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Grade : IX	Subject : Physics	Ch.: 8,9,10
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SECTION – A

- A worker covers a distance of 40 km from his house to his place of work, and 10 km towards his house back. Then the displacement covered by the worker in the whole trip is**
(a) zero km (b) 10 km (c) 30 km (d) 50 km
- Rate of change of displacement is called**
(a) Speed (b) Deceleration (c) Acceleration (d) Velocity
- Acceleration is a vector quantity, which indicates that its value**
(a) Is always negative (b) Is always positive
(c) Is zero (d) Can be positive, negative or zero
- A player moves along the boundary of a square ground of side 50 m in 200 sec. The magnitude of displacement of the farmer at the end of 11 minutes 40 seconds from his initial position is**
(a) 50 m (b) 150 m (c) 200 m (d) $50\sqrt{2}$ m
- An object travels 40m in 5 sec and then another 80m in 5 sec. What is the average speed of the object?**
(a) 12 m/s (b) 6 m/s (c) 2 m/s (d) 0 m/s
- The average velocity of a body is given by the expression :**
(a) $V = u + at$ (b) $2as = v^2 - u^2$ (c) $V_{av} = (u + v)/2$ (d) $S = ut + \frac{1}{2}at^2$
- SI Unit of measurement of acceleration is**
(a) m/s (b) m/s^2 (c) m/hr (d) M
- An object of mass 6 kg is sliding on horizontal surface, with a uniform velocity of 8 m/s . Assuming force of friction offered by the surface to be zero, The force required to maintain the motion of object with the same uniform velocity is N**
(a) 0 (b) 2 (c) 8 (d) 32
- There will be a change in the speed or in the direction of motion of a body when it is acted upon by**
(a) Zero Force (b) Balanced Force (c) An Unbalanced force (d) Uniform force
- Which of the Expression to find the Force is correct ?**
(a) $F = m/a$ (b) $F = ma$ (c) $F = a/m$ (d) $F = ma/m$.
- A bullet of mass 40gm is fired from a gun of mass 8kg with a velocity of 800 m/s, calculate the recoil velocity of gun**
(a) 1m/s (b) -1m/s (c) 2m/s (d) -4m/s
- A hammer of mass 300 g, moving at 40m/s, strikes a nail. The nail stops the hammer in a very short time of 0.02 s. The force of the nail on the hammer is**
(a) 600N (b) 1200N (c) 2000N (d) 2500N
- A body of mass 1kg is attracted by the earth with a force which is equal to**
(a) 9.8N (b) 6.67×10^{11} (c) 1 N (d) 9.8m/s
- The mass of the body on moon is 40kg, what is the weight on the earth.**
(a) 240k (b) 392N (c) 240N (d) 400kg
- The gravitational force between two objects is F. If masses of both the objects are halved without altering the distance between them, then the gravitational force would become**
(a) F/4 (b) F/2 (c) F (d) 2F
- The distance between two bodies becomes 6 times more than the usual distance. The Force becomes**
(a) 36 times (b) 6 times (c) 12 times (d) 1/36 times

SECTION - B

1. What does the force of gravity depend on and why?
2. Why does weight change?
3. What is buoyancy?
4. Plot the nature of velocity versus time graph for motion with uniform velocity.
5. Plot the nature of velocity versus time graph for retarded motion.
6. What is the ratio of weight of an object on earth that to on the moon?
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 5×10^4 m/s enters into a uniform electric field and acquires a uniform acceleration of 10^4 m/s² 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/s² on a mass m_1 and an acceleration of 16 m/s² on a mass m_2 .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?

