TEST PAPER: PHYSICS

Time: 60 Minutes **Class:** C.B.S.E. 9

Max. Marks: 40 Marks **Date:** 27th July 2018

Marking Scheme: All questions carry 10 marks each. Subparts **(A)** and **(B)** carry 3 marks each and subpart **(C)** carries 4 marks.

Question 1

A. Fill in the blanks:

i) The rate of change of motion is called _____

ii) The rate of change of velocity is called _____

iii) The rate of change of motion in a specified direction is called _____

B. Following statements are incorrect. Write correct statements:

i) According to Newton's third law of motion, forces are always different in magnitude and in same direction.

ii) Momentum of an object is defined as product of mass and acceleration

iii) The area under velocity-time graph gives acceleration

C. Solve:

i) A force of 10N acts on a body (initially at rest) of mass 2kg for 3sec. Calculate the velocity acquired by the body and change in momentum of the body.

ii) A ball is gently dropped from a height of 20m. If its velocity increases uniformly at the rate of 10 m/s^2, with what velocity will it strike the ground? After what time will it strike the ground?

Question 2

A. State true or false:

i) All bodies have same inertia.

ii) Force of friction always opposes motion of objects

iii) Motion of moon around the earth is due to the centripetal force

B. Answer the following:

i) State Newton's first law of motion

ii) State Newton's second law of motion

iii) Write three equations of motion with proper abbreviation used and SI units.

C. i. State universal law of gravitation and derive expression for force between two objects

ii. State law of conservation of momentum with suitable example. Write expression for the same.

Question 3

A. Define following terms:

i) Uniform circular motion

ii) Inertia

iii) Retardation

B. Give two differences between:

i) Speed and velocity

ii) Mass and weight

C. Solve:

i) How much momentum will a dumb-bell of mass 10kg transfer to the floor if it falls from a height of 80cm? Take its downward acceleration to be 10 m/s^2.

ii) A scooter acquires a velocity of 36 km/h in 10s after the start. Calculate acceleration of the scooter?

Question 4

A. Explain:

i) How can a karate player break a slab of ice with a single blow?

ii) Why do you fall in the forward direction when a moving bus brakes to a stop and fall backwards when it accelerates from rest?

B. Derive the mathematical formulation of Newton's second law of motion.

C. Solve:

i) A ball is initially moving with a velocity 0.5 m/s. Its velocity decreases at a rate of 0.05 m/s per second.

a) How much time will it take to stop?

b) How much distance will the ball travel before it stops?

ii) What information about the motion of a body are obtained from graphical representation of motion?

Question 5

A. Answer the following:

i) Why buildings have wide foundations?

ii) A car accelerated from 6m/s to 16m/s in 10 sec. Calculate acceleration

iii) Convert speed 36 km/hr into m/s

B. Answer the following:

i) List the importance of universal law of gravitation.

ii) Mass of an object is 10 kg. What is its weight on the earth?

C. i. A car (mass 480 kg) moving at 54 km/h is stopped in 10 s. Calculate the force applied (convert speed into m/s).

ii. In a cricket match, why does a player lower his hands slightly while catching the ball?