

MAR THOMA RESIDENTIAL SCHOOL, TIRUVALLA

FIRST ASSESSMENT EXAMINATION -2020

STD XI

PHYSICS

MARK:20

PART – I

TIME:30min

Question 1

- a) Which of the following is not a unit of time?
1) nanosecond 2) parsec 3) solar day 4) leap year
- b) Write the order of magnitude of 0.000428 kg.
- c) How many significant figures in 2.00×10^{19} m/s.
- d) Write the dimensional formula of pressure.
- e) Name one physical quantity having no dimension.
- f) How many significant figures are there in the product $1.2 \times 2.56 \times 3.62$? [6x1/2=3]

Question 2

- a) State the principle of homogeneity of dimensions. [1]
- b) Using this principle find the dimensional formula of the constants A and B in the equation $\mu = A + B/\lambda^2$ where μ is the refractive index of glass and λ is the wavelength of light. [2]
- c) Find the dimension of **(axb)** in the equation $P = (a-t^2)/bx$, where P is the power, x is the distance and t is the time. [3]

Question 3

- a) Write the advantages of SI units. (any four) [2]
- b) Convert 25J into a new system where the base units are 250g, 200cm and 30min. [3]
- c) The critical velocity 'v' of the flow of a liquid through a pipe depends on 1) radius **r** of the pipe, 2) density **ρ** and coefficient of viscosity **η** of the liquid. Derive an expression for v. [3]
- d) Write any three limitations of dimensional analysis. [3]
