Unit 1

Physics and Human Society

Introduction

You learnt about general science in lower grades. General science includes sub jects like Biology, Chemistry and Physics. Therefore, in this grade level and in higher grades, you will learn about each of the three subjects and explore their beauty. In this unit you will learn about physics and the human society. In particular, you will learn about definition of physics, different branches of physics,

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relationship between physics and other fields of study, contributions of prominent scientists in advancing physics, and the way physics know ledge was evolving and changing in history.

1.1 Definition and Nature of Physics

Have you ever thought about some modern technological devices such as computers, smart phones, tablets etc? Also think about the fact that our historical heritages such as Harar Jugol, Fasciledes Castle, the Obelisk of Axum and rock-hewn churches of Lalibela buildings have kept their balance and survived for hundreds of years. The working principles of all these rely on physics.

The word physics is thought to have come from the Greek word phusis, meaning nature. Hence, physics is a branch of natural science aimed at describing the fundamental aspects of our universe. These include what things are in it, what properties of those things are noticeable, and what processes those things or their properties undergo. In simpler terms, physics attempts to describe the basic mechanisms that make our universe behave the way it does. For example

Physics enables you to understand the working principles of cars, airplanes, space-rockets, refrigerators, radios, televisions, etc as well as many of your daily utensils and tools.

• Physics explains physical phenomena such as the difficulty of walking on a smooth plane, and why an electric fan rotates etc.

• Physics helps you discover some of the unknown parts of nature and makes you familiar with the modern world.

• Physics helps you to understand some concepts in other subjects like: Biology, Chemistry, Geology, Astronomy, etc.

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Studying physics helps you understand concepts, relationships, principles and laws of nature. A person who studies physics is called a physicist. In addition to understanding the concepts, relationships, principles and laws of nature, studying physics has various career opportunities. Some of te fields in which physics is applicable include:

• The field of transportation

• The field of aviation and space science

The field of medicine

• The field of forensic and military science

• the field of meteorology and metrology etc

More on Definition and nature of "Physics"

Physics is a branch of natural science that focuses on understanding the fundamental principles governing the universe. The term *physics* originates from the Greek word *phusis*, meaning "nature," which reflects its purpose of studying natural phenomena. Physics deals with the structure of matter, the behavior of energy, and the interactions between them. It describes what things exist in the universe, the properties of those things, and the processes or changes they undergo. In simple terms, physics tries to answer the question of why the universe behaves the way it does. This makes it one of the most fundamental sciences because it forms the basis for explaining and connecting concepts in many other fields.

The nature of physics lies in its ability to explain both simple and complex phenomena in the natural world. For instance, physics explains everyday occurrences such as why it is difficult to walk on a slippery surface, why objects fall to the ground, or why an electric fan rotates. It also helps us

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understand the functioning of technological devices like cars, airplanes, rockets, televisions, and refrigerators. By developing theories, principles, and laws, physics not only interprets natural behavior but also provides predictive power to foresee outcomes under specific conditions. This predictive nature of physics has made it an essential tool in advancing technology, medicine, transportation, and communication.

Beyond describing natural events, physics connects with other scientific disciplines such as chemistry, biology, geology, and astronomy, providing them with foundational principles. A biologist studying the human body, a chemist analyzing reactions, or an astronomer observing celestial bodies often rely on physical laws to interpret their findings. The nature of physics is therefore universal—it applies from the smallest particles of matter to the largest galaxies in the universe. Moreover, studying physics fosters problem-solving skills, logical reasoning, and innovation, all of which are vital in addressing global challenges. Thus, the definition and nature of physics emphasize its role as a science of discovery, explanation, and application in both scientific progress and human society.

Choose the correct answer from the given choices

1. Which of the following subjects are included in general science?

A) Biology, Chemistry, Physics

B) Physics, Geography, Mathematics

C) Chemistry, Economics, Biology

D) History, Physics, Astronomy

2. At higher grades, students learn each science subject in detail to:

A) Avoid studying mathematics

B) Explore their beauty and applications

C) Replace history and geography

D) Prepare for sports activities

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3. Which of the following historical heritages is mentioned as an example of physics application?

A) The Eiffel Tower

B) Harar Jugol

C) The Pyramids of Giza

D) Statue of Liberty

4. The word *physics* comes from the Greek word *phusis*, which means:

A) Science B) Energy C) Nature D) Matter

5. Physics is a branch of natural science that describes:

A) Economic systems

B) Fundamental aspects of the universe

C) Works of literature

D) Political structures

6. Which of the following is NOT explained by physics?

A) Why an electric fan rotates

B) Difficulty of walking on a smooth plane

C) Composition of poetry

D) Working of airplanes

7. Physics helps us understand the working principles of:

A) Cars, airplanes, refrigerators

B) refrigerators, radios, televisions

C) Paintings, sculptures, music

D) A and B

8. Which of the following is a correct contribution of physics?

A) Discovering unknown parts of nature

B) Designing cooking recipes

C) Explaining literary themes

D) Organizing political systems

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9. Physics helps you to understand some concepts in other subjects such as:

A) Sociology and Politics

B) Biology, Chemistry, Astronomy

C) Literature and History

D) Music and Arts

10. A person who studies physics is called a:

A) Physician

B) Physicist

C) Philosopher

D) Technician

11. Which of the following is a career opportunity where physics is applicable?

A) Transportation

B) Cooking

C) Literature

D) Poetry

12. Aviation and space science depend heavily on:

A) Politics

B) Chemistry alone

C) Physics

D) Literature

13. Which field uses physics in investigating crimes?

A) Medicine

B) Forensic science

C) Economics

D) History

14. Meteorology and metrology are fields related to:

A) Arts and music

B) Weather and measurement

C) Politics and law

D) History and culture

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15. Which of the following is the main nature of physics?

A) To explain how the universe behaves

B) To describe political ideologies

C) To compose music and poetry

D) To prepare food recipes

16. The word *physics* originates from which language?

A) Latin B) Greek C) Arabic D) French

17. Physics mainly studies the:

A) History of human culture

B) Fundamental principles of the universe

C) Rules of politics

D) Evolution of languages

18. Which of the following is not a concern of physics?

A) What things exist in the universe

B) The properties of matter and energy

C) Processes that things undergo

D) Writing poetry and stories

19. Physics is considered a fundamental science because it:

A) Explains political systems

B) Forms the basis for other sciences

C) Describes cultural traditions

D) Focuses only on astronomy

20. Which example shows the application of physics in daily life?

A) Writing an essay

B) Explaining why an electric fan rotates

C) Composing music

D) Studying literature

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21. The predictive power of physics means it can:

A) Create myths and stories

B) Foresee outcomes under given conditions

C) Write political constitutions

D) Replace biology entirely

22. Which of the following devices works on principles explained by physics?

A) Television

B) Refrigerator

C) Airplane

D) All of the above

23. Which field is not directly supported by physics?

A) Chemistry

B) Geology

C) Literature

D) Astronomy

24. Which of the following best describes the role of physics in science?

A) It is a branch of art

B) It supports and connects other sciences

C) It only studies stars and space

D) It focuses mainly on human culture

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