DELHI PUBLIC SCHOOL JAMMU

Assignment

Class XI **Sub:PHYSICS**

Topic: Laws of Motion

Based on your understanding of the e- lectures-cum-PPTs, video links and other e-resources shared with you, answer the following questions.

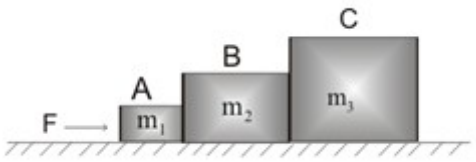
Q1. A ball is travelling with uniform translatory motion. This means that
(a) it is at rest.
(b) the path can be a straight line or circular and the ball travels with uniform speed.
(c) all parts of the ball have the same velocity (magnitude and direction) and the velocity is constant.
(d) the centre of the ball moves with constant velocity and the ball spins about its centre uniformly. (1mk)

Q2. Conservation of momentum in a collision between particles can be understood from
(a) conservation of energy.
(b) Newton's first law only.
(c) Newton's second law only.
(d) both Newton's second and third law (1mk)

Q3. A body of mass 3kg travels according to the law x=at+bt2+ct3
where a=3 m/s , b=4 m/s^2 , c= 5 m/s^3
The force acting on the body at t = 2 seconds is
(a) 136 N
(b) 204 N
(c) 158 N
(d) 68 N (1mk)

Q4. 11. The velocity of a body of mass 2 kg as a function of t is given by
$v=2ti+t^2 j$
Find the momentum and the force acting on it, at time t= 2s (2 mks)

Q5. Consider a three body system shown in figure below



(a) Find the acceleration of the each object
(b) Find the contact force between all the objects (2 mks)

Q6. A body of Mass m moves along the X-axis such that a time t its position is given by following expression $x=at^{3/2}-bt+c$. Where a, b and c are constant

(a) Calculate the acceleration of the body

(b) What is the force acting on it

(c) What is the force at t=1 sec (3 mks)

Q7. An 8 Kg object is subjected to three forces

$\mathbf{F}_1 = 20\mathbf{i} + 30\mathbf{j}$ N

$\mathbf{F}_2 = 22\mathbf{i} - 10\mathbf{j}$ N

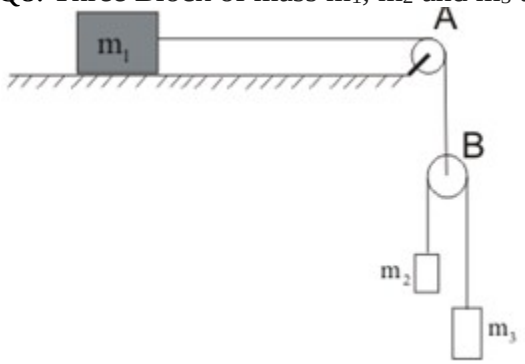
$\mathbf{F}_3 = 6\mathbf{i} + 4\mathbf{j}$ N

(a) Find the acceleration of the object.

(b) If the object starts from rest from origin, what will be the location after 4 sec

(c) What is the magnitude of resultant force and its direction? (3 mks)

Q8. Three Block of mass m_1, m_2 and m_3 are connected as shown in the figure below.



All the surfaces are frictionless and strings and pulley are light. Find the acceleration of all the masses. (3 mks)

Q9 A object of mass M is standing in a stationary lift. What pressure force N exerted by the object on the floor of the lift

(a) If the lift is stationary

(b) if the lift is moving upward with acceleration a

(c) if the lift is moving downward with acceleration a (3 mks)

Q10. Three blocks A, B,C are such as

M_1=2 kg , M_2=3 kg , M_3=6 kg

They are connected as shown in the below figure.

The coefficient of friction between the block M_2 and table is 0.2 Find out the following

(a) Draw all the forces acting on the system

(b) The acceleration of the system
(c) Frictional force between the block M_2 and table
(d) Tension in the cord on the left and tension in the cord on the right
Given g=10 m/sec^2 (3 mks)

YOU TUBE LINKS:

1. https://www.vedantu.com

2. Laws of Motion and friction Numericals for JEE Main and Advanced

Note:

1. Due date of submission: 28nd of July 2021

2. Send your assignment on the email ID of your respective subject teachers

Section XI A Sub Teacher: Mr. Mandeep Singh (email ID : mandy.7104@gmail.com)
Section XI B Sub Teacher:Ms Manika Verma (email ID : manikaverma25@gmail.com)
Section XI C Sub Teacher: Mr. Parshant Verma (email ID: prashant.v85@gmail.com
Section XI D Sub Teacher: Ms Jyoti Pallalia (email ID : jyotijamwal50@gmail.com)

3. Students must mention their name, class/section and date in their assignments.

4. Your assignment will be marked for internal/term assessments. Therefore you are required to submit it on time.