

# PHYSICS NOTES FOR CLASS 12

## CHAPTER 12 ATOMS

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**What are the important points of atoms Class 12 physics?**

**What is an atom in physics class 12?** An atom is defined as the smallest unit that retains the properties of an element. An atom is composed of sub-atomic particles and these cannot be made or destroyed. All atoms of the same element are identical and different elements have different types of atoms. Chemical reactions occur when atoms are rearranged.

**What is z in atoms chapter class 12?** Alpha- particles are nuclei of helium atoms and, therefore, carry two units,  $2e$ , of positive charge and have the mass of the helium atom. The charge of the gold nucleus is  $Ze$ , where  $Z$  is the atomic number of the atom; for gold  $Z = 79$ .

**What is the size of atom Class 12 physics?** An atomic radius is half the distance between adjacent atoms of the same element in a molecule. Measuring the atomic radii of chemical elements is a complicated task as the size of an atom is of the order of  $1.2 \times 10^{-10}$  m.

**What are the 3 important points of an atom?** Given that these particles make up atoms, they are often referred to as subatomic particles. There are three subatomic particles: protons, neutrons and electrons. Two of the subatomic particles have electrical charges: protons have a positive charge while electrons have a negative charge.

**What are 4 important facts about atoms?**

**What is a short note on atoms?** What is an atom? An atom is the basic building block of chemistry. It is the smallest unit into which matter can be divided without the release of electrically charged particles. It also is the smallest unit of matter that has the characteristic properties of a chemical element.

**What are the five parts of an atom?** Atomic Particles Atoms consist of three basic particles: protons, electrons, and neutrons. The nucleus (center) of the atom contains the protons (positively charged) and the neutrons (no charge). The outermost regions of the atom are called electron shells and contain the electrons (negatively charged).

**Why is atom called atom?** The word atom is derived from the ancient Greek adjective atomos, meaning "uncuttable" or "indivisible." The earliest concepts of the nature of the atom were debated in ancient India and ancient Greece. We now know that the atom has a nucleus composed of protons and neutrons surrounded by clouds of electrons.

**What is the energy formula for atoms Class 12?** The energy in joules of an atom is given by  $E_n = -(2.18 \times 10^{-18}) \frac{Z^2}{n^2}$ , where Z is the atomic number of the atom and n is the orbit number.

**What does Z stand for atomic?** The total number of protons in the nucleus of an atom gives us the atomic number of that atom. It is represented with the letter 'Z.' All the atoms of a particular element have the same number of protons, and hence the same atomic number.

**What is nucleus in physics class 12?** What is a nucleus? A nucleus is a positively-charged entity situated at the centre of the atom, and electrons that revolve around the nucleus in an orbit are negatively charged. A nucleus radius is smaller than that of an atomic radius. The atom's mass is focused on the nucleus.

**What are atoms made of?**

**Which is the biggest atom?** Therefore, the smallest atom is helium and the largest atom is francium. Note: It must be noted that new orbitals are added when we go down the group which increases the size of the atom. Also, when we go across the period, new protons are being added to the nucleus which increases the effective

nuclear charge.

**Are atoms bigger than electrons?** An atom (any atom) is bigger. Atoms are composed of constituent parts, specifically, a nucleus which consists of 1 or more protons, zero or more neutrons (only a hydrogen atom has zero neutrons), and as many electrons as there are protons.

**What are the 3 rules of atoms?**

**What are the 4 most important atoms?** The four most abundant elements in the human body – hydrogen, oxygen, carbon and nitrogen – account for more than 99 per cent of the atoms inside you. They are found throughout your body, mostly as water but also as components of biomolecules such as proteins, fats, DNA and carbohydrates.

**What are electrons made of?** The electron is a subatomic particle that is found in all atoms. Unlike protons, neutrons, or the nuclei of atoms, electrons are elementary particles. This means they are not made of even smaller particles. Also unlike protons and neutrons, electrons have essentially no mass.

**What are the 4 rules of atoms?** 1) All matter is made of atoms. Atoms are indivisible and indestructible. 3) Compounds are formed by a combination of two or more different kinds of atoms. 4) A chemical reaction is a rearrangement of atoms.

**What are the four 4 main parts of an atom?** Atom is made up of 4 parts, nucleus, protons, electrons and neutrons.

**What parts make up an atom?** Atoms consist of three basic particles: protons, electrons, and neutrons. The nucleus (center) of the atom contains the protons (positively charged) and the neutrons (no charge). The outermost regions of the atom are called electron shells and contain the electrons (negatively charged).

**What are 5 interesting facts about atoms?**

**What are neutrons made of?** Neutrons contain one up quark and two down quarks. The nucleus is held together by the "strong nuclear force," which is one of four fundamental forces (gravity and electromagnetism are two others). The strong force counteracts the tendency of the positively-charged protons to repel each other.

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**Why is it called atom?** In Greek, the prefix "a" means "not" and the word "tomos" means cut. Our word atom therefore comes from atomos, a Greek word meaning uncuttable. The word is derived from the Greek word "atomos", meaning indivisible.

**What is an atom in physics?** An atom is the smallest particle into which an element can be divided without losing its chemical identity. Atoms consist of a heavy central nucleus surrounded by a cloud of negatively charged particles called electrons. The nucleus contains positive particles (protons) and electrically neutral particles (neutrons).

**What part of the atom has no charge?** Neutrons are a type of subatomic particle with no charge (they are neutral). Like protons, neutrons are bound into the atom's nucleus as a result of the strong nuclear force.

**What are the two types of ions?** The electrically charged atoms are called ions. There are two types of ions: Cations: positively charged ions are called cations. Anions: negatively charged ions are called anions.

**Why are atoms important in physics?** Answer and Explanation: Atoms are the fundamental constituents of matter. They are the smallest units of an element that preserve its chemical characteristics. Atoms are made up of subatomic particles such as protons (positively charged), neutrons (uncharged or neutral), and electrons (negatively charged).

**What are the five major points of their atomic?**

**What are the important parts of an atom?** Atoms consist of three basic particles: protons, electrons, and neutrons. The nucleus (center) of the atom contains the protons (positively charged) and the neutrons (no charge). The outermost regions of the atom are called electron shells and contain the electrons (negatively charged).

**What are the important points of atomic structure?** Atoms consist of an extremely small, positively charged nucleus surrounded by a cloud of negatively charged electrons. Although typically the nucleus is less than one ten-thousandth the size of the atom, the nucleus contains more than 99.9% of the mass of the atom.

**What is a short note on atoms?** What is an atom? An atom is the basic building block of chemistry. It is the smallest unit into which matter can be divided without the release of electrically charged particles. It also is the smallest unit of matter that has the characteristic properties of a chemical element.

**Are atoms a theory or fact?** Atoms do exist but they are certainly not indivisible. As Democritus rightly guessed, atoms are the basic units of matter. Like Lego bricks, they can be put together in many different ways to make everything from viruses to Venus. But while Democritus' pictured solid atoms, real atoms are mostly empty space.

**Can an atom exist without protons?** Without protons atoms cannot be formed. Atoms are the smallest form that an element can exist. Protons dictate how many electrons each atom has on a one to one basis. The number of electrons gives each element its own chemical properties.

**What are the 5 parts to Dalton's theory?**

**Which of Dalton's points were proven false?** The indivisibility of an atom was proved wrong: an atom can be further subdivided into protons, neutrons and electrons. However an atom is the smallest particle that takes part in chemical reactions.

**What is Dalton's theory?** A theory of chemical combination, first stated by John Dalton in 1803. It involves the following postulates: (1) Elements consist of indivisible small particles (atoms). (2) All atoms of the same element are identical; different elements have different types of atom. (3) Atoms can neither be created nor destroyed.

**What are 3 important facts about atoms?**

**What part of the atom has no charge?** Neutrons are a type of subatomic particle with no charge (they are neutral). Like protons, neutrons are bound into the atom's nucleus as a result of the strong nuclear force.

**What are electrons made of?** The electron is a subatomic particle that is found in all atoms. Unlike protons, neutrons, or the nuclei of atoms, electrons are elementary

particles. This means they are not made of even smaller particles. Also unlike protons and neutrons, electrons have essentially no mass.

**What is the importance of atomic structure?** Understanding atomic structure is fundamental to all aspects of chemistry, as it provides a foundation for understanding chemical reactions, properties of elements, and the behaviour of matter.

**What is atomic structure in physics?** Atomic structure is the make-up of an atom and what it consists of. An atom is a central positively charged nucleus that is made of protons and neutrons. Around this nucleus is a number of electrons that differs depending on the element of the periodic table.

**What makes up most of every atom?** Protons, neutrons, and electrons are very small, and most of the volume of an atom—greater than 99 percent—is actually empty space.

### **The Ten Faces of Innovation: IDEO's Strategies for Defeating the Devil's Advocate and Driving Creativity**

IDEO, a renowned design and innovation firm, has identified ten "devils advocates" that stifle creativity and impede innovation within organizations. These challenges often manifest as skepticism, fear, and resistance to new ideas. To overcome these obstacles, IDEO has developed a comprehensive set of strategies known as "The Ten Faces of Innovation."

#### **1. The Cynic: "This idea will never work."**

- **Strategy:** Address the cynic's concerns head-on. Use data, research, and real-world examples to demonstrate the validity of the idea.

#### **2. The Perfectionist: "It's not perfect enough."**

- **Strategy:** Encourage the perfectionist to focus on the potential benefits of the idea rather than its flaws. Emphasize that innovation requires embracing failure and learning from mistakes.

#### **3. The Lone Wolf: "I don't need anyone else."**

- **Strategy:** Foster collaboration and teamwork. Engage the lone wolf in discussions with others and highlight the value of diverse perspectives.

#### **4. The Armchair Critic: "It's too risky."**

- **Strategy:** Encourage risk-taking and experimentation. Create a safe environment where individuals feel comfortable sharing their ideas and testing new approaches.

#### **5. The Status Quo Defender: "We've always done it this way."**

- **Strategy:** Challenge the status quo and encourage a willingness to question established practices. Demonstrate the benefits of innovation and how it can lead to improved outcomes.

### **Conclusion:**

By understanding and addressing the ten faces of innovation, organizations can create an environment that fosters creativity and drives innovation throughout the organization. IDEO's strategies provide a roadmap for overcoming resistance, embracing diversity, and encouraging risk-taking, ultimately leading to the development of groundbreaking ideas and solutions.

### **Understanding Unix/Linux Programming: A to Z Theory and Practice**

**Q: What is Unix/Linux programming?** A: Unix/Linux programming involves developing software for operating systems based on the Unix/Linux kernel, which are widely used in servers, desktops, and embedded systems. It offers a powerful and versatile environment for creating applications, utilities, and system tools.

**Q: Why is it important to understand Unix/Linux programming?** A: Proficiency in Unix/Linux programming is highly sought after in the IT industry. It provides a solid foundation for software development, system administration, and cloud computing. Moreover, understanding Unix/Linux internals helps developers optimize performance, troubleshoot issues, and create reliable applications.

**Q: What are the key concepts of Unix/Linux programming?** A: Unix/Linux programming revolves around several fundamental concepts, including processes, files, and devices. The kernel manages processes (running programs) and provides abstractions for interacting with files and devices. Other core concepts include pipes, sockets, and signals, which facilitate communication and synchronization between processes.

**Q: What are the essential tools and libraries for Unix/Linux programming?** A: Unix/Linux programming relies on a wide range of tools, including text editors like vi and emacs, compilers like gcc and clang, and debugging tools like gdb and ddd. Key libraries include the C standard library, POSIX, and system-specific libraries like the Linux kernel API.

**Q: How can I practice Unix/Linux programming?** A: The best way to master Unix/Linux programming is through hands-on practice. Create simple programs using command-line tools, explore system calls and library functions, and experiment with different programming paradigms. Open source projects and tutorials provide excellent resources for learning and experimentation.

## **Television and Video Engineering: A Comprehensive Overview with A.M. Dhake**

### **1. What is the role of a television and video engineer?**

A television and video engineer is responsible for the design, development, and maintenance of television and video systems. This includes everything from the initial planning and design of a system to the installation, testing, and troubleshooting of equipment. Television and video engineers also work with other professionals, such as producers, directors, and editors, to create high-quality video content.

### **2. What are the different types of television and video systems?**

There are a wide variety of television and video systems available, each with its own unique set of features and capabilities. Some of the most common types of systems include broadcast television, cable television, satellite television, and streaming video. Each of these systems has its own unique advantages and disadvantages, and the best system for a particular application will depend on factors such as the



desired quality of video, the size of the audience, and the budget.

### **3. What are the challenges facing television and video engineers today?**

Television and video engineers face a number of challenges today, including the need to keep up with the latest technological advances, the growing demand for high-quality video content, and the need to meet the needs of a diverse audience. In addition, television and video engineers must also be aware of the regulatory requirements that apply to their work.

### **4. What is the future of television and video engineering?**

The future of television and video engineering is bright. As the demand for high-quality video content continues to grow, television and video engineers will be in high demand. In addition, the development of new technologies, such as artificial intelligence and machine learning, is expected to create new opportunities for television and video engineers.

### **5. Where can I learn more about television and video engineering?**

There are a number of resources available to help you learn more about television and video engineering. These resources include books, articles, websites, and online courses. You can also find information about television and video engineering programs at colleges and universities.

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