MAR THOMA RESIDENTIAL SCHOOL, TIRUVALLA

FIRST TERM ASSESSMENT 2020-'21

Marks-20

Class-X   Time:30 minutes

PHYSICS

Question-1

a. i) Define work
   ii) Write the relation between SI unit and CGS unit of work.
   iii) When does a machine act as a force multiplier?   (3)
b.   A light mass and a heavy mass have equal momentum.
   i) Which will have less kinetic energy?
   ii) Give reason for your answer.
   iii) The work done by a fielder when he takes a catch in a cricket match, is negative. Why?   (3)
c.   A force of 15N is required to pull up a body of mass 2kg through a distance 5m along an
       inclined plane making an angle of 30^0 with the horizontal as shown below. Calculate
   i) the work done by the force in pulling the body.
   ii) the force due to gravity on the body.
   iii) the work done against the force due to gravity. Take g = $9.8 m/s^2$.
   iv) Account for the difference in answers of part (i) and part (iii).
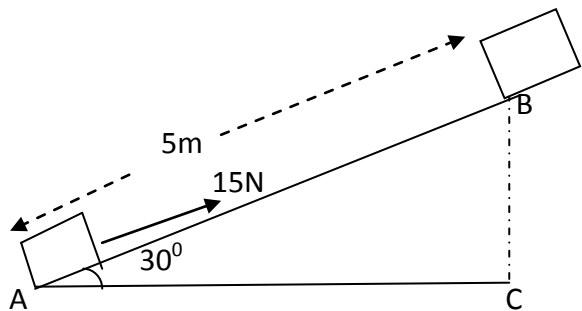
(4)

Question-2

a. i) How is the mechanical advantage related with the velocity ratio for an actual machine?
   ii) State the relationship between mechanical advantage, velocity ratio and efficiency of a
       machine.
   iii) Name the term that will not change for a machine of a given design.   (3)
b. i) How fast should a man weighing 600N run so that his kinetic energy is 750J? (g = $10m/s^2$).
   ii) Give one reason for a machine not to be 100% efficient.   (3)
c.   A simple pendulum, while oscillating, rises to a maximum vertical height of 5cm from its
       rest position when it reaches to its extreme position on one side. If mass of the bob of the
       simple pendulum is 500g and g = $10m/s^2$, find
   i) the total energy of the simple pendulum at any instant while oscillating and
   ii) the velocity of bob at its mean position.   (4)

Question Paper (Please click on the attachment (in blue coloured letters) for downloading the question paper)

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