Class XI th.

Physics. (2nd term)

Important

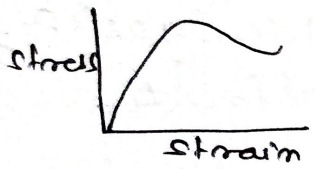
(1) Mechanical Properties of solid.

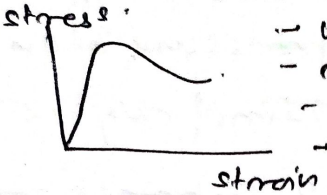
(A) Explain stress-strain curve?

(B) Define Hooks law, Young's modulus, Shearing modulus.

(C) Draw stress strain curve of (a) Ductile (b) Brittle (c) Elastomers

(4)





- which one has Higher Young's modulus.
- more stronger.
- why steel is more Stronger than rubber
- What is Young's modulus of Rigit body?

(5) Express potential Energy of Elastic material? How Elasticity used in crane or Lift wires?

(6) Numerical on modulus of Elasticity. [try atleast 5 numerical

Mechanical Properties of Fluid.

(1) Define Pascal's law & ~~Pressure~~ Explain Hydraulic lift?
(2) Express Excess of pressure of liquid bubble $P = \frac{2S}{R}$?
(3) Define bernoulli's & derive its expression. (numerical)
(4) Explain (a) Magnus effect (b) blowing Roof top ?
(5) Define (a) Angle of contact (b) terminal velocity (c) surface tension & application
(6) Derive ~~shock~~ terminal velocity
(7) Derive ascent formula $h = \frac{2S\cos\theta}{\rho g}$.

Thermal properties of matter.

(1) What are the different ways of Heat transfer?
(2) Define (a) Wein's displacement (b) ~~Boltzmann~~ Stefan's law.
(3) Explain thermal conductivity (b) black body (emissivity)
(4) Numerical :- (a) calorimeter.
(b) thermal conductivity
(c) linear, areal expansion.
(5) Anamolous behaviour of water & triple point.

Thermodynamics.

(1) Explain (a) zeroth, first, 2nd law of thermodynamics
(2) Derive $C_p - C_v = R$.
(3) Define condition for Isothermal? Derive the Expression & Example
(4) Define Adiabatic condition? Derive the Expression & Example

Kinetic theory of Gases.

(1) What the postulates of K.T. of Gases? Define mean free path.
(2) Derive the expression of pressure of an ideal gas? $P = \frac{1}{3} \rho c^2$
(3) Define degree of freedom? find degree of freedom of O_2, H_2O?
(4) Define law of Equipartition? Express relation between K.E per unit volume with pressure of an ideal gas?
(5) Express molar ratio γ of triatomic gas O_3?
(6) What will be the Internal Energy of 8g of O_2 at S.T.P?

Oscillation.

(1) Define S.H.M? Is it a S.H.M motion (a) $\sin\omega t - \cos\omega t$.
(b) $\sin 2\omega t$.

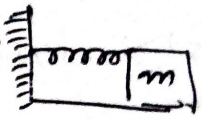
(2) Derive the Expression of acceleration, velocity, total energy K.E, P.E of S.H.M. show its Graph.

(3) A particle Execute S.H.M with a time period of 2s & amplitude 5cm find (a) displacement (b) velocity (c) acceleration after $\frac{1}{3}$s starting from mean position.

(4) Define & Express time period of simple pendulum.

(5) Define - (a) Damped Oscillation (b) free / forced / Resonant oscillation.

(6) A spring of force constant $1200\,Nm^{-1}$ is mounted on a Horizontal table. A mass of 3kg is attached to the free end of the spring pulled sideways to a distance of 2.0cm & then released.
(a) what is the frequency of Oscillation of the mass
(b) what is the max. acceleration & max. speed?



Wave.

(1) Explain Laplace correction.
(2) Numerical - (a) Organ pipe
(b) beat.
(3) Explain progressive & standing wave).