

CLASS : XII
PHYSICS ASSIGNMENT

Unit IX : Electronic devices

1: Marks Questions

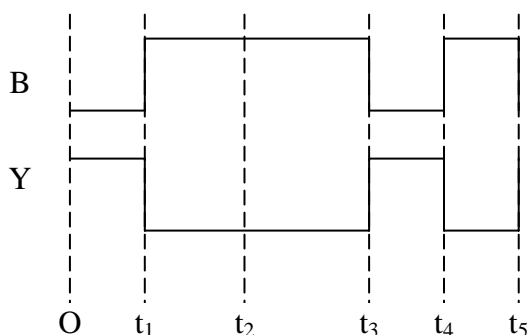
1. Why does the conductivity of a semiconductor increases with rise of temperature?
2. Give the ratio of number of holes and number of conduction electrons in an intrinsic semiconductor.
3. What is the action of potential barrier in a junction diode?
4. Which type of biasing gives a semi-conductor diode very high resistance?
5. Draw a graph showing the variation of current with voltage for a p-n junction diode?
6. Why is the base region of a transistor made very thin and lightly doped?
7. What are the current carriers inside and outside the transistor in a circuit containing a NPN transistor?
8. Why a transistor cannot be used as a rectifier?
9. What is tank circuit? Give the frequency of oscillations produced by it?

3: Marks Questions

10. Using suitable combination from a NOR, OR, NOT gate, draw circuits to obtain truth table given below:

(i)	<table style="border-collapse: collapse;"><tr><td style="padding: 0 10px;">A</td><td style="padding: 0 10px;">B</td><td style="padding: 0 10px;">Y</td></tr><tr><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">0</td></tr><tr><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">0</td></tr><tr><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">1</td></tr><tr><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">0</td></tr></table>	A	B	Y	0	0	0	0	1	0	1	0	1	1	1	0	(ii)	<table style="border-collapse: collapse;"><tr><td style="padding: 0 10px;">A</td><td style="padding: 0 10px;">B</td><td style="padding: 0 10px;">Y</td></tr><tr><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">1</td></tr><tr><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">1</td></tr><tr><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">0</td><td style="padding: 0 10px;">0</td></tr><tr><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">1</td><td style="padding: 0 10px;">1</td></tr></table>	A	B	Y	0	0	1	0	1	1	1	0	0	1	1	1
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11. Distinguish between n-type and p-type semi-conductors on the basis of energy band diagram.
12. An unknown input A and input B shown here are used as two inputs in NAND gate. The output Y is shown below. Draw input A and identify intervals over which A must be low.



13. What is the need of rectification? With the help of a labelled circuit diagram, explain the working of a full wave rectifier.
14. With the proper circuit diagram, show the biasing of a PNP transistor. Explain the movement of charge carries through different parts of this transistor. Hence show that $I_E = I_B + I_C$.

5: Marks Questions

15. With the help of labelled circuit diagram, explain the working of a n-p-n transistor as a common emitter amplifier. Also give expression for voltage gain.
16. What is an oscillator? With the help of a circuit diagram explain the working of a transistor as an oscillator.

17. What is a LED? Draw a circuit diagram & explain its working.

18. Give the symbol & the truth table of each of the two logic gates obtained by using the two circuits shown below. Justify your answer.

