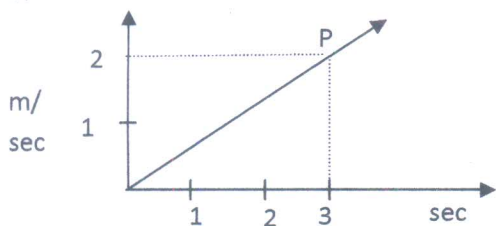


Class-9
Revision Questions
Midterm 2018-2019

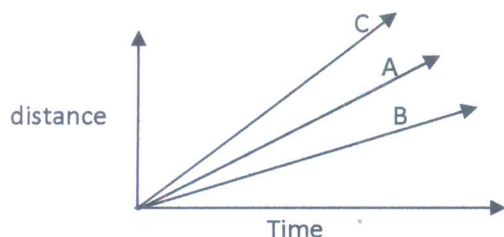
Motion

1. Define : distance, displacement, speed, velocity, uniform acceleration ,non uniform acceleration, uniform circular motion.
2. Prove graphically $v = u + at$, $v^2 = u^2 + 2as$, $s = ut + \frac{1}{2} at^2$ where the symbols has usual meanings.
3. Draw a velocity versus time graph showing the following cases:
 - i) A stone thrown vertically upwards and then coming down after attaining the maximum height.
 - ii) A body at rest
 - iii) A body moving with uniform velocity
 - iv) A body moving with uniform acceleration for some time then moving with constant velocity
4. State the differences between:
 - i) Speed & velocity
 - ii) Distance & displacement
 - iii) Uniform and non- uniform motion
5. A motorcyclist drives from A to B with a uniform speed of 30km/hr and returns back with a speed of 20km/h. Find his average speed.
6. A car starts from rest and moves along a straight line with a constant acceleration of $5m/s^2$ for 8 seconds. It then continues with constant velocity. What distance will the car cover in 12 seconds since it started from rest?
- 7.



The velocity- time graph of a body of mass 150g moving in a definite direction is is shown

- a) What is the velocity of the body at point P?
 - b) Find the momentum of the particle at time $t = 3s$
 - c) What does the slope of a graph represent?
 - d) Calculate the distance travelled in 3 sec.
8. An insect moves along a circular path of radius 14cm with a constant speed . It takes 1 min to move from a point on the path to the diametrically opposite point, find (i) the distance covered (ii) the speed (iii) the displacement (iv) the average velocity.
 9. The motion of three cars A,B, C are shown. Which of the cars is travelling the slowest and the fastest?



10. (a) Under what condition average velocity and average speed of a body is equal?
- (b) What is the quantity which is measured by the area occupied below the velocity- time graph?
- (c) What is the quantity that can be measured by a distance-time graph?

11. All questions and numerical problems from examples and exercises of NCERT.

Force and Laws of Motion

1. Define : Force, Units of force, different types of forces--- balanced, unbalanced, contact, noncontact (examples also), Inertia, Momentum.
2. State Newton's laws of Motion.
3. Define force and inertia from first law.
4. Derivation of $F=ma$
5. Explanation of cases due to inertia of rest and inertia of motion
6. Explanation of cases of action and reaction not cancelling each other---- pushing a book, horse pulling cart.
7. State the law of conservation of momentum
8. Verification of law of conservation of momentum from Newton's third law of motion.
9. Show that first law of motion can be mathematically stated from mathematical expression for second law of motion.
10. All numerical problems from examples and exercise of NCERT.

Gravitation

1. Define/ differences between gravitation and gravity.
2. What is 'G'? Why is it considered universal? Mention its value with unit.
3. What is 'g'? Derivation of $g = GM/R^2$.
4. Factors due to which value of 'g' varies and its explanation.
5. State Newton's law of gravitation. Importance of this law.
6. What do you mean by freefall? Example of a body--- having no velocity but acceleration, --- having velocity and acceleration perpendicular to each other.
7. Difference of mass and weight. The weight of a body is 40 kg--- Do you agree? Explain. The mass of a body is 200N. Do you agree? Explain,
8. Difference between buoyancy and buoyant force.
9. State the factors on which buoyant force depends.
10. The weight of an object in air is W and weight in water is W_1 , find the relative density.
11. The weight of an object in air W_1 g and weight in water W_2 g. Find the buoyant force. Find the volume of the object and find the buoyant force when dipped in a liquid of density 2g/cc.
12. The value of 'g' is $9.8m/s^2$. What will be its value on the surface of the moon?
13. The mass of a planet is twice that of the earth and its radius is four times of the earth. Find the value of 'g' on its surface.
14. All questions and numerical problems from examples and exercise of NCERT.