LOYOLA SCHOOL, BHUBANESWAR

First Class Evaluation, July - 2025

Class: XI **Subject: Physics** **F.M. = 20** **Time: 40 min**

QUESTION -1 MCQ's **[1X5]**

(1) Which of the following is not dimensionless variable?

(a) Strain (b) Angle

(c) Relative Density (d) II

(2) With regards to significant figures $(12{\cdot}5)^2$ equal to

(a) 156 (b) 156·2

(c) 156·25 (d) 156·20

(3) Two quantities A and B have different dimension. Which of the following mathematical operations is physically meaningful.

(a) A/B (b) A + B

(c) A –B (d) A = B

(4) Given force = $\frac{\alpha}{\text{density} + \beta^3}$, then dimensions of α and β are

(a) $[M\,L^{-2}T^{-2}]$, $[M^{1/3}\,L^{-1}]$ (b) $[M^2\,L^4\,T^{-2}]$, $[M^{1/3}\,L^{-1}]$

(c) $[M^2\,L^{-2}\,T^{-2}]$, $[M^{1/3}\,L^{-1}]$ (d) $[M^2\,L^{-2}\,T^{-2}]$, $[M\,L^{-3}]$

(5) In a system of units, if force (F) acceleration (A) and time (T) are taken as fundamental units, then the demense formula for energy is

(a) $[F\,A^2\,T]$ (b) $[F\,A\,T^2]$

(c) $[F\,A^2\,T^2]$ (d) [FAT]

QUESTION -2

1) Give two limitations of dimensional analysis. **[2]**

2) a. Add $5{\cdot}27 \times 10^4$ and 71461 **[2]**

b. Subtract 9·7 from 12.192

3) Check the dimensional consistency of the following equations. **[2]**

a. KE = $\frac{3}{16}\,mv^{\,2}$ b. KE = $\frac{1}{2}\,mv^{\,2} + ma$

QUESTION -3

(1) Find the value of 100J in a system that has 10g, 100 cm and 50s as unit. **[3]**

(2) Assuming that the mass m of the largest stone that can be moved by a flowing river depends upon the velocity v of water, its density and acceleration due to gravity g. Derive an formula. **[3]**

(3) If the unit of velocity be 20 units, the unit of acclⁿ be 40 cm/s² and unit of force be 30 dynes. What are the units of mass, length and time? **[3]**

**********ALL THE BEST**********