

Chapter 9

Carbon and Its Compounds

LESSON PLAN

SPECIFIC OBJECTIVES

The students will learn about

- ❖ occurrence of carbon
- ❖ carbon inside living organisms
- ❖ role of carbon in our daily life
- ❖ allotropy
- ❖ allotropes of carbon
- ❖ crystalline forms of carbon
- ❖ amorphous forms of carbon
- ❖ fuels and combustion
- ❖ combustible and noncombustible substances
- ❖ fuel and its calorific value
- ❖ characteristics of a good fuel
- ❖ oxides of carbon; their preparations and properties

Teaching Aids

Pictures/charts/models/animation on occurrence of carbon; allotropes of carbon; crystalline and noncrystalline forms of carbon; types of coal, their carbon content and properties; combustible and noncombustible substances; examples of fuel, characteristics of a good fuel, calorific values of some fuels; oxides of carbon

Teaching Strategy

- ❖ Teacher will start the chapter by introducing carbon catenation, hydrocarbons, organic chemistry and organic compounds.
- ❖ Teacher will discuss occurrence of carbon and role of carbon in daily life.
- ❖ Now, teacher will explain allotropy and allotropes of carbon.
- ❖ Teacher will ask the students to solve 'Check Point 1'.

- ❖ Now, teacher will discuss amorphous forms of carbon and will explain types of coal and destructive distillation of coal.
- ❖ Teacher will then discuss properties and uses of coke, coal gas, coal tar, charcoal, lamp black and wood charcoal and will demonstrate Activity 1.
- ❖ Now, teacher will ask the students to solve 'Check Point 2'.
- ❖ Teacher will define combustion and discuss combustible and noncombustible substances by demonstrating Activities 2 and 3.
- ❖ Teacher will define fuel, calorific value of a fuel and characteristics of a good fuel.
- ❖ Teacher will explain solid, liquid and gaseous fuels.
- ❖ Now, teacher will ask the students to solve 'Check Point 3'.
- ❖ Then, teacher will discuss oxides of carbon, i.e., carbon dioxide and carbon monoxide; their occurrence, preparation, properties and uses and will demonstrate Activities 5 and 6.
- ❖ Teacher will ask the students to solve 'Check Point 4'.
- ❖ At last, teacher will sum up the lesson by going through the points given under the head 'Wrapping It Up'.
- ❖ Teacher will finally help students to answer the questions given under the head 'Test Yourself'.

Boost Up

- ❖ Teacher can help students to perform the activities given in chapter.
- ❖ Teacher can make students revise new terms given under the head 'Know These Terms'.
- ❖ Teacher can encourage students to learn the facts given under the head 'Something More'.
- ❖ Teacher can show animations related to the topics taught, if possible.
- ❖ Teacher can ask students to collect more information on the role of carbon in daily life.
- ❖ Teacher should assign Activity 4 as home assignment and discuss the result in class.
- ❖ Teacher should encourage the students to learn the use of carbon dioxide fire extinguisher.
- ❖ Teacher should ask the students to collect information on government's efforts to make cleaner fuel available at an affordable price to common people.

Expected Learning Outcomes

The students understand and know:

- ❖ catenation, organic chemistry and organic compounds.
- ❖ occurrence of carbon and its role in everyday life.
- ❖ allotropy; allotropes of carbon.
- ❖ crystalline and amorphous forms of carbon.
- ❖ destructive distillation of coal.
- ❖ combustion.
- ❖ combustible and noncombustible substances.
- ❖ calorific value, characteristics and classification of fuels.

- ❖ oxides of carbon, their occurrence, preparation, properties and uses.
- ❖ carbon dioxide fire extinguisher.
- ❖ government's efforts towards making cleaner and cheaper fuel available to common people.

Evaluative Questions

The teacher should ask the following questions to evaluate the students.

1. Is carbon a solid nonmetal?
2. Define allotropy. Write allotropes of carbon.
3. Mention two properties of diamond.
4. Name one solid fuel.
5. What is the percentage of carbon content in anthracite and lignite coal?
6. How will you prepare carbon dioxide in laboratory?
7. Write the names of two liquid fuels.
8. Write the molecular formula of carbon monoxide.