



PHYSICS

BOOKS - SARAS PUBLICATION

ELECTRONIC DEVICES

Example

1. What is the value of inductance L for which the current is a maximum in a series LCR circuit with $C = 10\mu F$ and $w=1000s^{-1}$

A. 10 mH

B. 100 mH

C. 1 mH

D. cannot be calculated unless R is known

Answer:



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2. A transformer is used to light a 100W and 110V lamp from 220V mains. If the main

current is 0.5 amp, the efficiency of the transformer is approximately:

A. 0.1

B. 0.3

C. 0.5

D. 0.9

Answer:



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3. A common emitter amplifier has voltage gain of 50, an input impedance of 100ohm and an output impedance of 200ohm .The power gain of the amplifier is

A. 100

B. 500

C. 1000

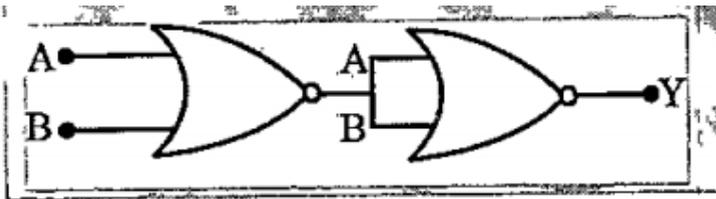
D. 1250

Answer:



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4. In the following circuit, the output Y for all possible inputs A and B is expressed by the table



A.

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

B.

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

C.

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

D.

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

Answer:



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5. A p-n photodiode is made of a material with ,band gap of 2.0 ev 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. $1 \times 10^{14} Hz$

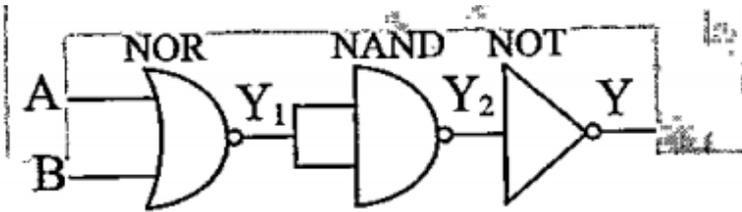
D. $20 \times 10^{14} Hz$

Answer:



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6. The circuit is equivalent to:



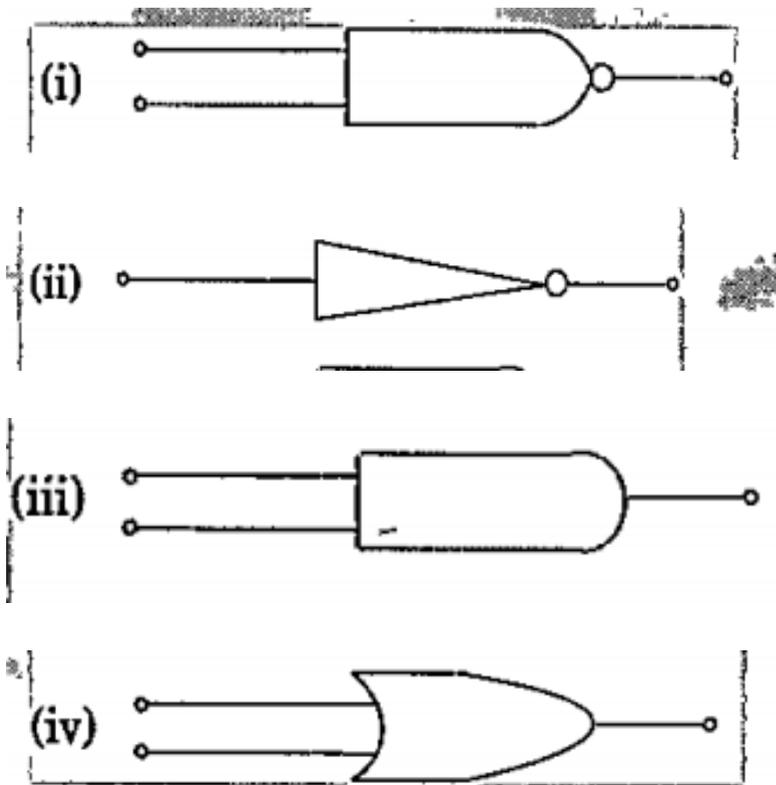
- A. AND gate
- B. NAND gate
- C. NOR gate
- D. OR gate

Answer:



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7. The symbolic representation of four logic gates are given below:



The logic symbols for OR, NOT and NAND gates are respectively

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

B. (iv),(ii),(i)

C. (i),(iii),(iv)

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

Answer:



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8. A p-n photodiode is fabricated from a semiconductor with a band gap of 2.5eV. It can detect a signal of wavelength:

A. 7000\AA

B. 5500\AA

C. 4000\AA

D. 6000\AA

Answer:



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9. The device that act as a complete electronic circuit is:

- A. junction diode
- B. integrated circuit
- C. junction transistor
- D. zener diode

Answer:



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10. In forward biasing of the p-n junction

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

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

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

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

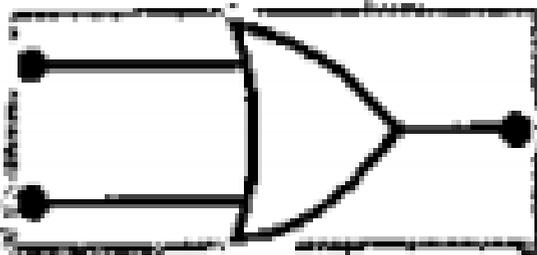
Answer:



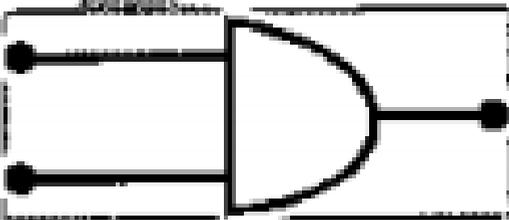
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11. Symbolic representation of four logic gates are shown as

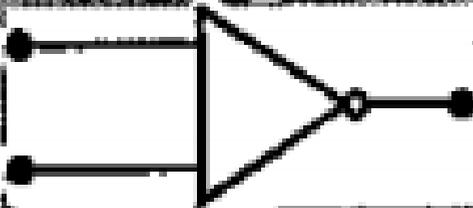
(i)



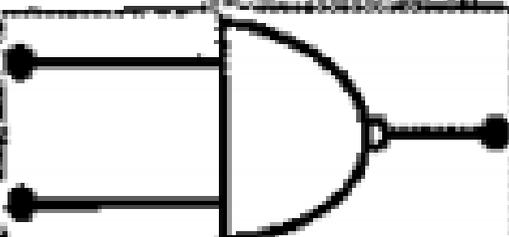
(ii)



(iii)



(iv)



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which ones are for AND, NAND and NOT gates, respectively:

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

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

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

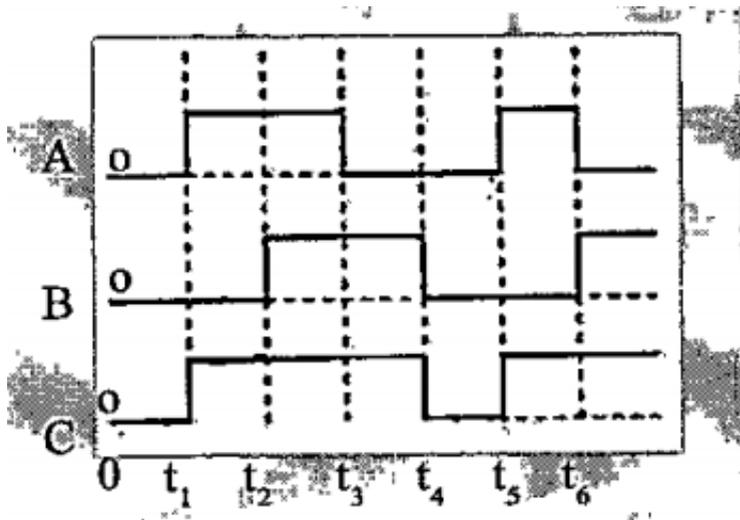
D. (iii),(ii), and (iv)

Answer:



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12. The figure show a logic circuit with inputs A and B and the output C. The voltage wave forms across A, B and C are given .The logic circuit gats is :



A. NOR gate

B. AND gate

C. NAND gate

D. OR gate

Answer:



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13. C, Si and Ge have same lattice structure .

Why is C an insulator while Si and Ge are intrinsic semiconductors ?

A. In case of C the conduction band is partly filled even at absolute zero temperature

B. 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

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

D. In case of C the valance band is not completely filled at absolute zero temperature

Answer:



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14. For a CE- transistor amplifier , the audio signal voltage across the collected resistance of $2k\Omega$ is 2 V . Suppose the current amplification factor of the transistor is 100 ,

find the input signal voltage and base current ,
if the base is $1k\Omega$.

A. 1.0 V

B. 1 mV

C. 10 mV

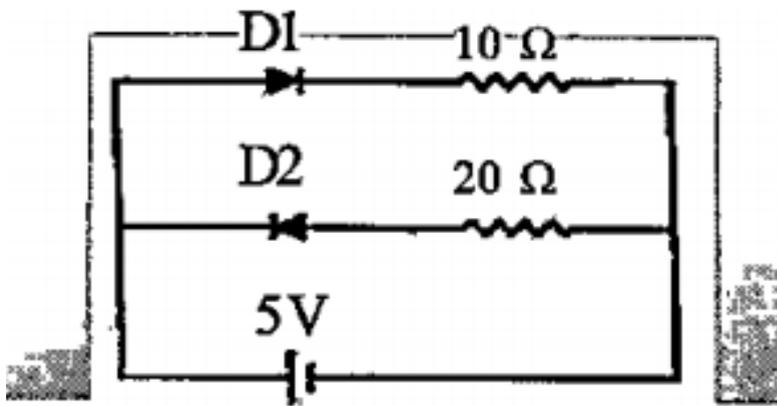
D. 0.1 V

Answer:



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15. Two ideal diodes are connected to a battery as shown in the circuit .The current supplied by the battery is



- A. Zero
- B. 0.25 A
- C. 0.5 A
- D. 0.75 A

Answer:



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16. In a common emitter (CE) amplifier having a voltage gain G , the transistor used has transconductance 0.03 mho and current gain 25 . If the above transistor is replaced with another one with transconductance 0.02 mho and current gain 20 , the voltage gain will be

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

B. $1.5 G$

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

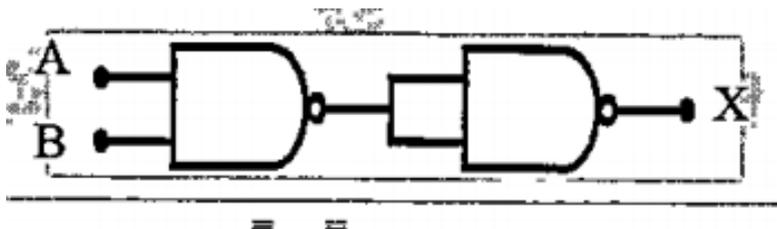
D. $\frac{5}{4} G$

Answer:



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



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

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

C. $X = A \cdot B$

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

Answer:



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18. In an unbiased p-n junction , holes diffuse from the p-region to n- region because

- A. The potential difference across the p-n junction
- B. The attraction of free electrons of n-region
- C. The higher hole concentration in p-region than that in n-region
- D. The higher concentration of electrons in the nregion than that in the pregon

Answer:



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19. One way in which the operation of a n-p-n transistor differs from that of a p-n-p

A. The emitter junction is reversed biased in n-p-n

B. The emitter junction injects minority carriers into the base region of the p-n-p

C. The emitter injects holes into the base of the p-n-p and electrons into the base region of n-p-n

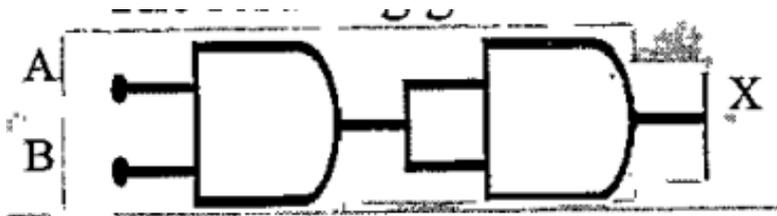
D. The emitter injects holes into the base
of n-p-n

Answer:



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20. The output from a NAND gate is divided into two in parallel and fed to another NAND gate. The resulting gate is a



A. NOT gate

B. AND gate

C. NOR gate

D. OR gate

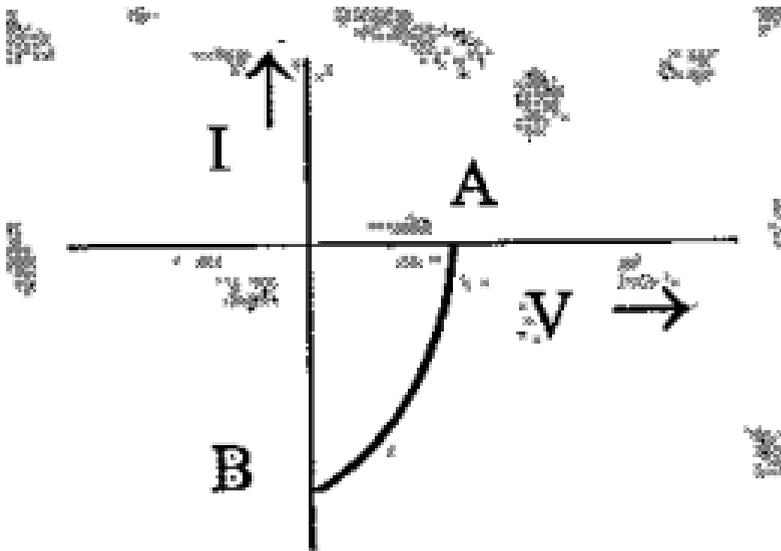
Answer:



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21. The given graph represents V-I characteristic for 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

represent open circuit voltage and

current respectively

D. It is for a LED and points A and B

represents open circuit voltage and

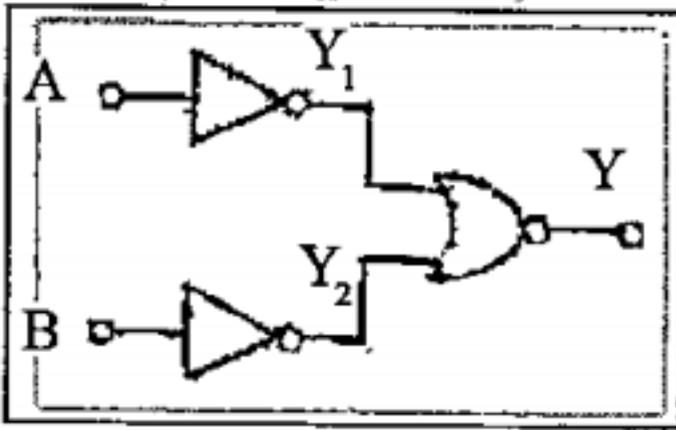
short circuit current respectively

Answer:



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22. Which logic gate is represented by the following combination of logic gates?



A. NAND

B. AND

C. NOR

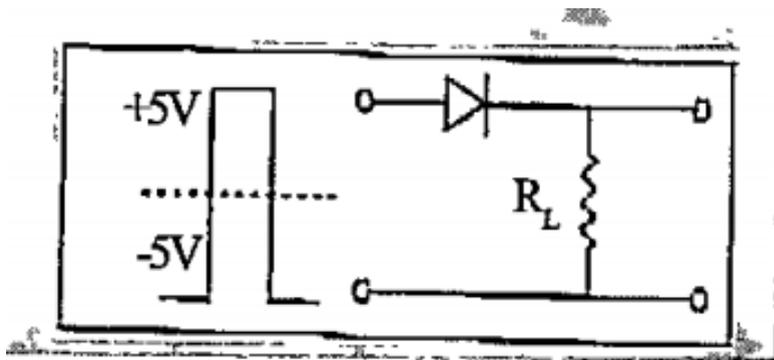
D. OR

Answer:

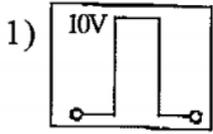


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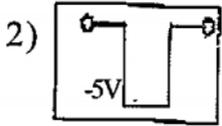
23. If in a p-n junction, square input signal of 10 V is applied as shown Then the output across R_L will be:



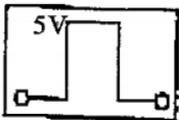
A.



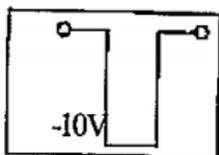
B.



C.



D.



Answer:



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24. 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 bas resistance is $1K\Omega$ then the input signal voltage is

A. 30 mV

B. 15 mV

C. 10 mV

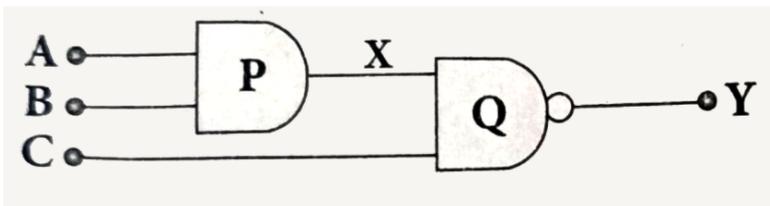
D. 20 mV

Answer:



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25. What is the output Y in the following circuit , When all the three inputs A,B, and C are first 0 and then 1?



A. 1, 0

B. 1, 1

C. 0, 1

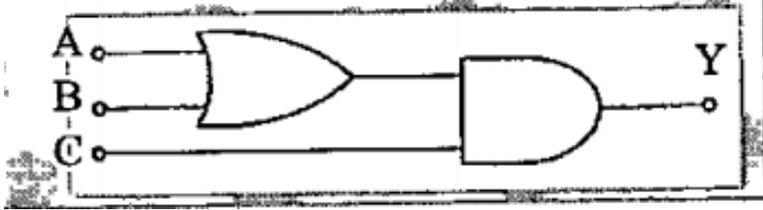
D. 0, 0

Answer:



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



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

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

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

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

Answer:



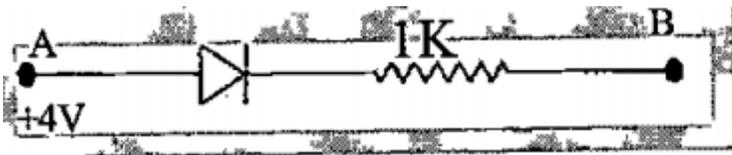
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27. A small signal voltage $V(t) = V_0 \sin \omega t$ is applied across an ideal capacitor C:

- A. Current $I(t)$, leads voltage $V(t)$ by 180°
- B. Current $I(t)$, lags voltage $V(t)$ by 90°
- C. Over a full cycle the capacitor C does not consume any energy from the voltage source
- D. Current $I(t)$ is in phase with voltage $V(t)$

Answer:

28. Consider the junction diode as ideal. The value of current flowing through AB is



A. $10^{-3} A$

B. $0 A$

C. $10^{-2} A$

D. $10^{-1} A$

Answer:



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29. A npn transistor is connected in common emitter configuration in a given amplifier . A load resistance of 800Ω 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 circuit is 192Ω , the voltage gain and the power gain of the amplifier will respectively be:

A. 4,3.69

B. 4, 3.84

C. 3.69, 3.84

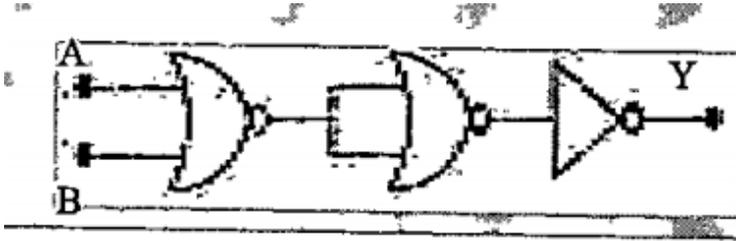
D. 4, 4

Answer:



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30. The given electrical network is equivalent to:



A. OR gate

B. NOR gate

C. NOT gate

D. AND gate

Answer:



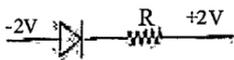
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31. Which of the following represent forward bias diode ?

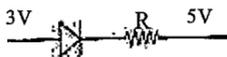
A.



B.



C.



D.



Answer:



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