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## Maninagar Campus

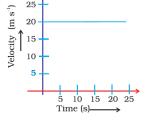
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Grade : IX	Subject : Physics	
Date : 22/08/2019	Empower – 1 Theory Worksheet	Ch.: 8,9,10
	SECTION – A	
. A worker covers a distance of 4		of work, and 10 km towards his
	nent covered by the worker in the	
_	(c) 30 km (d) 50 km	
2. Rate of change of displacement	t is called	
(a) Speed (b) Deceleration	on (c) Acceleration (d) V	elocity
3. Acceleration is a vector quantit	ty, which indicates that its value	
(a) Is always negative	(b) Is always positive	
(c) Is zero	(d) Can be positive, negativ	
4. A player moves along the boun	dary of a square ground of side 5	0 m in 200 sec. The magnitude of
_	he end of 11 minutes 40 seconds f	rom his initial position is
	(c) 200 m (d) $50\sqrt{2}$ m	
-	and then another 80m in 5 sec. W	hat is the average speed of the
object?		
	(c) $2 \text{ m/s}$ (d) $0 \text{ m/s}$	
5. The average velocity of a body		
	(c) $V_{av} = (u + v)/2$ (d) S	$=$ ut + $\frac{1}{2}$ a t <sup>2</sup>
7. SI Unit of measurement of acce		
	(c) m/hr (d) M	•••••••••••••••••••••••••••••••••••••••
		niform velocity of 8 m/ s . Assumin
object with the same uniform	surface to be zero, The force requ	infed to maintain the motion of
	(c) 8 (d) 32	
		of a body when it is acted upon by
	orce (c) An Unbalanced force	(d) Uniform force
10. Which of the Expression to find		(d) Uniform force
(a) $F = m/a$ (b) $F = ma$	(c) $F = a/m$	(d) $F = ma/m$ .
		ocity of 800 m/s, calculate the reco
velocity of gun		servy of 000 mills, carculate the reco
(a) $1m/s$ (b) $-1m/s$	(c) 2m/s	(d) -4m/s
		il stops the hammer in a very shor
time of 0.02 s. The force of the	-	
(a) 600N (b) 1200N	(c) 2000N	(d) 2500N
13. A body of mass 1kg is attracted		
(a) 9.8N (b) $6.67 \times 10^{11}$	-	(d) 9.8m/s
4. The mass of the body on moon	is 40kg, what is the weight on the	earth.
(a) 240k (b) 392N	(c) 240N	(d) 400kg
15. The gravitational force between		•
altering the distance between the	hem, then the gravitational force	(d) 2F
(a) $\mathbf{E}/4$ (1) $\mathbf{E}/2$		
(a) F/4 (b) F/2 16. The distance between two bodi	(c) F es becomes 6 times more than the	

## **SECTION - B**

- What does the force of gravity depend on and why? 1.
- 2. Why does weight change?
- 3. What is buoyancy?
- 4. Plot the nature of velocity versus time graph for motion with uniform velocity.
- Plot the nature of velocity versus time graph for retarded motion. 5.
- What is the ratio of weight of an object on earth that to on the moon? 6.
- 7. When can we say that the momentum of the body is conserved?
- 8. Write the three basic equations of motion.
- 9. Write the equations of motion under the influence of gravity.
- 10. What is free fall and forced fall?
- 11. Differentiate between Balanced and unbalanced forces.
- 12. Write the statements for the Newton's three laws of motion.
- 13. What is Pressure?
- 14. Differentiate between g and G.
- 15. What is Inertia?
- 16. What is friction?
- 17. How many types of motion do you know?
- 18. What is the displacement in Uniform Circular motion?

## **SECTION - C**

- 1. The velocity-time graph shows the motion of a cyclist. Find (i) its acceleration (ii) its velocity and (iii) the distance covered by the cyclist in 15 seconds.
- 2. An electron moving with a velocity of 5 x  $10^4$  m/s enters into a uniform electric field and acquires a uniform acceleration of  $10^4 \text{ m/s}^2$  in the direction of its initial motion. (i) Calculate the time in which the electron would acquire a velocity double of its initial velocity. (ii) How much distance the electron would cover in this time?
- 3. Two stones are thrown vertically upwards simultaneously with their initial velocities  $u_1$  and  $u_2$ respectively. Prove that the heights reached by them would be in the ratio of  $u_1^2$ :  $u_2^2$  (Assume upward acceleration is -g and downward acceleration to be +g).
- 4. Two friends on roller-skates are standing 5 m apart facing each other. One of them throws a ball of 2 kg towards the other, who catches it, How will this activity affect the position of the two? Explain your answer.
- 5. Using second law of motion, derive the relation between force and acceleration. A bullet of 10 g strikes a sand-bag at a speed of  $10^3$  m/s and gets embedded after travelling 5 cm. Calculate (i) the resistive force exerted by the sand on the bullet (ii) the time taken by the bullet to come to rest.
- 6. Derive the unit of force using the second law of motion. A force of 10 N produces an acceleration of 8 m/s<sup>2</sup> on a mass m1 and an acceleration of 16 m/s<sup>2</sup> on a mass m2. What acceleration would the same force provide if both the masses are tied together?
- 7. Identical packets are dropped from two aeroplanes, one above the equator and the other above the north pole, both at height h. Assuming all conditions are identical, will those packets take same time to reach the surface of earth. Justify your answer.
- 8. The weight of any person on the moon is about 1/6 times that on the earth. He can lift a mass of 15 kg on the earth. What will be the maximum mass, which can be lifted by the same force applied by the person on the moon?
- 9. How does the weight of an object vary with respect to mass and radius of the earth. In a hypothetical case, if the diameter of the earth becomes half of its present value and its mass becomes four times of its present value, then how would the weight of any object on the surface of the earth be affected?



25