PHYSICS
MODEL QUESTIONS

Choose the correct answer from A, B, C, or D for each of the following:
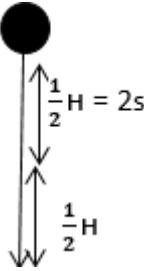
Q-1	Using the following mathematical relations that represent two physical quantities: Quantity (A)= $\frac{1}{2}$ X mass X velocity squared ($E_k=1/2mv^2$) Quantity (B)=Force x Displacement. (W = F. d) So that, the dimensional formula (ML^2T^{-2}) represents :
A	Quantity (A) only
B	Quantity (B) only
C	Both (A & B)
D	Neither (A) nor (B)

Q-2	A horse tries to pull a wagon loaded with wood. If the pull force of the horse represents an "action", which force of the following represents the "reaction"?
A	The friction force between the wagon wheels and the ground.
B	The pull force of the wagon to the horse.
C	The air resistance to the wagon.
D	The friction force between the horse legs and the ground

Q-3	A stone and a ball are projected upwards at the same time, where the stone is projected at 20m/s while the ball at 10m/s. If the maximum height reached by the ball is (H), What is the maximum height reached by the stone? (neglecting air resistance against the movement of stone and ball)
A	½ H
B	H
C	2H
D	4H

PHYSICS
MODEL QUESTIONS

Q-4	The figure represents a ball falling freely from a height (H) above the ground. It takes 2s to reach midway to ground ($\frac{1}{2}$ H). What is the required time for the ball to cover <u>the other half distance</u> to the ground? Given that: (g = 10 m/s^2)
A	3.0 s
B	2.0 s
C	0.83 s
D	0.5 s

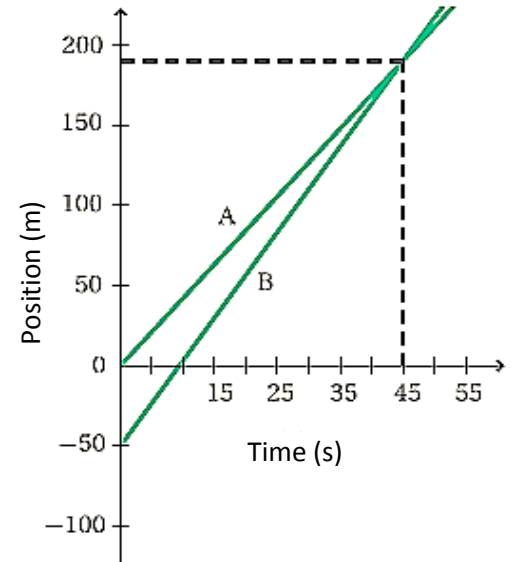| Q-5	A projectile is projected from a canon by 45° with the horizontal to reach a maximum height (h) and to cover a horizontal range (X). If the projectile is projected another time by the same canon at the same initial velocity by an angle 60° . The maximum height and the horizontal range in this case will be:
A	more than h , more than X
B	more than h , less than X
C	less than h , more than X
D	less than h , less than X

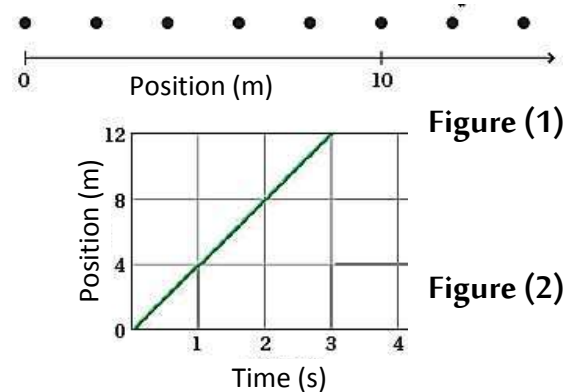| Q-6	When two students measured the time taken by a copper sphere to fall freely from a building of 5 m high, they got the two readings below: The first student's reading: (0.1 s) – the second student's reading: (10 s). What do you think about the two readings?
A	The two readings are reasonable.
B	The 1st reading is reasonable while the 2nd is not.
C	The two readings are not reasonable
D	The 2nd reading is reasonable while the 1st is not.

Q-7	The graph represents the position of two athletes, A and B, who are moving in a straight racetrack in the same direction versus time. At the instant when the athlete (A) is passing by the athlete (B):
A	Both displacement and velocity of athlete B are equal to those of A.
B	Both displacement and velocity of athlete B are more than those of A.
C	Both displacement and velocity of athlete B are less than those of A.
D	Displacement of athlete B is more than that of A while and the velocity of athlete B equals that of A.

Q-8	Figure (1) represents the change in position of a moving body (x) which is observed in equal intervals of time, each of 2s, while figure (2) represents (displacement – time) graph of another moving body (y). which statement describe correctly the motion of the two bodies?
A	They move at the same velocity.
B	Velocity of body (x) is twice that of body (y)
C	Velocity of body (x) is half that of body (y)
D	Velocity of body (x) is quarter that of body (y)

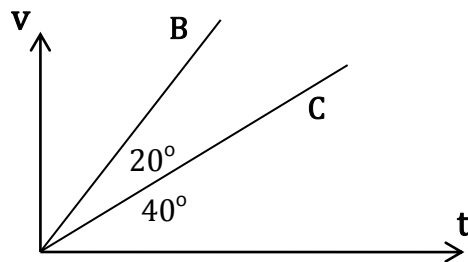| Q-9	Using the following relations:
	$F = m \times a$ (Force = mass x acceleration)
	$PE = m \times a \times d$ (Potential Energy = mass x acceleration height)
	So, the relation between The Newton (the measuring unit of force) and The Joule (the measuring unit of potential energy) is:
A	Newton = Joule/meter
B	Newton = Joule. Meter
C	Newton = meter/ Joule.
D	Newton = Joule.

Q-10	If the length of a rectangle = |5 ± 0.1| m and its width = |4 ± 0.2| m. So, the rectangle area is :
A	$\|9 \pm 0.3\|$ m^2
B	$\|20 \pm 0.3\|$ m^2
C	$\|20 \pm 1.4\|$ m^2
D	$\|20 \pm 0.5\|$ m^2

Q-11	The given figure illustrates two bodies K, Z of masses 2 kg and 5 kg respectively. If the body K affects the body Z on collision with a force of magnitude F, what is the force by which the body Z affects the body K?
A	$- F$
B	F
C	$\dfrac{5}{2} F$
D	$\dfrac{2}{5} F$

Q-12	The graph represents the relation between the velocities of two bodies (C and B) versus time. What is the ratio between the acceleration of the body C to that of the body B? (Given that : the slope of the line = tan Ø)
A	2.30
B	2.06
C	0.48
D	0.43