BRAIN INTERNATIONAL SCHOOL

PHYSICS ASSIGNMENT **CLASS XI** **NOV 2024**

CH: 7- (GRAVITATION)

1. Variation of acceleration due to gravity with height.
2. Variation of g with depth.
3. What do you understand by gravitational potential energy of a body? Derive an expression for it, when a body of mass'm' is situated at a distance 'r' from the centre of earth of mass M.
4. Derive a formula for escape velocity in terms of parameters of a planet.
5. Derive expression for the orbital velocity of a satellite and its time period. What is a geostationary satellite? Obtain the expression for the height of the geostationary satellite.
6. Find the expression of total energy of a satellite revolving around the surface of the earth.
7. State and explain Kepler's laws of planetary motion.

CH: 8- (MECHANICAL PROPERTIES OF SOLIDS)

1. State Hooke's law and hence define modulus of elasticity.
2. Which is more elastic – iron or rubber? Why?
3. Define the terms young's modulus, bulk modulus and modulus of rigidity.
4. What is the value of bulk modulus for an incompressible liquid?
5. What is the value of modulus of rigidity for an incompressible liquid?
6. Draw stress-strain curve for a loaded wire. On the graph mark
   (a) Hooke's limit
   (b) Elastic limit
   (c) Yield point
   (d) Breaking point
7. Derive an expression for Energy stored in a wire due to extension.
8. Determine the poisson's ratio of the material of a wire whose volume remains constant under an external normal stress.

CH: 9- (MECHANICAL PROPERTIES OF FLUIDS)

1. State Stoke's law. Deduce it on the basis of dimensional considerations.
2. State Poiseuille's formula. Deduce it on the basis of dimensional considerations.
3. What is terminal velocity? Derive and expression for the terminal velocity of a body falling freely in a viscous medium. On what factors does it depend.
4. Derive equation of continuity.
5. State and prove Bernoulli's principle or Bernoulli's theorem.
6. Derive an expression for excess pressure inside a liquid drop and soap bubble.
7. Discuss how a liquid rise or fall in a capillary tube hence derive ascent formula.