

BAHRIA COLLEGE ZAFAR CAMPUS ISLAMABAD, DEPARTMENT OF PHYSICS  
CLASS XII, HOME WORK-1

LAST DATE OF SUBMISSION: 03.DECEMBER.2020 TIME 1200 Hrs.

NOTE: SOLVING AND SUBMISSION OF THESE ASSIGNMENTS ARE COMPULSORY THESE CAN BE SUBMITTED BY ANY MEDIUM TO THE CONCERNED TEACHER BEFORE THE DEADLINE, ATTEMPT ALL QUESTIONS:-

CHAPTER 17, ELECTRONICS  
REVIEW QUESTIONS

1. Explain why in a transistor (a) the base is thin lightly doped (b) the collector is large in size.
2. Explain why the base current is weak as compared to collector current?
3. Why the emitter base junction is forward biased and collector base junction is reverse biased?
4. Draw the diagram of NPN and PNP transistors and explain how it works.
5. Explain why CE configuration is widely used in amplifier circuits?
6. Why transistors is called current amplification device?
7. A doped semiconductor has  $10^{10}$  silicon atoms and 10 trivalent atoms. If the temperature is  $25^{\circ}\text{C}$ , how many free electrons and holes are there inside the semiconductor?

COMPREHENSIVE QUESTIONS

1. Explain how PN-junction acts as a half-wave rectifier.
2. Explain the working of transistor as an amplifier?
3. Draw the circuit for a half wave rectifier and full wave rectifier?
4. Compare the advantages and disadvantages of full wave rectifier and half wave rectifier.
5. Deduce the relation between  $\alpha$  and  $\beta$  of a transistor.
6. Explain what is meant by the following terms. (i) P-type and N-type materials (ii) Doping of semiconductors (iii) P-N junction (iv) Forward and Reverse Biasing (v) Minority and Majority Carriers
7. Discuss the carrier's movement across the emitter base and collector base junctions.
8. What is the effect of increasing the junction temperature of a diode on reverse saturation current?
9. In a transistor the emitter and collector are of the same type of semiconducting material. Yet they cannot be interchanging in a circuit connection. Explain.
10. Is the frequency content of the output of a half wave rectifier and full wave rectifier the same. Explain?

NUMERICAL PROBLEMS

Solve numerical problem number 1, 2, 3.