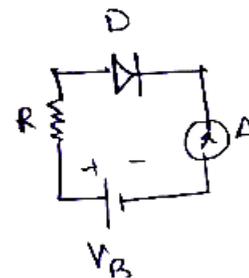


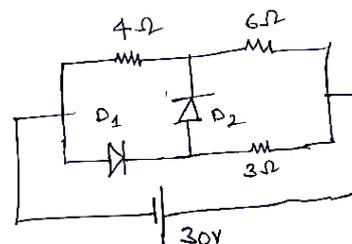
SINGLE CORRECT OPTION TYPE

1. A silicon diode is connected to a resistance (R) and a battery of voltage V_B as shown. The knee point of its I-V curve is at 0.7 volt. Given that diode requires a minimum current of 1 mA to attain a value higher than the knee point. If $V_B = 5\text{v}$, what should be the maximum value of resistance R so that voltage across diode is above knee point
(A) 5.3Ω (B) 4.3Ω
(C) 9.5Ω (D) $10\text{k}\Omega$

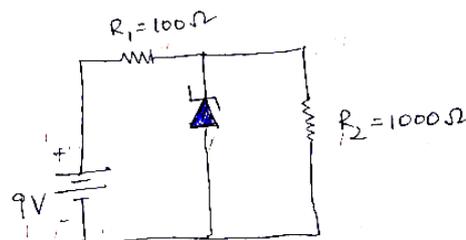


2. The forward biased resistance of a PN junction diode is 10Ω and its knee point voltage is 0.7 volt. This diode is connected across a load resistance of 500Ω and an AC supply of peak voltage 20v. Find the peak current through the diode and peak voltage across the load.
(A) 0.0378 A, 18.9 V (B) 0.5 A, 20 V (C) 0.9 A, 30 V (D) 0.1 A, 0.2 V

3. In the circuit shown, find current flowing through battery assume diodes are ideal.
(A) 2A
(B) 6A
(C) 5A
(D) 10A



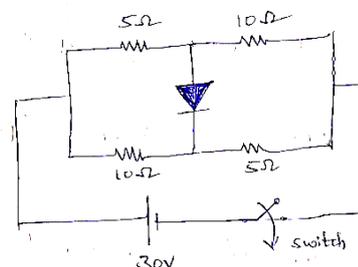
4. In the circuit shown in the figure a Zener diode of voltage $V_z = 6\text{V}$ is used to maintain a constant load voltage across a resistance of 1000Ω with a series resistance 100Ω . If the EMF of source is 9V, power dissipated in Zener diode is



- (A) 2 watts (B) 3 watts (C) 8 watts (D) 0.144 watts

5. In the circuit shown in figure, find the equivalent resistance across the battery when switch is closed. Assume diode is ideal.

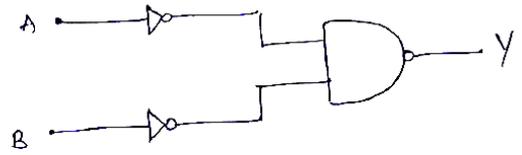
- (A) $\frac{40}{3}\Omega$ (B) $\frac{20}{3}\Omega$
(C) 10Ω (D) none



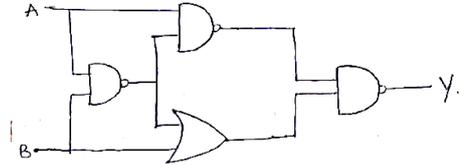
6. In a transistor circuit its base current is $105\mu\text{A}$ (micro ampere) and collector current is 2.05 (in ampere). Then α is
(A) 0.35 (B) 0.45 (C) 0.95 (D) none
7. An NPN transistor is connected in common emitter configuration in which collector supply is 8v and the voltage drop across the load resistance of 800Ω connected in the collector circuit is 0.8v. Determine the collector emitter voltage and collector current.
(A) $V_{CE} = 7.2\text{v}$, $I_C = 1\text{mA}$ (B) $V_{CE} = 7.2\text{v}$, $I_C = 5\text{mA}$
(C) $V_{CE} = 1\text{v}$, $I_C = 7.2\text{mA}$ (D) none

8. The input resistance of a silicon transistor is 665Ω . A change of $15\mu\text{A}$ in the base current produces a change of 2 mA in the collector current. The transistor is used a common emitter amplifier with a load resistance of $5\text{k}\Omega$. Find voltage gain of the amplifier (approximately)
 (A) 2000 (B) 3000 (C) 1000 (D) none

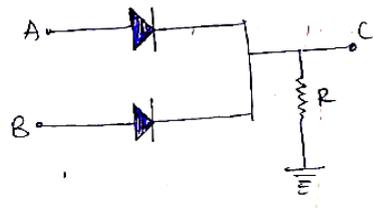
9. The logic gate equivalent to the given circuit is
 (A) OR
 (B) AND
 (C) NOR
 (D) NAND



10. The output of the given logic circuit is
 (A) $\bar{A}B$
 (B) $A\bar{B}$
 (C) $AB + \bar{A}\bar{B}$
 (D) $\bar{A}\bar{B} + AB$

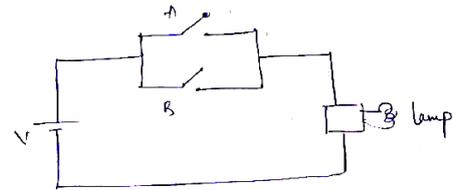


11. In the circuit below, A and B represents two inputs and C represents the output. The circuit represents
 (A) NOR gate (B) AND gate
 (C) NAND gate (D) OR gate

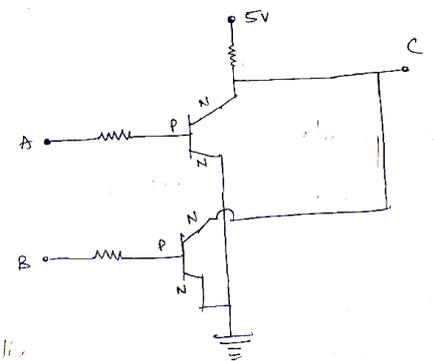


12. When npn transistor is used as an amplifier.
 (A) electrons move from collector to base (B) holes moves from emitter to base
 (C) electrons move from base to collector (D) holes move from base to emitter

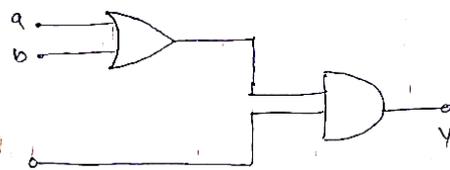
13. Which logic gate with inputs A and B performs the same operations as that performed by the following circuit.
 (A) NAND gate (B) OR gate
 (C) NOR gate (D) AND gate



14. Consider two npn transistors as shown. If 0 volts corresponds to false and 5 volts correspond to true then the output at C corresponds to
 (A) A NAND B
 (B) A OR B
 (C) A AND B
 (D) A NOR B

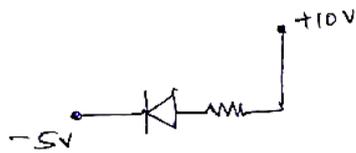


15. To get an output of (1) from the circuit shown the input must be
 (A) $a = 0, b = 0, c = 1$
 (B) $a = 1, b = 0, c = 0$
 (C) $a = 1, b = 0, c = 1$
 (D) $a = 0, b = 1, c = 0$

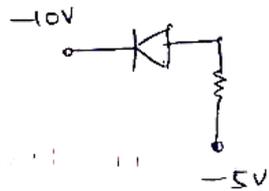


16. In the following, which one of the diodes reverse biased?

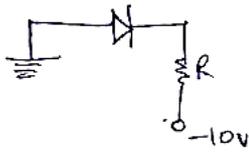
(A)



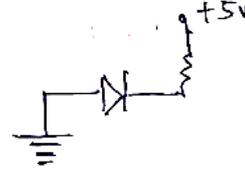
(B)



(C)

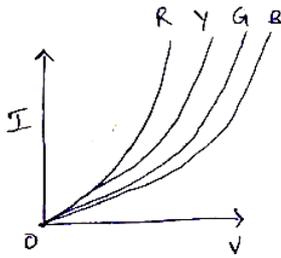


(D)

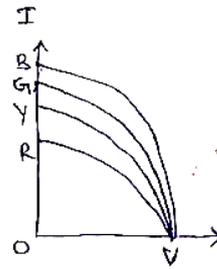


17. The I-V characteristic of an LED is

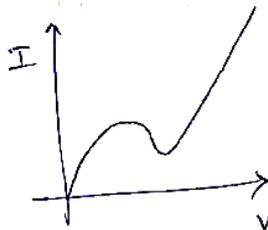
(A)



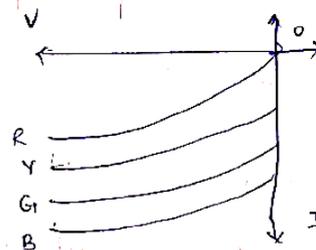
(B)



(C)

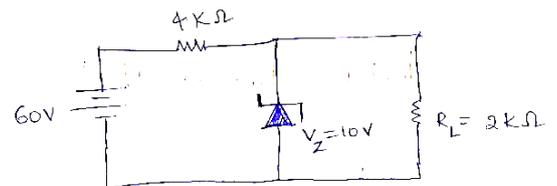


(D)



18. A Zener diode is connected to a battery and a load as shown below.

The currents I_1 , I_Z and I_L are respectively



(A) 15 mA, 5 mA, 10 mA

(B) 15 mA, 7.5 mA, 7.5 mA

(C) 12.5 mA, 5 mA, 7.5 mA

(D) 12.5 mA, 7.5 mA, 5 mA

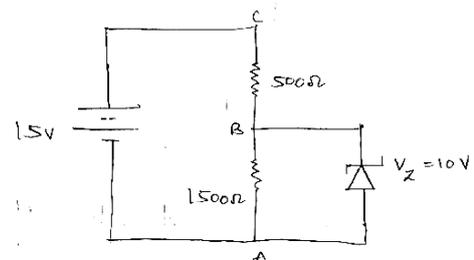
19. In the given circuit, the current through Zener diode is

(A) 2.5 mA

(B) 3.3 mA

(C) 5.5 mA

(D) 6.7 mA



20. For a common emitter configuration, if α and β have their usual meanings, the incorrect relationship for α and β is

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

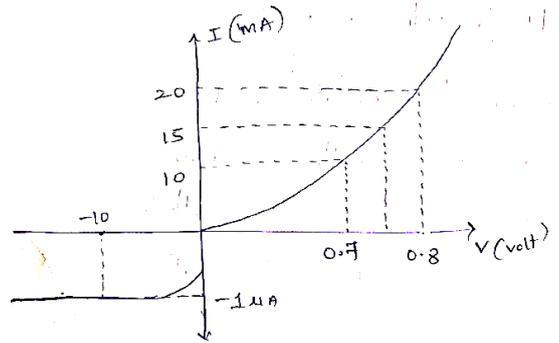
(B) $\alpha = \frac{\beta^2}{1+\beta^2}$

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

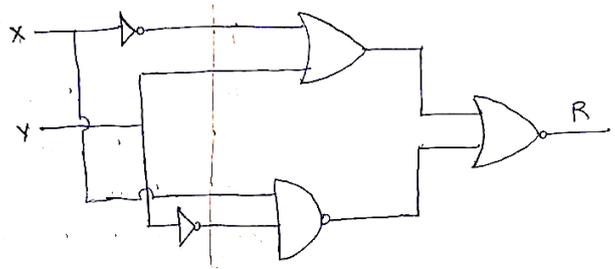
(D) none

INTEGER TYPE

21. The V-I characteristic of a diode is shown in figure. The ratio of forward to reverse bias resistance is 10^{-y} . Then y is _____.

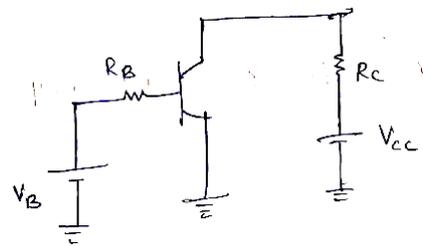


22. If $x = 1$, $y = 0$ inputs are given to the following logical circuit, then output R is _____.

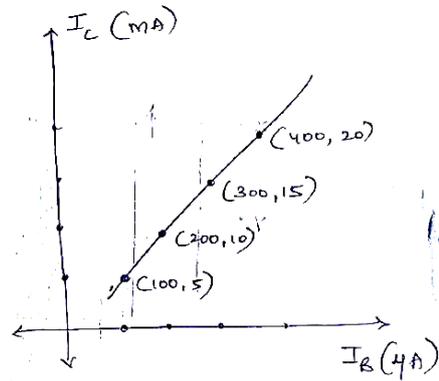


23. The current gain of a common emitter amplifier is 69. If the emitter current is 7 mA, collector current is _____ (in milliamperes)

24. A common emitter amplifier circuit, built using an npn transistor is shown in figure, its dc current gain is 250 $R_C = 1k\Omega$ and $V_{CC} = 10v$. What is the minimum base current for V_{CE} to reach saturation. (in micro amperes)



25. The transfer characteristic curve of a transistor, having input and output resistance 100Ω and $100k\Omega$ respectively is shown. The voltage gain is $x \times 10^4$, then x is _____.



KEY

1. B	2. A	3. C	4. D	5. B
6. C	7. A	8. C	9. A	10. B
11. D	12. D	13. B	14. A	15. C
16. D	17. A	18. C	19. B	20. B
21. 6	22. 1	23. 6.9	24. 4.0	25. 5

** Wish You^{ost} all the Best **