Bharatiya Vidya Bhavans,V.M. Public School

Ch 10– Gravitation

One mark question

Q1 What do you mean by the term 'free fall'?

Q2 Can a body has mass but no weight ? Give reasons for your answer.

Q3 Why is it easier to cut with a sharp knife edge than a blunt one?

Q4 An egg sinks in fresh water but floats in strong solution of salt. Give reason.

Q5 Do all bodies fall with the same acceleration in the absence of air resistance?

Two mark questions

Q1. Define thrust and pressure and state the SI units in which they are measured.

Q2. A steel needle sinks in water but a steel ship floats. Give reason.

Q3 State Archimedes Principle. Write its two applications.

Q4. Gravitational force on the surface of the moon is 1/6 as strong as gravitational force on the earth. What is the weight in newton of a 10 kg object on the moon and on the earth?

Q5. Differentiate between mass and weight of the object.

Three mark questions

Q1 The mass of a planet Jupiter is 1.9×10^{27} kg and that of sun is 1.99×10^{30} kg. The mean distance of the Sun from Jupiter is 7.8×10^{11}m. Calculate the gravitational force which the sun exerts on Jupiter.

Q2a) List two forces which act on a body when it is immersed in a liquid.

b) Briefly explain , why some objects float and some sink.

Q3 Distinguish between density and relative density of a substance. The relative density of silver Is 10.8. If the density of water is 10^3 kg/m^3, find the density of silver.

Q4 A stone is thrown vertically upward with an initial velocity of 40m/s . Taking g= 10m/s^{2}find the maximum height reached by the stone. What is the net displacement and the total distance covered by the stone?

Q5 When a cricket ball is thrown vertically upwards, it reaches a maximum height of 5 metres.

a) What is the initial speed of the ball?

b) How much time is taken by the ball to reach the highest point? (g=10m/s^2)

Five mark questions

Q1 a) State the universal law of gravitation. Write its two applications.

b) The mass of a planet is 6×10^{24} kg and its diameter is 12.8×10^3 km. If the value of gravitational constant be 6.7×10^{-11} Nm^2/kg^2, calculate the value of acceleration due to gravity on the surface

of the planet?

Q2 a) Define buoyant force. Name two factors on which the buoyant force depends.

b) What is the cause of buoyant force?

c) When a boat is partially immersed in water it displaces 600kg of water .How much is the buoyant force acting on the boat in Newtons? ($g=10m/s^2$)

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