Basic review questions

Submit on or before 14-11-19

1 What is an intrinsic semiconductor? Explain its crystal structure.
2 What is hole current? Explain with crystal structure how hole current exists?
3 What is thermal generation?
4 Why intrinsic semiconductors are not used in practical application?
5 Explain the formation of n-type semiconductor.
6 Explain the behavior of forward biased diode
7 Explain the behavior of a reverse biased diode.
8 What is a transistor? Explain its transfer of resistance application.
9 Explain the various components of the transistors.
10 What is reverse saturation current?
11 What is I_{CB}? Why it is greater than I_{CO}?
12 What is CB configuration? Explain the *input* and *output* configuration.
13 What is CE configuration? Explain the *input* and *output* configuration.
14 What are the different types of transistor configurations?
15 Explain the required condition for the transistor to be in saturation region.
16 Why CE configuration is widely used in amplifier circuits.
17 In CB configuration α=0.98, a voltage drop of 4.9V is obtained across 5KW when connected in the collector circuit. Find the base current.
18 The emitter current I_E in a transistor is 3mA. If the leakage current I_{CBO} is 5μA and α=0.95. Calculate the collector and base current.
19 For a common base emitter circuit I_E=1mA and I_B=0.044mA. Calculateα, β and I_C.
20 Obtain the relation between α, β and γ
21. What do you mean by Q-point of a transistor? What is its significance?
22. Explain the concepts of ac and dc load lines.
23. Compare CE, CB and CC configurations.
24 Which configuration of Bipolar Transistor is called as Emitter follower & why, for That purpose is it used?
25 A CE connected amplifier has C_{cb}= 5 pF, $C_{be'}$=12pF, h_{fe}= 100, h_{ie}= 1.5 kΩ. Find the input capacitance to the circuit for a circuit collector resistance of l2kΩ.
26 Explain how device Capacitances plays dominant role in CE Amplifier in high frequency region.
27 Why transistor is called current controlled device?
28 Discuss the need for biasing the transistor.
29 What are 'emitter injection efficiently' and 'base transport factor' and how do they influence the transistor operation?
30 Which of the transistor currents is always the largest? Which is always the smallest? Which two currents are relatively close in magnitude?
31 Why silicon type transistors are more often used than germanium type?
32 Why is there a maximum limit of collector supply voltage for a transistor?
33 Explain why $I_{CEO} >> I_{CBO}$?
34 Why CC configuration is called a voltage buffer? What is other name?
35 What are the main purposes for which a CC amplifier may be used.
36 What do you understand by collector reverse saturation? In which configuration does it have a greater value?
37 What is the need of power amplifier?
38 What is the difference between voltage amplifier and power amplifier?
39 Write the principle of class C push pull amplifier.
40 Explain driver stage and output stage in power amplifiers.