

BRAIN INTERNATIONAL SCHOOL

Physics Assignment

Class XI

July '18

- 1) Define work . write its unit and dimensional formula.
- 2) Define conservative and non conservative force.
- 3) Derive the expression for the kinetic energy.
- 4) Define elastic collision. For an elastic collision , derive the expression of velocity of two object after collision.
- 5) State and derive work energy theorem.
- 6) A man cycles up a hill ,whose slope is 1 in 20 with a velocity of 6.4km/h along the hill. The weight of man and cycle is 98 kg. What work per minute is he doing.
- 7) Two ball bearings of mass m each moving in opposite direction with equal speed v collide head on with each other. Predict the outcome of the collision assuming it to be perfectly elastic.
- 8) A ball is dropped from a height of 3m. What is the height up to which the ball will rebound. the coefficient of restitution is 0.5.
- 9) State and prove work energy theorem.
- 10) A locomotive of mass m starts moving so that its velocity varies according to the law $V = \beta \sqrt{s}$, where β is constant and s is the distance covered. Find total work done by all the forces acting on the locomotive during the first t second after the beginning of motion.
- 11) A pendulum bob of mass 0.01 kg is raised to a height of 0.05m and then released. At the bottom of its swing, it picks up a mass of 0.003 kg . To what height will the combined mass rise.
- 12) Derive expression for the spring potential energy.
- 13) Write the characteristics of perfectly inelastic collision.