

MAR THOMA RESIDENTIAL SCHOOL, TIRUVALLA

FIRST ASSESSMENT EXAMINATION-2020

STD XII

PHYSICS

MARK:20

PART II

TIME:30min

Question 1

- a) 1. Define stopping potential.
2. How is it related to the maximum kinetic energy of photo electrons? [2]
- b) The work function of a certain metal is 4.2eV. Will this metal give photoelectric emission for radiation of frequency 330nm? [2]
- c) An α particle and a deuteron are accelerated from rest through the same potential difference V. Find the ratio of deBroglie wavelengths associated with them? [2]
- d) Draw a graph showing the variation of maximum kinetic energy of photoelectron with frequency of incident radiation. Using this graph how will you find 1) work function
2) Planck's constant. [4]

Question 2

- a) 1. State Bohr's quantisation condition. [1]
2. Name the spectral series of H-atom which lies in the visible region of electromagnetic spectrum. [1]
3. Calculate the longest and shortest wavelength of this series. ($R=1.097 \times 10^7 \text{ m}^{-1}$) [3]
- b) Define the following with respect to semiconductors.
1. Energy band 2. Doping 3. Depletion region [3]
- c) What is meant by forward biasing a p-n junction? Draw a circuit diagram to show the forward biasing a p-n junction using symbol. [2]
