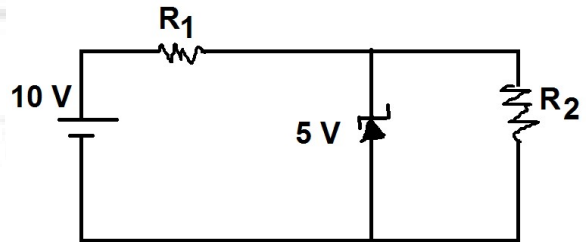


Physics Worksheet-2 : Semiconductor-2

- For a transistor amplifier, the voltage gain
 - remains constant for all frequencies.
 - is high at high and low frequencies and constant in the middle frequency range.
 - is low at high and low frequency range.
 - none of these
- In a n-p-n transistor circuit the collector current is 9 mA. If 90% of the electrons emitted reach the collector, then the emitter current and base current respectively are
 - 10 mA, 1 mA
 - 11 mA, 2 mA
 - 9.5 mA, 0.5 mA
 - 10.5 mA, 1.5 mA
- A change of 8.0 mA in the emitter current brings a change of 7.6 mA in the collector current. The value of β is
 - 16
 - 17
 - 18
 - 19
- A common-emitter amplifier, has an input resistance of $0.6 \text{ k}\Omega$ and an output resistance of $51 \text{ k}\Omega$. If the current gain is 65, then the power of the transistor is
 - 1.2×10^5
 - 2.4×10^5
 - 3.6×10^5
 - 4×10^5
- Consider the following statements A and B and identify the correct answer.
 - A and B are correct
 - A and B are wrong
 - A is correct, but B is wrong
 - A is wrong, but B is correct
- What is the current flowing in R_2 in the circuit shown in figure? Given : $R_1=500\Omega$ and $R_2=1\text{k}\Omega$
 - 0 mA
 - 5 mA
 - 40 mA
 - 15 mA
- A common emitter amplifier is designed with n-p-n transistor ($\alpha=0.99$). The input impedance is $1 \text{ k}\Omega$ and load is $10 \text{ k}\Omega$. The voltage gain will be
 - 9.9
 - 99
 - 990
 - 9900
- The part of a transistor which is most heavily doped to produce large number of majority carriers is
 - emitter
 - base
 - collector
 - can be any of the above three
- When npn transistor is used as an amplifier
 - electrons move from base to collector.
 - holes move from emitter to base.
 - electrons move from collector to base.
 - holes move from base to emitter.



10. In a common base amplifier, the phase difference between the input signal voltage and output voltage is
 (A) 0 (B) $\pi/2$ (C) $\pi/4$ (D) π
11. In common base mode of a transistor, the collector current is 5.488 mA for an emitter current of 5.60 mA. The value of the base current amplification factor (β) will be
 (A) 48 (B) 49 (C) 50 (D) 51
12. For transistor action, which of the following statements are correct?
 (A) Base, emitter and collector regions should have similar size and doping concentrations.
 (B) The base region must be very thin and highly doped.
 (C) The emitter junction is reverse biased and collector junction is forward biased.
 (D) Both the emitter junction as well as the collector junction are forward biased.
13. A transistor has an $\alpha = 0.95$. It has change in emitter current of 100 milli ampere. The change in the collector current is
 (A) 100 mA (B) 100.95 mA (C) 99.05 mA (D) 95 mA
14. In a common base amplifier circuit, calculate the change in base current if that in the collector current is 2 mA and $\alpha = 0.98$.
 (A) 0.04 mA (B) 1.96 mA (C) 980 mA (D) 2 mA
15. The relation between α and β parameters of a transistor is given by
 (A) $\alpha = \frac{1-\beta}{\beta}$ (B) $\alpha = \frac{1+\beta}{\beta}$ (C) $\alpha = \frac{\beta}{1-\beta}$ (D) $\alpha = \frac{\beta}{1+\beta}$



Physics Worksheet-2 : Semiconductor-2

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1-C	2-A	3-D	4-C	5-D	6-B	7-C	8-A	9- A/D	10-A	11-B	12-B	13-D	14-A	15-D