



INDIAN SCHOOL DARSAIT  
DEPARTMENT OF PHYSICS



Subject : PHYSICS	TOPIC: Motion in a plane	Worksheetno#03
Resource Person: Ms Sonia Antony		Date :04/06/17
Name of the Student : _____	Class & Division : -	Roll Number: -

Q.N O	QUESTIONS	Mark s
1	Is angular displacement a vector ?why?	1
2	Electrons revolve round the nucleus of an atom. What is the source for centripetal force?	1
3	If both speed and radius of the circular path are doubled, what will be the change in the centripetal force?	1
4	The velocity of a particle is constant in magnitude but not in direction. What is the nature of trajectory?	1
5	Which of the following is greater? Angular velocity of hour hand of a watch or angular velocity of earth around its own axis. Why?	2
6	A body is thrown with a velocity $v$ from a tower of height $h$ . After how much time and at what distance from the base of the tower will the body strike the ground?	2
7	What do you mean by null vector? What is its physical significance?	2
8	A unit vector is represented by $a\mathbf{i} + b\mathbf{j} + c\mathbf{k}$ . If the value of $a$ and $b$ are 0.6 and 0.8 respectively, find the value of $c$ ?	2
9	Can three co-planar vectors give zero resultant? Why?	2
10	A stone tied at the end of a string 80 cm long is whirled in a horizontal circle with a constant speed. If the stone makes 14 revolutions in 25 seconds, what is the magnitude and acceleration of the stone?	2
11	Calculate the angular speed of the fly wheel making 240 revolutions per minute.	2
12	Prove that the path of a projectile is a parabola.	3
13	Establish the relation between linear velocity and angular velocity.	3
14	The ceiling of a long hall is 25m high. What is the maximum horizontal distance that a ball thrown with a speed of 40m/s can go without hitting the ceiling of the hall?	3

15	Derive the equation for range and time of flight of a projectile.	3
16	State and prove triangle law of vector addition and parallelogram of vector addition.	3
17	Find the angle of projection at which horizontal range and maximum height are equal.	3
18	A body is projected with a velocity of 40 m/s. After 2 seconds it crosses a vertical pole height 20.4m. Find the angle of projection and horizontal range of projectile. ( $g=10\text{m/s}^2$ )	3
19	The radius of earth's orbit around the sun $1.5 \times 10^{11}\text{m}$ . Calculate the angular velocity and linear velocity of the earth. Through how much angle does the earth revolve in two days?	
20	What do you mean by position vector and displacement vector. Distinguish them with illustration.	3