the depletion region becomes thick

C. the positive terminal of the battery is connected to p-side and the depletion region become thin

D. the positive terminal of the battery is connected to p-side and the depletion region becomes thick

**Answer: C**



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**25.** Which one of the following statement is false?



- A. Pure Si doped with trivalent impurities gives a p-type semiconductor
- B. Majority carriers in a n-type semiconductor are holes
- C. Minority carriers in a p-type semiconductor are electrons
- D. The resistance of intrinsic semiconductor decreases with increase of temperature.

**Answer: B**



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**26.** The device that can act as a complete electronic circuit is

- A. Junction diode
- B. Integrated circuit
- C. Junction transistor
- D. Zener diode

**Answer: B**



27. A common emitter amplifier has a voltage gain of 50, an input impedance of  $100\Omega$  and an output impedance of  $200\Omega$ . The power gain of the of the amplifier is

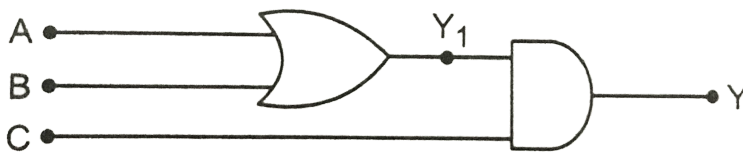
- A. 500
- B. 1000
- C. 1250
- D. 50

**Answer: C**



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**28.** To get an output  $y = 1$  from the circuit shown below, the input must be



A. 

$A$	$B$	$C$
0	1	0

B. 

$A$	$B$	$C$
0	0	1

C. 

$A$	$B$	$C$
1	0	1

D. 
$$\begin{array}{ccc} A & B & C \\ 1 & 0 & 0 \end{array}$$

**Answer: C**



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**29.** Sodium has body centred packing. Distance between two nearest atoms is  $3.7\text{\AA}$ . The lattice parameter is

A.  $6.8\text{\AA}$

B.  $4.3\text{\AA}$

C.  $3.0\text{\AA}$

D.  $8.6\text{\AA}$

**Answer: B**



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**30.** A transistor is operated in common emitter configuration at  $V_c = 2V$  such that a change in the base current from  $100\mu A$  to  $200\mu A$  produces a change in the collector

current from  $5mA$  to  $10mA$ . The current gain is

A. 75

B. 100

C. 150

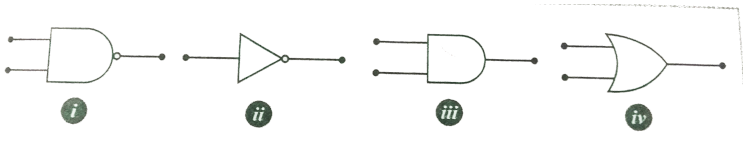
D. 50

**Answer: D**



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**31.** The symbolic representation of four logic gates are given in Fig. The logic symbol for OR, NOT and NAND gates are respectively



A. (iii), (iv) , (i)

B. (iv), (i), (iii)

C. (iv), (ii), (i)

D. (i), (iii), (iv)

**Answer: C**





32. A  $p - n$  photodiode is fabricated from a semiconductor with a band gap of  $2.5\text{eV}$ . It can detect a signal of wavelength

A.  $6000\text{\AA}$

B.  $4000\text{nm}$

C.  $6000\text{nm}$

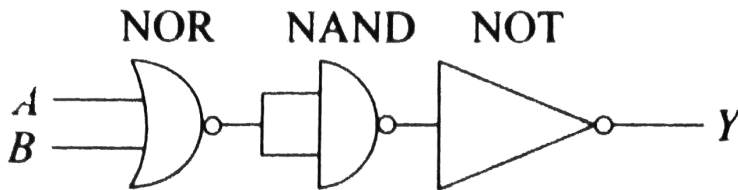
D.  $4000\text{\AA}$

**Answer: D**



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33. The circuit is equivalent to



A. AND gate

B. NAND gate

C. NOR gate

D. OR gate

**Answer: C**



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**34.** A  $p - n$  photodiode is made of a material with a band gap of  $2.0eV$ . The minimum frequency of the radiation that can be absorbed by the material is nearly

A.  $10 \times 10^{14} Hz$

B.  $5 \times 10^{14} Hz$

C.  $1 \times 10^{14} Hz$

D.  $20 \times 10^{14} Hz$

**Answer: B**



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**35.** The voltage gain of an amplifier with 9 % negative feedback is 10. The voltage gain without feedback will be

A. 90

B. 10

C. 1.25

D. 100

**Answer: D**



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**36.** If the lattice parameter for a crystalline structure is  $3.6\text{\AA}$ , then the atomic radius is fcc crystals is

A.  $1.81\text{\AA}$

B.  $2.10\text{\AA}$

C.  $2.92\text{\AA}$

D.  $1.27\text{\AA}$

**Answer: D**



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**37.** For a cubic crystal structure which one of the following relations indicating the cell characteristic is correct?

A.  $a \neq b \neq c$  and  $\alpha \neq \beta$  and  $\gamma \neq 90^\circ$

B.  $a \neq b \neq c$  and  $\alpha \neq \beta = \gamma = 90^\circ$

C.  $a = b = c$  and  $\alpha \neq \beta \neq \gamma = 90^\circ$

D.  $a = b = c$  and  $\alpha = \beta = \gamma = 90^\circ$

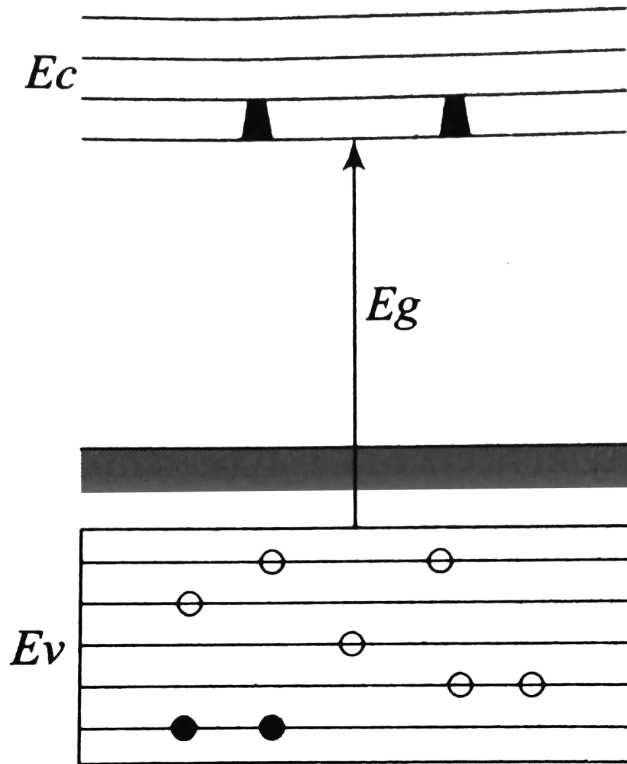
**Answer: D**



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**38.** In the energy band diagram of a material shown below, the open circles and filled circles denote holes and electrons respectively. The

material is a/an



A. p-type semiconductor

B. insulator

C. metal



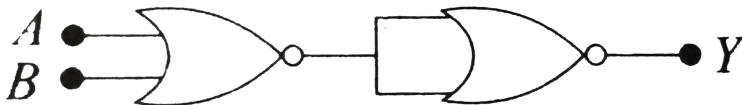
D. n-type semiconductor

**Answer: A**



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**39.** In the following circuit, the output  $Y$  for all possible inputs  $A$  and  $B$  is expressed by the truth table:



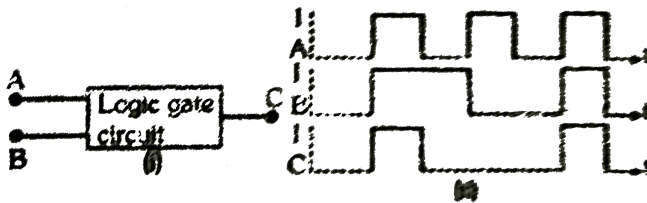
A.	$A$	$B$	$Y$
	0	0	0
	0	1	0
	1	1	1
B.	$A$	$B$	$Y$
	0	0	1
	0	1	1
	1	0	1
	1	1	0
C.	$A$	$B$	$Y$
	0	0	1
	0	1	0
	1	0	0
	1	1	0
D.	$A$	$B$	$Y$
	0	0	0
	0	1	1
	1	0	1
	1	1	1

**Answer: D**



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40. The following figure shows a logic gate circuit with two inputs A and B output C. The voltage waveforms of A,B and C are as shown in second figure given below :-



The logic circuit gate is :-

A. AND gate





**Answer: D**



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**42.** A transistor is operated in common emitter configuration at constant collector voltage  $V_c = 1.5V$  such that a change in the base current from  $100\mu A$  to  $150\mu A$  produces

a change in the collector current from  $5mA$  to  $10mA$ . The current gain ( $\beta$ ) is

A. 67

B. 75

C. 100

D. 50

**Answer: C**



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**43.** A transistor -oscillator using a resonant circuit with an inductor  $L$  (of negligible resistance) and a capacitor  $C$  in series produce oscillations of frequency  $f$ . If  $L$  is doubled and  $C$  is changed to  $4C$ , the frequency will be

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

B.  $8f$

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

D.  $\frac{f}{2}$

**Answer: C**



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**44.** Copper has face centred cubic (*fcc*) lattice with interatomic spacing equal to  $2.54\text{\AA}$ . The value of the lattice constant for this lattice is

A.  $1.27\text{\AA}$

B.  $5.08\text{\AA}$

C.  $2.54\text{\AA}$

D.  $3.59\text{\AA}$



**Answer: D**



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**45.** Choose the only false statement form the following

A. Substances with energy gap of the order of  $10eV$  are insulators

B. The conductivity of a semiconductor increases with increases in temperature

C. In conductors the valence and conduction bands may overlap

D. The resistivity of a semiconductor increases with increase in temperature

**Answer: D**



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**46.** Carbon , silicon and germanium have four valence elcectrons each . These are characterised by valence and conduction

bands separated by energy band - gap  
respectively equal to  $(E_g)_c$ ,  $(E_g)_{Si}$  and  $(E_g)_{Ge}$ .

Which of the following statements are true?

A.  $(E_g)_c > (E_g)_{Si}$

B.  $(E_g)_c = (E_g)_{Si}$

C.  $(E_g)_c < (E_g)_{Ge}$

D.  $(E_g)_c < (E_g)_{Si}$

**Answer: A**



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**47.** Zener diode is used for

- A. producing oscillations in an oscillator
- B. amplification
- C. stabilisation
- D. rectification

**Answer: C**



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**48.** Application of a forward bias to a  $p - n$  junction:

A. increases the number of donors on the  
n-side

B. increases the electric field in the  
depletion zone

C. increases the potential difference across  
the depletion zone

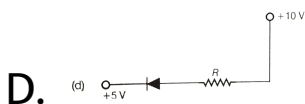
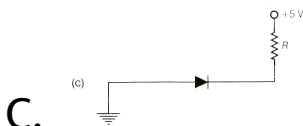
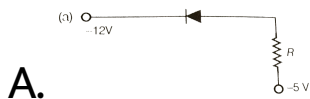
D. widens the depletion zone

**Answer: A**



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**49.** Of the diodes shown in the following diagrams, which one is reverse biased?



**Answer: C**



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**50.** In a  $p - n$  junction photo cell, the value of the photo electromotive force produced by monochromatic light is proportional to

A. to barrier voltage at the p-n junction

B. the intensity of the light falling on the  
cell

C. the frequency of the light falling on the  
cell

D. the voltage applied at the p-n junction

**Answer: B**



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**51.** The output of  $OR$  gate is 1

A. only if both inputs are zero

B. if either or both inputs are 1



C. only if both inputs are 1

D. if either input is zero

**Answer: B**



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**52.** The peak voltage in the output of a half-wave diode rectifier fed with a sinusoidal signal without filter is  $10V$ . The  $dc$  component of the output voltage is

A.  $\frac{10}{\sqrt{2}} V$

B.  $\frac{10}{\pi} V$

C.  $10V$

D.  $\frac{20}{\pi} V$

**Answer: B**



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**53.** In semiconductors at a room temperature

- A. the valence band is partially empty and  
the conductor band is partially filled
- B. the valence band is completely filled and  
the conduction band is partially filled
- C. the valence band is completely filled
- D. the conduction band is completely  
empty

**Answer: A**



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**54.** A *npn* transistor conducts when

- A. collector is positive and emitter is at same potential as the base
- B. both collector and emitter are negative with respect to the base
- C. both collector and emitter are positive with respect to the base
- D. collector is positive and emitter is negative with respect to the base

**Answer: D**



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**55.** If a full wave rectifier circuit is operating from  $50Hz$  mains, the fundamental frequency in the ripple will be

A.  $70.7Hz$

B.  $100Hz$

C.  $25Hz$

D.  $50Hz$

**Answer: B**



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**56.** Barrier potential of a  $p - n$  junction diode does not depend on

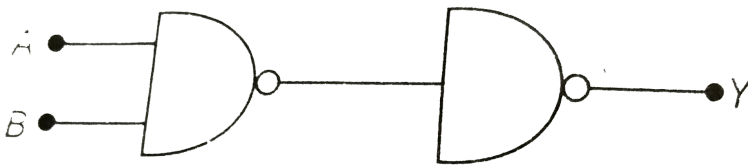
- A. forward bias
- B. doping density
- C. diode design
- D. temperature

**Answer: C**



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**57.** Following diagram performs the logic function of



A. OR gate

B. AND gate

C. XOR gate

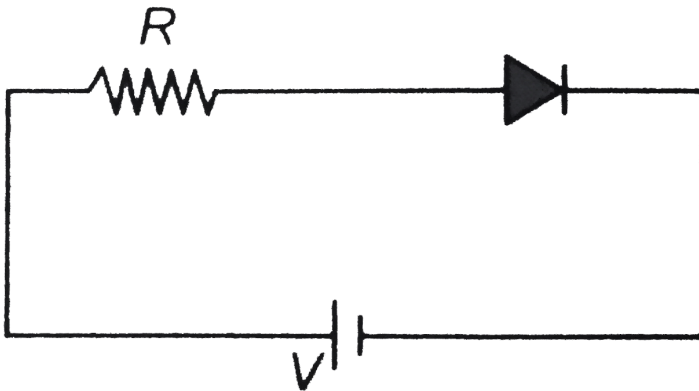
D. NAND gate

**Answer: B**



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**58.** For the given circuit of  $PN$ -junction diode, which of the following statements is correct?





A. In forward biasing the voltage across R is  $V$

B. In reverse biasing the voltage across R is  $V$

C. In forward biasing the voltage across R is  $2V$

D. In reverse biasing the voltage across R is  $2V$

**Answer: A**



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**59.** For conduction in a p-n junction, the biasing is

A. high potential on n-side and low potential on p-side

B. high potential on p-side and low potential on n-side

C. same potential on both p and n-sides

D. undetermined

**Answer: B**



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**60.** For a transistor  $\frac{I_C}{I_E} = 0.96$ , then current gain for common emitter configuration

A. 6

B. 12

C. 24

D. 48

**Answer: C**



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**61.** The number of atoms per unit cell in bcc lattice is

A. 1

B. 2

C. 4

D. 9

**Answer: B**



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**62.** In bcc structure of lattice constant  $a$ , the minimum distance between atoms is

A.  $\frac{\sqrt{3}}{2}a$

B.  $\sqrt{2}a$

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

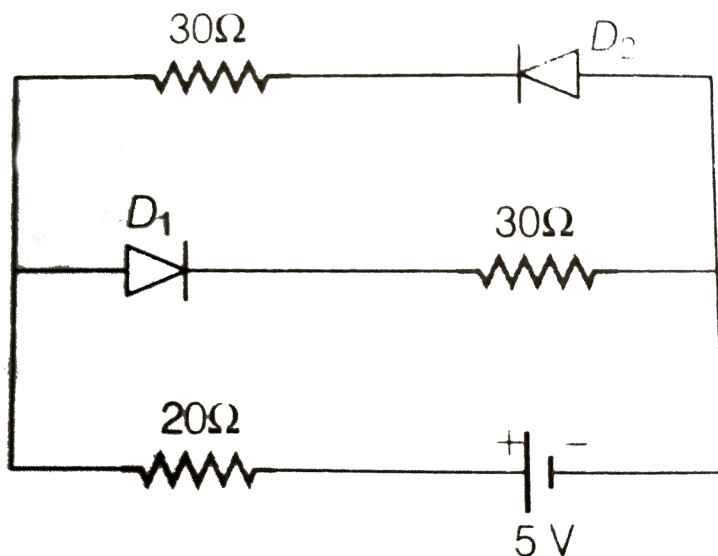
D.  $\frac{a}{2}$

**Answer: A**



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**63.** If internal resistance of cell is negligible, then current flowing through the circuit is



A.  $\frac{3}{50} A$

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

C.  $\frac{4}{50} A$

D.  $\frac{2}{50} A$

**Answer: B**



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**64.** In a common-base configuration of a transistor  $\frac{\Delta i}{\Delta i_e} = 0.98$ , then current gain in

common emitter configuration of transistor will be

A. 49

B. 98

C. 4.9

D. 24.5

**Answer: A**



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**65.** Si and Cu are cooled to a temperature of  $300K$ , then resistivity

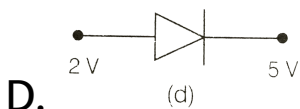
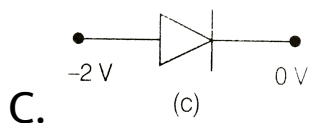
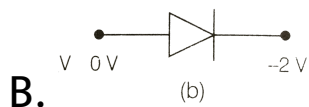
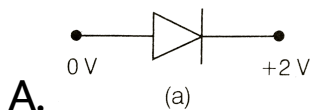
- A. for Si increases and for Cu decreases
- B. for Cu increases and for Si decreases
- C. decreases for both Si and Cu
- D. increases for both Si and Cu

**Answer: A**



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**66.** In which of the following figures, junction diode is forward biased?



**Answer: B**



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67. The truth table given below represents



A. AND gate

B. NOR gate

C. OR gate

D. NAND gate

**Answer: A**



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**68.** If  $\alpha$  and  $\beta$  current gains in common-base and common-emitter configuration of a transistor, then  $\beta$  is equal to

A.  $\frac{1}{\alpha}$

B.  $\frac{\alpha}{1 + \alpha}$

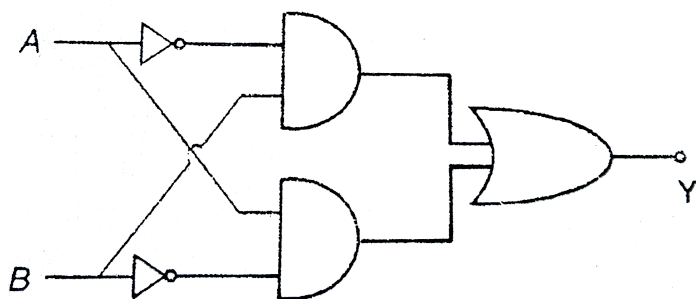
C.  $\frac{\alpha}{1 - \alpha}$

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

**Answer: C**



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69.

The following circuit represents:

A. OR gate

B. XOR gate

C. AND gate

D. NAND gate

**Answer: B**



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70. In  $P$ -type semiconductor the majority and minority charge carriers are respectively

A. holes

B. Electrons are minority carriers and pentavalent atoms are dopants

C. protons

D. neutrons

**Answer: A**



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71. In forward bias, the width of potential barrier in a  $P - N$  junction diode

A. increases

B. decreases

C. remains constant

D. first increases then decreases

**Answer: B**



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72. Depletion layer consists of

A. electrons

B. protons

C. mobile charge

D. immobile ions

**Answer: D**



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**73.** In junction diode, the holes are due to

- A. protons
- B. extra electrons
- C. neutrons
- D. missing electrons

**Answer: D**



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74. Which of the following when added as an impurity into silicon produces n-type semiconductor ?

A. P

B. Al

C. B

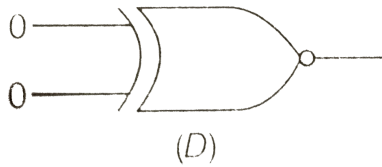
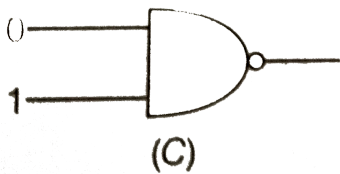
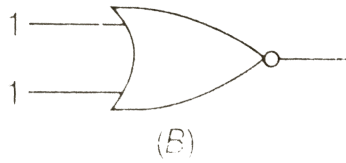
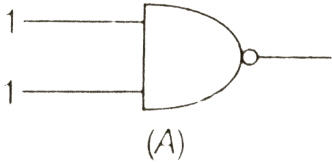
D. Mg

**Answer: A**



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



A. A

B. B

C. C

D. D

**Answer: C**



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**76.** The transfer ratio of a transistor is 50. The input resistance of the transistor when used in the common -emitter configuration is  $1k\Omega$ . The peak value for an *A. C.* input voltage of  $0.01V$  peak is

A.  $100\mu A$

B.  $0.01mA$

C.  $0.25mA$

D.  $500\mu A$

**Answer: D**



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**77.** A semiconducting device is connected in a series circuit with a battery and a resistance. A current is found to pass through the circuit. If the polarity of the battery is reversed, the

current drops to almost zero. The device may be

- A. a p-n junction semiconductor
- B. an intrinsic semiconductor
- C. a p-type semiconductor
- D. an n-type semiconductor

**Answer: A**



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**78.** The cause of the potential barrier in a p-n diode is:

A. depletion of positive charges near the junction

B. concentration of positive charges near the junction

C. depletion of negative charges near the junction

D. concentration of positive and negative charges near the junction

**Answer: D**



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**79.** The following truth table belongs to which of the following four gates ?



**A. NOR**



B. XOR

C. NAND

D. OR

**Answer: A**



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**80.** The relation between  $\alpha$  and  $\beta$  parameters of current gains for a transistors is given by

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

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

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

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

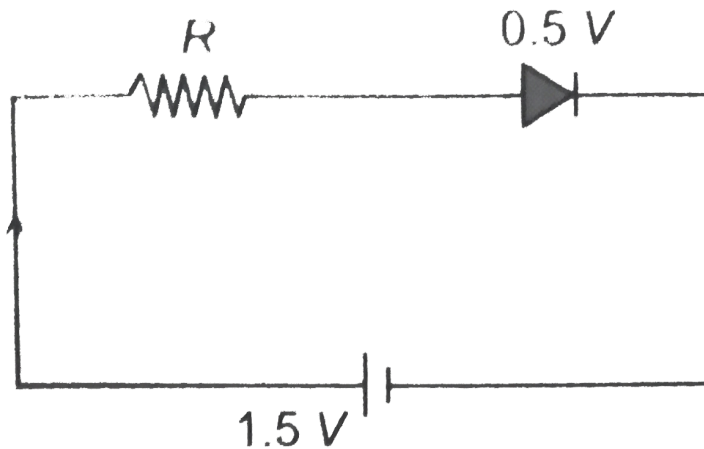
**Answer: B**



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**81.** The diode used in the circuit shown in the figure has a constant voltage drop of  $0.5V$  at all currents and a maximum power rating of 100 milliwatts. What should be the value of

the resistor  $R$ , connected in series with the diode for obtaining maximum current?



- A.  $200\Omega$
- B.  $6.67\Omega$
- C.  $5\Omega$
- D.  $1.5\Omega$

**Answer: C**



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**82.** To obtain a *P*-type germanium semiconductor, it must be dopped with

A. phosphorus

B. indium

C. antimony

D. arsenic

**Answer: B**



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**83.** When arsenic is added as an impurity to silicon, the resulting material is

A. n-type semiconductor

B. p-type semiconductor

C. n-type conductor

D. insulator

**Answer: A**



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**84.** The current gain for a transistor working as a common-base amplifier is 0.96. If the emitter current is  $7.2\text{mA}$ , the base current will be

A.  $0.29\text{mA}$

B.  $0.35\text{mA}$

C.  $0.39\text{mA}$

D.  $0.43mA$

**Answer: A**



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**85.** When N-P-N transistor is used as an amplifier-

A. the electrons flow from emitter to collector

B. the holes flow from emitter to collector

C. the electrons flow from collector to emitter

D. the electrons flow from base to emitter

**Answer: A**



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**86.** Which of the following , when added as an impurity, into the silicon, produces n-type semiconductor ?



- A. phosphorus
- B. Aluminium
- C. Magnesium
- D. Both (b) and (c)

**Answer: A**



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**87.** Which of the following gates corresponds to the truth table given below ?



A. NAND

B. OR

C. AND

D. XOR

**Answer: A**

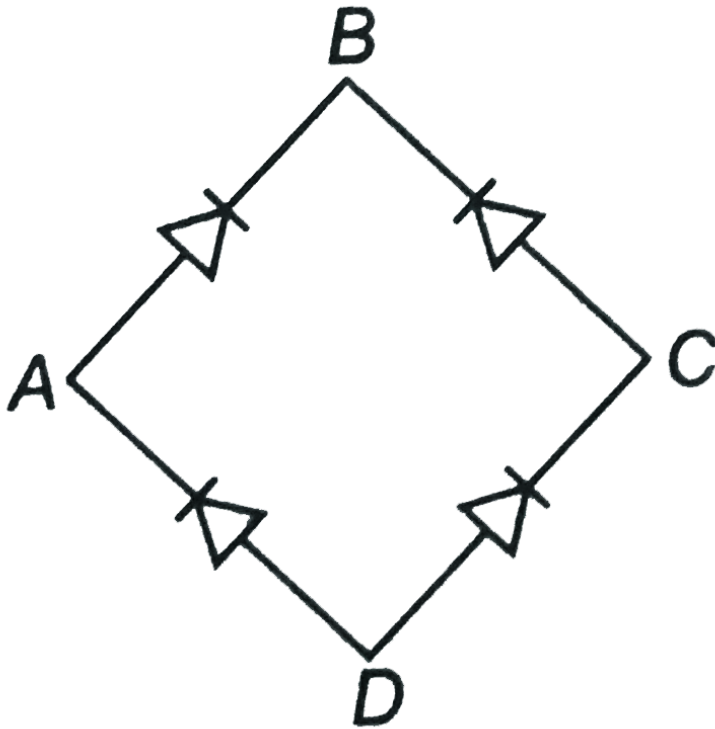


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**88.** In the figure, the input is across the terminals

A and C and the output is across B and D. Then

the output is



- (a ) zero
- ( b ) same as the input
- ( c ) full - wave rectified
- (d) half - wave rectified .

A. zero

B. same as the input

C. half wave rectified

D. full wave rectified

**Answer: D**



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**89.** An oscillator is nothing but an amplifier with

A. positive feedback

B. negative feedback

C. large gain

D. no feedback

**Answer: A**



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**90.** When a p-n junction diode is reverse biased the flow of current across the junction is mainly due to

A. diffusion of charges

B. drift charges

C. Depends on the nature of material

D. Both drift and diffusion of charges

**Answer: B**



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**91.** The part of a transistor which is most heavily doped to produce large number of majority carriers is

A. emitter

B. base

C. collector

D. Any of the above depending upon the nature of transistor

**Answer: A**



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92. A piece of copper and the other of germanium are cooled from the room temperature to 80 K, then which of the following would be wrong statements?

A. resistance in each will increase

B. resistance in each will decrease

C. the resistance of copper will increase

while that of germanium will decrease

D. the resistance of copper will decrease

while that of germanium will increase



**Answer: D**



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**93.** Diamond is very hard, because

- A. it is covalent solid
- B. it has large cohesive energy
- C. high melting point
- D. insoluble in all solvents

**Answer: B**



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**94.** For an electronic valve, the plate current  $I$  and plate voltage  $V$  in the space charge limited region are related as

A.  $i$  is proportional to  $V^{3/2}$

B.  $i$  is proportional to  $V^{2/3}$

C.  $i$  is proportional to  $V$

D.  $i$  is proportional to  $V^2$

**Answer: A**



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**95.** Which one of the following is the weakest kind of the bonding in solids ?

A. Ionic

B. Metallic

C. van der Waals'

D. Covalent

**Answer: C**



**96.** For amplification by a triode, the signal to be amplified is given to

- A. the cathode
- B. the grid
- C. the glass-envelope
- D. the anode

**Answer: B**



97. The following truth table corresponds to the logical gate



A. NAND

B. OR

C. AND

D. XOR

**Answer: B**



**View Text Solution**

**98.** To use a transistor as an amplifier

- A. the emitter base junction of forward biased and the base collector junction is reversed biased
- B. no bias voltage is required
- C. both junctions are forward biased
- D. both junction are reverse biased

**Answer: A**



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99. The depletion layer in  $P - N$  junction region is caused by

- A. drift of holes
- B. diffusion of charge carriers
- C. migration of impurity ions
- D. drift of electrons

**Answer: B**



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**100.** In a common base amplifier , the phase difference between the input signal and output voltage is

A. zero

B.  $\frac{\pi}{4}$

C.  $\frac{\pi}{2}$

D.  $\pi$

**Answer: A**





**101.** When a triode is used as an amplifier the phase difference between the input signal voltage and the output is

A. zero

B.  $\pi$

C.  $\frac{\pi}{2}$

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

**Answer: B**



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**102.** Radiowaves of constant amplitude can be generated with

A. FET

B. filter

C. rectifier

D. oscillator

**Answer: D**



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**103.** When  $N$ -type of semiconductor is heated

A. number of electrons increases while that of holes decreases

B. number of holes increases while that of electrons decreases

C. number of electrons and holes remain same

D. number of electrons and holes increases  
equally

**Answer: D**



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**104.** p-n junction is called as forward biased  
when

A. the positive pole of the battery is joined  
to the p-semiconductor and negative

pole to the n-semiconductor

B. the positive pole of the battery is joined to the n-semiconductor and negative pole to the p-semiconductor

C. the positive pole of the battery is connected to n-semiconductor and p-semiconductor

D. a mechanical force is applied in the forward direction

**Answer: A**



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**105.** At absolute zero , Si acts as

A. non-metal

B. Metallic

C. insulator

D. None of the above

**Answer: C**



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