Important Questions Class 9 Science Chapter 9: Gravitation is a natural force that pulls objects toward each other because of their mass. In Chapter 9 of Class 9 Science the main idea is the universal law of gravitation, which explains that every object in the universe attracts other objects. This force depends on how heavy the objects are and how far apart they are.

Some important questions from this chapter include the explanation of the universal law of gravitation, what free fall means and how to calculate the acceleration due to gravity (g). Students are also asked to explain the difference between mass and weight, how gravity affects the movement of planets, and why all objects fall at the same rate in free fall. Understanding these ideas helps us see how gravity controls things like falling objects and the orbits of planets and satellites.

Important Questions Class 9 Science Chapter 9 Overview

These important questions for Class 9 Science Chapter 9 Gravitation are created by the subject experts of Physics Wallah to help students grasp the key concepts effectively.

By solving these questions, students can strengthen their understanding of gravitation and prepare well for their exams.

Important Questions Class 9 Science Chapter 9 PDF

The PDF link for the Important Questions for Class 9 Science Chapter 9 is available below. This PDF is created by subject experts to provide students with important questions and answers covering all the crucial topics in the chapter on Gravitation.

By referring to this PDF students can enhance their understanding and improve their preparation for exams. Download the PDF from the link below for easy access to these important questions.

Important Questions Class 9 Science Chapter 9 PDF

Important Questions Class 9 Science Chapter 9 Gravitation

Here we have provided Important Questions Class 9 Science Chapter 9 Gravitation-

Q.1. What is the acceleration of free fall?

Ans: The acceleration of free fall is g=9.8 m/s2g = 9.8.

Q.2. What do we call the gravitational force between the Earth and an object?

Ans: Weight.

Q.3. In what direction does the buoyant force on an object immersed in a liquid act?

Ans: In the upward direction only.

Q.4. Even though a stone also attracts the Earth towards itself, why does the Earth not move?

(a) Because of the greater mass of the Earth
(b) Because of the lesser mass of the stone
(c) Force exerted by the stone is less
(d) Force exerted by the Earth is large

Ans: (a) Because of the greater mass of the Earth.

Q.5. The weight of an object is:

(a) Greater on Earth and lesser on the Moon
(b) Lesser on Earth and greater on the Moon
(c) Equal on both Earth and the Moon
(d) None of these

Ans: (a) Greater on Earth and lesser on the Moon.

Q.6. Weight of an object has S.I. unit of:

(a) Newton
(b) kg
(c) N/kg
(d) kg/N

Ans: (a) Newton

Q.7. Which of the statements is correct?

(a) Mass is constant and weight is variable
(b) Mass is variable and weight is constant
(c) Both mass and weight are variable
(d) Both mass and weight are constant

Ans: (a) Mass is constant and weight is variable

Q.8. If the cross-sectional area of an object is more, then the pressure applied by the external force is:

(a) Less
(b) More
(c) Remains the same
(d) None of the above

Ans: (a) Less

Q.9. If the acceleration due to gravity at a place is more, the weight of that object will:

(a) Decrease
(b) Increase
(c) Remain the same
(d) None of the above

Ans: (b) Increase

Q.10. Weight of the object is:

(a) More at the equator and less at poles
(b) More at poles and less at equator
(c) Same at poles and equator
(d) Depends on the mass of the object

Ans: (b) More at poles and less at equator

Q.11. If the distance between the objects increases, with mass remaining the same, then the gravitational forces between the objects will:

(a) Increase
(b) Decrease
(c) Remain the same
(d) None of the above

Ans: (b) Decrease

Q.12. The S.I. units of mass, force and weight are respectively:

(a) kg, N, N
(b) N, kg, N
(c) N, N, kg
(d) kg, N, kg

Ans: (a) kg, N, N

Q.13. Units of 'g' are:

(a) N/kg
(b)
(c)
(d)

Ans: (a) N/kg

Q.14. S.I. unit of pressure is:

(a) Pascal
(b) Newton
(c) Nm
(d) N/m^2

Ans: (a) Pascal

2 Marks Questions

Q.1. What do you mean by free fall?

Ans: Free fall is the motion of an object falling towards the Earth under the influence of gravitational force.

Q.2. What do you mean by acceleration due to gravity?

Ans: Acceleration due to gravity is the acceleration experienced by an object in free fall towards the Earth's center. It is denoted by ggg and is caused by the gravitational force of the Earth.

Q.3. Why is it difficult to hold a schoolbag having a strap made of a thin and strong string?

Ans: It is difficult to hold a schoolbag with a thin and strong string strap because the weight of the bag is concentrated over a small area of the shoulder, producing greater pressure that makes it painful to hold.

Q.4. What do you mean by buoyancy?

Ans: Buoyancy is the upward force experienced by an object when it is immersed in a fluid.

Q.5. You find your mass to be 42 kg on a weighing machine. Is your mass more or less than 42 kg?

Ans: Your mass will be slightly more than 42 kg due to the precision of the weighing machine.

Q.6. You have a bag of cotton and an iron bar, each indicating a mass of 100 kg when measured on a weighing machine. In reality, one is heavier than the other. Can you say which one is heavier and why?

Ans: The bag of cotton is heavier because its volume is greater than that of the iron bar, resulting in a larger upthrust. Therefore, the real mass of the cotton bag is more, making it heavier.

Q.7. How does the force of gravitation between two objects change when the distance between them is reduced to half?

Ans: The force of gravitation is inversely proportional to the square of the distance between the objects. Therefore, if the distance is reduced to half, the gravitational force will become four times stronger.

Q.8. Gravitational force acts on all objects in proportion to their masses. Why then, does a heavy object not fall faster than a light object?

Ans: In free fall, the acceleration due to gravity is independent of the mass of the objects. Hence, a heavy object does not fall faster than a light object.

Q.9. The Earth and the Moon are attracted to each other by gravitational force. Does the Earth attract the Moon with a force that is greater, smaller, or the same as the force with which the Moon attracts the Earth? Why?

Ans: The Earth and the Moon attract each other with the same gravitational force.

Q.10. If the Moon attracts the Earth, why does the Earth not move towards the Moon?

Ans: The Earth does not move towards the Moon because the mass of the Moon is very small compared to that of the Earth.

Q.11. Amit buys a few grams of gold at the poles as per the instruction of one of his friends. He hands over the same when he meets him at the equator. Will the friend agree with the weight of gold bought? If not, why?

Ans: The friend will not agree with the weight of the gold because the value of ggg is greater at the poles than at the equator. Thus, the weight of the same amount of gold will be less at the equator than it was at the poles.

Q.12. Why will a sheet of paper fall slower than one that is crumpled into a ball?

Ans: A sheet of paper has a greater surface area, which offers more air resistance and buoyancy compared to the crumpled ball. Therefore, the sheet of paper falls slower than the crumpled ball.

3 Marks Questions

Q.1. State the universal law of gravitation.

Ans: According to Newton's universal law of gravitation:
Every mass in this universe attracts every other mass with a force which is directly proportional to the product of two masses and inversely proportional to the square of the distance between them.

Q.2. What are the differences between the mass of an object and its weight?

Ans: Mass is the amount of matter in an object and is measured in kilograms (kg). It remains constant regardless of the object's location.

Weight is the force exerted by gravity on an object and is measured in newtons (N). It changes based on the gravitational field strength of the location.

Q.3. Why is the weight of an object on the moon 1/6th its weight on the Earth?

Ans: The mass of the object remains the same whether on Earth or the moon, but the value of acceleration due to gravity on the moon is approximately 1/6th of that on Earth. Because of this, the weight of an object on the moon is 1/6th of its weight on Earth.

Q.4. Why does an object float or sink when placed on the surface of water?

Ans: When an object comes into contact with the surface of a fluid, it experiences two forces:

Gravitational force (weight) acting downwards.

Buoyant force acting upwards.
If the weight of the object is greater than the buoyant force, the object sinks; if the buoyant force is greater, the object floats.

Q.5. What happens to the force between two objects if:

(i) The mass of one object is doubled?

Ans: The force between the two objects will be doubled.

(ii) The distance between the objects is doubled and tripled?

Ans: The force will become 14\frac{1}{4}41 and 19\frac{1}{9}91 of the present force, respectively.

(iii) The masses of both objects are doubled?

Ans: The force will become four times the present force.

Q.6. What is the importance of the universal law of gravitation?

Ans: The universal law of gravitation is important because:
i) It explains the force that binds us to the Earth.
ii) It describes the motion of planets around the sun.
iii) It justifies the formation of tides on Earth due to the moon and sun.
iv) It provides reasons for the movement of the moon around the Earth.

Benefits of Important Questions Class 9 Science Chapter 9

Focused Study: Important questions help students focus on key topics, making their study time more effective.

Know the Exam Style: Practicing these questions helps students understand the format of the exam and the types of questions that might appear.

Better Time Management: By working on important questions students can learn how to manage their time better during the exam.

Memory Improvement: Repeatedly studying important questions can help students remember information more easily when they need it.

Spotting Weak Areas: Important questions can show students where they need to practice more, helping them improve before the exam.

Smart Study Planning: Knowing which topics are important allows students to create a study plan that helps them do well in the exam.

Increased Confidence: Practicing important questions can make students feel more confident and prepared for the exam.

Less Exam Stress: Being well-prepared with important questions can help reduce anxiety and make students feel more secure.

Practice Like the Real Exam: Attempting important questions under timed conditions simulates the actual exam, helping students get used to the pressure.

Improved Answering Skills: Working on important questions helps students develop better ways to answer different types of questions, like multiple-choice or problem-solving.