

QB365 Question Bank Software Study Materials

Carbon and its Compounds Important 2,3 & 5 Marks Questions With Answers (Book Back and Creative)

9th Standard

Science

Total Marks : 75

2 Marks

3 x 2 = 6

1) How many valence electrons are there in carbon?




Answer : Four valence electrons termed as tetravalency.

2) Who is called 'Father of Modern Organic Chemistry'?

Answer : Friedrich Wohler

3) Which three resin codes are unsafe?

Answer :

PVC (Poly Vinyl Chloride)	- 03	
PS (Polystyrene)	- 06	
PC (Polycarbonate)	- 07	

3 Marks

13 x 3 = 39

4) Differentiate graphite and diamond.

Answer :

Diamond	Graphite
i) Each carbon has four covalent bonds	Each carbon has three covalent bonds
ii) Hard, heavy and transparent	Soft, slippery to touch and opaque
iii) It has tetrahedral units linked in three dimension	It has planar layers of hexagon units
iv) It is a non-conductor of heat and electricity	It is a conductor of heat and electricity

5) Why are one-time use and throwaway plastics harmful?

Answer : 1. Use and throwaway plastics cause short and long term environmental damage.

2. Half of all the plastic items made today is used for throwaway plastic items.

3. They block drains and pollute water bodies .

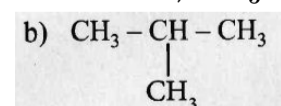
4. One-time use plastic causes health problems for humans, plants and animals.

5. If these items are thrown away they can stay in our environment for over 1000 years causing plastic pollution for future generations.

6. Some examples are plastic carry bags, cups, plates, straws, water pouches etc.

6) Write all possible isomers of C₄H₁₀.

Answer : a) CH₃ - CH₂ - CH₂ - CH₃



It is an ether.

7) Carbon forms only covalent compounds. Why?

Answer : Carbon forms only covalent compounds because it has 4 electrons in it.

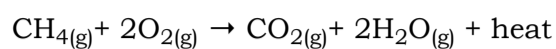
8) Define Allotropy.

Answer : Allotropy is a property by which an element can exist in more than one form that are physically different and

chemically similar.

9) What is burning?

Answer : Organic compounds like hydrocarbon undergo oxidation to form oxides and steam with evolution of heat and flame. This is called burning.

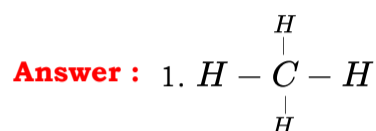


10) How can you find resin code on plastic items?

Answer : The secret resin codes are shown as three chasing arrows in a triangle. There is a number in the middle or letters under the triangle which is an acronym of that plastic type. It can be found on the label or bottom of a plastic item.

11)

Type of bond	Example	Class of the compound
Single bond	- 1 -	Alkane
Double bond	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H} - \text{C} = \text{C} - \text{H} \end{array}$ - 2 -	
- 3 -	- 4 -	Alkyne



2. Alkene

3. Triple bond

4. $\text{H} - \text{C} \equiv \text{C} - \text{H}$ (Ethyne)

12) Define - Coal.

Answer : Coal is a fossil fuel developed from prolonged decomposition of buried plants and animals. All the lifeforms contain carbon.

13) What is isomer?

Answer : Compounds that have the same molecular formula but different structural formula are called isomers

14) How is carbon monoxides toxic for our life?

Answer : It enters into the human body through the air we breathe and affects the function of haemoglobin. It displaces oxygen from haemoglobin thereby stops its function leading to death.

15) Define - resin code.

Answer : The resin code represents the type of polymer used to make the plastic. Resin code contains three chasing arrows in a triangle. There is a number in the middle or letters under the triangle.

16) Give the three unsafe plastics:

Answer : Unsafe plastics

1. resin code 3 - PVC

2. resin code 6 - PS

3. resin code 7 - PC / ABS.

5 Marks

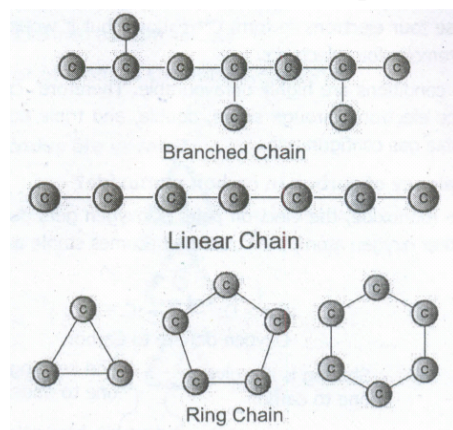
6 x 5 = 30

17) What is catenation? How does carbon form catenated compounds?

Answer : 1. Catenation is binding of an element to itself or with other elements through covalent bonds to form open chain or closed chain compounds.

2. Carbon is the most common element which undergoes catenation and forms long chain compounds.

3. Carbon atoms links repeatedly to itself through covalent bond to form linear chain, branched chain or ring structure.



4. This property of carbon itself is the reason for the presence of large number of organic carbon compounds.

5. Ex: Starch, Cellulose contain chains of hundreds of carbon atoms.

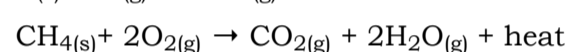
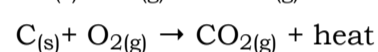
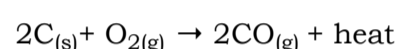
6. Plastic we use in our daily life are macromolecules of catenated carbon compounds.

18) What are the chemical reactions of carbon?

Answer : Oxidation: (Reaction with oxygen)

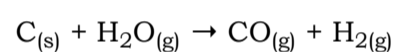
Carbon combines with oxygen to form its oxides like carbon monoxide (CO) and carbondioxide (CO₂) with evolution of heat.

Organic carbon compounds like hydrocarbon also undergo oxidation to form oxides and steam with evolution of heat and flame. This is otherwise called combustion.



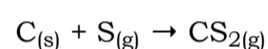
Reaction with steam:

Carbon reacts with steam to form carbon monoxide and hydrogen. This mixture is called water gas.



Reaction with sulphur:

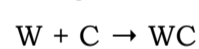
With sulphur, carbon forms its disulphide at high temperature



Reaction with metals :

At elevated temperatures, carbon reacts with some metals like iron, tungsten, Titanium, etc to form their carbides.

Tungsten+Carbon→Tungsten carbide



19) Name the three safer resin codes of plastics and describe their features.

Answer :

RESIN CODE	OTHER NAMES	COMMON ITEMS	ABOUT	
	PEHD	Bottles (shampoo, detergent, etc.), toys, plastic bags and waste bins.	Consider one of the safer plastics. It is light, very strong and widely recycled.	

RESIN CODE	OTHER NAMES	COMMON ITEMS	ABOUT	
	PELD LLDPE	Food packaging, plastic bags, food storage containers and plastic coating on the inside of paper cups.	Consider one of the safer plastics. It is very flexible and soft but strong.	
		Bottle caps, straws, food containers hard pencil cases and plastic chairs.	Consider one of the safer plastics. It feels waxy or greasy. It is light and hard but scratches easily.	

20) Give some steps to protect our environment free from plastic .

- Answer :** 1. We should not litter the environment by throwing plastic items.
2. We must not use thermocol (resin code # 6 PS) for our school projects.
 3. Do not use one-time use or throwaway plastics like plastic bags, teacups, thermocol plates and cups, and plastic straws.
 4. Do not burn plastics since they release toxic gases that are harmful to our health and contribute to climate change.
 5. Burning PVC plastic releases dioxins which are one of the most dangerous chemicals known to humans.
 6. Do not eat hot or spicy food items in plastic containers.
 7. Segregate plastic waste and hand this over to the municipal authorities. So that it can be recycled.
 8. Educate at least one person per day about how to identify the resin codes and avoid unsafe plastics.

21) Give the uses and properties of following.

- A) Carbon monoxide
- B) Carbon dioxide
- C) Calcium carbide
- D) Carbondi sulphide
- E) Calcium carbonate
- F) Sodium bicarbonate

Answer :

Compounds	Formation	Properties	Uses
Carbon monoxide (CO)	Not a natural component of air. Mainly added to atmosphere due to incomplete combustion of fuels.	Colourless Odourless Highly toxic Sparingly soluble in water.	Main component of water gas (CO + H ₂). Reducing agent.
Carbon dioxide (CO ₂)	Occurs in nature as free and combined forms. Combined form is found in minerals like limestone, magnesite. Formed by complete combustion of carbon or coke.	Colourless Odourless Tasteless Stable Highly soluble in water. Takes part in photosynthesis.	Fire extinguisher Preservative for fruits. Making bread To manufacture urea Carbonated water. Nitrogenous fertilizers Dry ice in refrigerator
Calcium Carbide (CaC ₂)	Prepared by heating CaO and Coke	Greyish black solid	To manufacture graphite and hydrogen. To prepare acetylene gas for welding.
Carbon disulphide (CS ₂)	Directly prepared from C and S	Colourless Inflammable Highly poisonous gas	Solvent for sulphur To manufacture rayon Fungicide Insecticide
Calcium Carbonate (CaCO ₃)	Prepared by passing CO ₂ into the solution of slaked lime	Crystalline solid Insoluble in water	Antacid
Sodium bicarbonate (NaHCO ₃)	Formed by NaOH with carbonic acid (H ₂ CO ₃)	White Crystalline substance Sparingly soluble in water	Preparation of sodium carbonate. Baking powder Antacid

22) List out the physical properties of carbon and its compound.

Answer : Physical properties of Carbon and its compounds:

- (i) Carbon is a non-metal found in various allotropic forms from soft powder to hard solid.
- (ii) All the allotropic forms of carbon are solids whereas its compounds exist in solid, liquid and gaseous state.
- (iii) Amorphous forms of carbon and graphite are almost black in colour and opaque. Diamond is transparent and shiny.
- (iv) Its amorphous forms have low melting and boiling point compared to crystalline forms.
- (v) Carbon is insoluble in water and other common solvents. But some of its compounds are soluble in water and other solvents. e.g., Ethanol, CO₂ are soluble in water.