VP & RPTP Science College
Vallabh Vidyanagar
FYBSc[Semester-I]
Physics Course No:US01CPHY01
First Internal Test
Date and Day: 4-10-2016,Tuesday Time: 1.00 pm to 2.30pm

Total Marks:25

Q-1 Multiple Choice Questions: 3

(a) The possible value of Poisson's ratio is _____.
(i) 0.5   (ii) -1.0   (iii) +1.0   (iv) 0.40

(b) The material of a beam should not be
(i) Homogenous   (ii) Isotropic   (iii) Elastic   (iv) None of the these

(c) At what temperature, the velocity of sound in air is double its value at 0°C?
(i) 1092 K   (ii) 819 K   (iii) 546 K   (iv) 273 K

Q-2 **Answer any TWO questions in short.** 4

(a) Define (i) Elasticity and (ii) Plasticity.
(b) Discuss any one application of torsional pendulum.
(c) Define (i) Longitudinal Waves and (ii) Transverse Waves.

Q-3 Define and explain bulk modulus (K) and prove that $K = \frac{1}{3(\alpha-2\beta)}$. 6

OR

Q-3 Define Poisson's ratio (σ) and derive formula of it to determine 6
experimentally, i. e. $\sigma = \frac{1}{2}\left(1 - \frac{1}{A}\frac{dV}{dL}\right)$.

Q-4 Derive an expression for torsional rigidity of the cylinder or a rod 6
of uniform circular section.

OR

Q-4 Define modulus of rigidity and describe (i) statical method and 6
(ii) dynamical method to determinate it experimentally.

Q-5 Derive an expression for the velocity of sound in a metal rod. 6

OR

Q-5 Giving the construction and working of a Kundt's tube explain 6
how the velocity of sound in a metal rod can be calculated.

_____*Best of Luck*_____