9th Science Lesson 15 Questions in English

15] Carbon And Its Compounds

1. Carbon is the _____ element denoted by the symbol _____.
a) Non-metallic, C
b) Metallic, CO
c) Organic, CO2
d) Non-metallic, c
Explanation
Carbon is one of the most important non-metallic elements. It is a chemical element with the symbol C and atomic number 6.

2. Who named carbon from the Latin word Carbo?
a) Benjamin Brodie
b) Berzelius
c) Antoine Lavoisier
d) Carl Scheele
Explanation
Antoine Lavoisier named Carbon from the Latin word 'Carbo' meaning coal.

3. Assertion (A): Carbon is the main constituent of coal and present in all the living forms.
Reasoning (R): Coal is a fossil fuel developed from the decomposition of buried plants and animals.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
Carbon is the main constituent of coal. Coal is a fossil fuel developed from prolonged decomposition of buried plants and animals. So it is clear that all the life forms contain carbon.

4. What percentage of carbon dioxide is present in the earth's atmosphere?
a) 0.73%
b) 0.33%
c) 3.33%
d) 0.03%
Explanation
The earth atmosphere has only 0.03% of carbon dioxide (i.e.300 parts per million by weight).

5. Assertion (A): Earth crust contains 0.032% of carbon in various forms.

Reasoning (R): Carbon compounds are very important element in everyday life of human.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

The earth's crust contains only 0.032% of carbon (i.e.320 parts per million by weight) in the form of minerals like carbonates, coal and petroleum. Even though available in small amount in nature, carbon compounds have an immense importance in everyday life.

6. In which of these substances carbon is not present?

a) Human blood

b) Air

c) Graphite

d) Glass

Explanation

Carbon is present in our muscles, bones, organs, blood and other components of living matter.

7. What is the other name of the Carbon chemistry?

a) Plant Chemistry

b) Inorganic Chemistry

c) Living Chemistry

d) Human Chemistry

Explanation

Carbon Chemistry is also called as Living Chemistry. Without carbon there is no possibility for the existence of plants and animals including human.

8. What are known forms of carbon from the ancient times?

a) Diamonds

b) Charcoal

c) Graphite

d) All the above

Explanation

Carbon has been known since ancient times in the form of soot, charcoal, graphite and diamonds.

9. What was the conclusion of the experiments done by Antoine Lavoisier in 1772?

a) Sun rays burn diamonds.

b) Diamond and Charcoal were made of carbon.

c) Diamond is the highest form of carbon.

d) Carbon is essential for human lives.

Explanation

In 1772, French scientist Antoine Lavoisier pooled resources with other chemists to buy a diamond, which they placed in a closed glass jar they focused the Sun's rays on the diamond with a remarkable giant magnifying glass and saw the diamond burn and disappear. Lavoisier noted that the overall weight of the jar was unchanged and that when it burned, the diamond had combined with oxygen to form carbon dioxide. He concluded that diamond and charcoal were made of the same element – carbon.

10. Name the scientist who showed burnt graphite forms carbon dioxide?

a) Benjamin Brodie

b) Smithson Tennant

c) Berzelius

d) Carl Scheele

Explanation

In 1779, Swedish scientist Carl Scheele showed that graphite also burned to form carbon dioxide.

11. Who proved that diamond is a pure carbon?

a) Smithson Tennant

b) Antoine Lavoisier

c) Berzelius

d) Francis Bundy

Explanation

In 1796, English chemist Smithson Tennant established that diamond is pure carbon and not a compound of carbon and it burned to form only carbon dioxide.

12. What was the conclusion of the experiments done by Francis Bundy at General Electric company?

a) Graphite is an Inorganic carbon compound.

b) Graphite is a purest form of carbon.

c) Graphite could be transformed into diamond at high temperature and pressure.

d) Diamond and Graphite can be transformed to coal.

Explanation

In 1855, English chemist Benjamin Brodie produced pure graphite from carbon, proving graphite is a form of carbon. Although it had been previously attempted without success, in 1955 American scientist Francis Bundy and his co-workers at 'General Electric' company finally demonstrated that graphite could be transformed into diamond at high temperature and pressure.

13. In which year a new form of carbon, fullerenes were discovered by scientists?

a) 1855

b) 1985

c) 1796
d) 1955
Explanation
In 1985, Robert Curl, Harry Kroto and Richard Smalley discovered fullerenes, a new form of carbon in which the atoms are arranged in soccer-ball shapes.

14. Choose the Incorrect statements regarding Graphene.
i) It consists of single layer of carbon atoms in hexagon arrangement.
ii) It was discovered in the year 1985.
iii) Kostya Novoselov and Andre Geim discovered graphene.
a) i only
b) ii only
c) iii only
d) None of the above
Explanation
Graphene consists of a single layer of carbon atoms arranged in hexagons. Graphene's discovery was announced in 2004 by Kostya Novoselov and Andre Geim.

15. Which of these statements is true?
a) Carbon is found in Free State only
b) Carbon is excessively present in earth's layer.
c) Carbon is found in both Free State and combined state in nature.
d) Carbon is metallic element.
Explanation
Carbon is found both in Free State as well as combined state in nature.

16. On what basis Berzelius classifies the carbon compounds?
a) Source
b) Usage
c) Chemical properties
d) Atomic values
Explanation
In the early 19th century, Berzelius classified carbon compounds based on their source.

17. Match the origin of the scientists.

A. Smithson Tennant	i) France
B. Carl Scheele	ii) England
C. Antoine Lavoisier	iii) America
D. Francis Bundy	iv) Sweden

a) ii, iv, i, iii

b) ii, iii, iv, i
c) ii, iv, i, iii
d) iv, iii, ii, i
Explanation
French scientist Antoine Lavoisier, Swedish scientist Carl Scheele, English chemist Smithson Tennant, American scientist Francis Bundy did various experiments on carbon and its compounds.

18. Which of these carbon compounds are found in living organisms?
a) Ethanol
b) Cellulose
c) Starch
d) All the above
Explanation
Organic Carbon Compounds: These are the compounds of carbon obtained from living organisms such as plants and animals. e.g. Ethanol, cellulose, Starch.

19. Assertion (A): Calcium carbonate is an inorganic carbon compound.
Reasoning (R): Inorganic carbon compounds are obtained from the non-living matters.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
Inorganic Carbon Compounds: These are the compounds containing carbon but obtained from non-living matter. e.g. Calcium Carbonate, Carbon Monoxide, Carbon dioxide.

20. Choose the Incorrect statements.
i) Organic carbon compounds are connected with elements like hydrogen, oxygen and nitrogen.
ii) Organic carbon compounds are classified based on their sources.
iii) Hydrocarbons, alcohols and amino acids are various organic carbon compounds.
a) i only
b) ii only
c) iii only
d) None of the above
Explanation
There are millions of organic carbon compounds available in nature and also synthesized manually. Organic carbon compounds contain carbon connected with other elements like **hydrogen, oxygen, nitrogen, sulphur** etc. Thus, depending on the nature of other elements and the way in which they are connected with carbon, there are various classes of organic carbon compounds such as **hydrocarbons, alcohols, aldehydes and ketones, carboxylic acids, amino** acids.

21. Which is not a major class of Inorganic carbon compounds?

a) Bicarbonates

b) Ketones

c) Cyanides

d) Carbides

Explanation

As compared to organic compounds the number of inorganic carbon compounds is limited. Among them oxides, carbides, sulphides, cyanides, carbonates and bicarbonates are the major classes of inorganic carbon compounds.

22. Which of these are added to the atmosphere by incomplete combustion of fuels?

a) CO

b) CS_2

c) $CaCO_3$

d) $NaHCO_3$

Explanation

Carbon monoxide (CO) is not a natural component of air. Mainly added to atmosphere due to incomplete combustion of fuels.

23. Which is a main component of the water gas?

a) Carbon disulphide

b) Carbon dioxide

c) Carbon monoxide

d) Calcium carbonate

Explanation

Carbon monoxide is the main component of water gas (CO+H2).

24. Assertion (A): Carbon dioxide is found in combined forms in nature.
Reasoning (R): Combined forms of carbon dioxide are found in minerals.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is False but R is True.

d) Both A and R is False.

Explanation

Carbon dioxide occurs in nature as free and combined forms. Combined form is found in minerals like limestone, magnesite. It is formed by complete combustion of carbon or coke.

25. In which of these carbon dioxide is not used?

a) Fire extinguisher

b) To prepare acetylene gas for welding
c) Fruits preservation and bread making
d) Dry ice
Explanation
Uses of CO2: Fire extinguisher, preservative for fruits, making bread, to manufacture urea, carbonated water, nitrogenous fertilizers, dry ice in refrigerator.

26. Which of this carbon compound is not colorless?
a) CO
b) CO_2
c) CaC_2
d) CS_2

27. Choose the correct statements regarding Calcium carbide.
i) It appears as a Greyish black solid.
ii) Prepared by heating calcium oxide and coke.
iii) Used to manufacture graphite and hydrogen.
a) i only
b) ii only
c) iii only
d) All the above
Explanation

Calcium Carbide (CaC_2)	Prepared by heating calcium oxide and coke.	Greyish black solid.	To manufacture graphite and hydrogen. To prepare acetylene gas for welding.

28. Which is not a property of carbon disulphide?
a) Colorless
b) Greyish solid
c) Inflammable
d) Highly poisonous gas
Explanation
Carbon disulphide (CS2) is a Colorless, inflammable, highly poisonous gas.

29. Which of this compound is insoluble in water?
a) Carbon monoxide
b) Calcium carbonate
c) Calcium carbide
d) Sodium bicarbonate

Explanation

Calcium Carbonate ($CaCO_3$)	Prepared by passing Carbondioxide into the solution of slaked lime	Crystalline solid, insoluble in water.

30. Carbon disulphide is prepared from _____ and _____.
a) Carbon, Sulphur
b) Carbon, Sulphate
c) Calcium, Sulphur
d) Carbonates, Sulphate
Explanation
Carbon disulphide (CS2) is directly prepared from Carbon and Sulphur.

31. What are the uses of carbon disulphide?
a) Fungicides and insecticides
b) Solvent for sulphur
c) Rayon manufacture
d) All the above
Explanation
Uses of Carbon disulphide: Solvent for sulphur, to manufacture rayon, fungicide, insecticide.

32. Which of these are used to produce Calcium carbonate?
a) Carbon monoxide, Coke
b) Carbon dioxide, slaked lime solution
c) Calcium oxide, Coke
d) Complete combustion of carbon
Explanation
Calcium Carbonate (CaCO3) : Prepared by passing Carbon dioxide into the solution of slaked lime.

33. What is the color of sodium bicarbonate?
a) Colorless
b) Grey
c) Black
d) White
Explanation
Sodium bicarbonate (NaHCO3): White crystalline substance, sparingly soluble in water.

34. Match
A. Carbon disulphide i) Antacid

B. Calcium Carbonate ii) Baking powder
C. Sodium bicarbonate iii) Acetylene gas
D. Calcium Carbide iv) Rayon
a) iii, iv, ii, i
b) iv, i, ii, iii
c) iv, iii, i, i
d) ii, iv, iii, i
Explanation

Calcium Carbide (CaC_2)	Prepared by heating calcium oxide and coke.	Greyish black solid.	To manufacture graphite and hydrogen. To prepare acetylene gas for welding.
Carbon disulphide (CS_2)	Directly prepared from Carbon and Sulphur	Colourless, inflammable, highly poisonous gas.	Solvent for sulphur. To manufacture rayon, fungicide, insecticide
Calcium Carbonate ($CaCO_3$)	Prepared by passing Carbondioxide into the solution of slaked lime	Crystalline solid, insoluble in water.	Antacid
Sodium bicarbonate ($NaHCO_3$)	Formed by treating sodium hidroxide with carbonic acid (H_2CO_3)	White crystalline substance, sparingly soluble in water	Preparation of sodium carbonate, baking powder, antacid

35. Catenation,
i) Binding of an element to itself.
ii) Form open chains by covalent bonds.
iii) Binding of an element to itself or with other elements.
iv) Covalent bonds form open chains or close chain compounds
a) i , iii, only
b) ii, iii, iv only
c) iii, iv only
d) i, iv only
Explanation
Catenation is binding of an element to itself or with other elements through covalent bonds to form open chain or closed chain compounds.

36. Which of these chain structures are formed by the carbon atoms through covalent bonds?
a) Linear chain
b) Branched chain
c) Ring
d) All the above

Explanation

Carbon is the most common element which undergoes catenation and forms long chain compounds. Carbon atom links repeatedly to itself through covalent bond to form linear chain, branched chain or ring structure.

37. Which of the carbon property is dealt by the organic chemistry?

a) Catenation

b) Tetravalency

c) Isomerism

d) None of the above

Explanation

This property of catenations carbon itself is the reason for the presence of large number of organic carbon compounds. So organic chemistry essentially deals with catenated carbon compounds.

38. How many electrons are in the outermost orbit of carbon?

a) 2

b) 6

c) 4

d) 8

Explanation

Another versatile nature of carbon is its tetravalency. The shell electronic configuration of carbon is 2, 4 (Atomic no: 6). It has four electrons in its outermost orbit.

39. Which is the nearest noble gas that could be reached by tetravalency of carbon?

a) Oxygen

b) Neon

c) Helium

d) Fluorine

Explanation

According to Octet Rule, carbon requires four electrons to attain nearest noble gas (Neon) electronic configuration. So carbon has the tendency to share its four electrons with other atoms to complete its octet. This is called its tetravalency.

40. Which of this bond is used for combining tetravalent carbon with other elements?

a) Single bond

b) Double bond

c) Triple bond

d) All the above

Explanation

The tetravalency carbon is able to combine with other elements or with itself through single bond, double bond and triple bond.

41. Assertion (A): The nature of bonding is a primary factor of a compound.
Reasoning (R): The physical and chemical characteristics of a compound are determined by the nature of bonding.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
The nature of bonding in a compound is the primary factor which determines the physical and chemical characteristics of a compound.

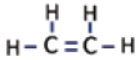
42. What is the main reason for the existence of various classes of carbon compounds?
a) Multiple bonds
b) Isomerism
c) Easily available
d) Simple structure
Explanation
The ability of carbon to form multiple bonds is the main reason for the existence of various classes of carbon compounds.

43. Match

A. Ethene	i) Alkane
B. Methane	ii) Alkyne
C. Ethyne	iii) Alkene

a) i, iii, ii
b) ii, iii, i
c) iii, i, ii
d) ii, i, iii
Explanation

Table 15.2 Hydrocarbon

Type of bond	Example	Class of the compound
Single Bond	 Methane	**Alkane**
Double Bond	 Ethene	**Alkene**
Triple Bond	H-C ≡ C-H Ethyne	**Alkyne**

44. Which of this hydrocarbon has a triple bond configuration?
a) Methane
b) Ethyne
c) Ether
d) None of the above
Explanation
Alkyne class of compounds has triple bond configuration example is Ethyne.

45. Which of these elements replace the hydrogen in hydrocarbons to form various functional groups?
a) O
b) N
c) S
d) All the above
Explanation
When one or more hydrogen in hydrocarbons is replaced by other elements like O, N, S, halogens, etc., a variety of compounds having different functional groups is produced.

46. What is the special feature of catenated organic carbon compounds?
a) Isomerism
b) Pentavalent
c) Tetravalent
d) All the above
Explanation
Isomerism is another special feature of carbon compounds especially found in catenated organic compounds.

47. Assertion (A): The total number of atoms is represented in the molecular formula of an organic compound.
Reasoning (R): The molecular formula denotes the arrangement of atoms and the structure.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
The molecular formula of an organic compound represents only the number of different atoms present in that compound. It does not tell about the way in which the atoms are arranged and hence its structure. Without knowing the structure, we can't name it.

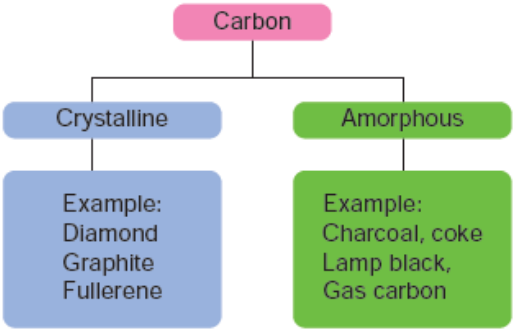
48. Define isomerism.
a) Same molecular formula with different structures.
b) Different structural arrangement of compounds.
c) Similar chemical properties.
d) All the above
Explanation
A given molecular formula may lead to more than one arrangement of atoms. Such compounds are having different physical and chemical properties. This phenomenon in which the same molecular formula may exhibit different structural arrangement is called isomerism.

49. Which is the origin of the word isomers?
a) Latin
b) Persian
c) Greek
d) Arabic
Explanation
Compounds that have the same molecular formula but different structural formula are called isomers **(Greek, isos = equal, meros = parts).**

50. Assertion (A): Allotropy elements can exist in more than one form.
Reasoning (R): The physical and chemical characteristics are same for allotropes.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
Allotropy is a property by which an element can exist in more than one form that is physically different and chemically similar.

51. What is the main reason for the existence of allotropes?
a) Various sources
b) Formation and preparation methods
c) Multiple bonding
d) All the above
Explanation
The different forms of that element are called its allotropes. The main reason for the existence of allotropes of an element is its method of formation or preparation.

52. How many allotropes of carbon are classified based on their physical nature?
a) 2
b) 3
c) 4
d) 5
Explanation



53. Choose the correct statements about Diamond.
i) Each carbon atom forms four covalent bonds.
ii) Atoms are arranged in tetrahedral fashion.
iii) The arrangement of diamond is the reason for the hardness and rigidity.
a) i only
b) ii only
c) iii only
d) All the above
Explanation
Diamond: In diamond, each carbon atom shares its four valence electrons with four other carbon atoms forming four covalent bonds. Here the atoms are arranged in repeated tetrahedral fashion which leads to a three dimensional structure accounting for its hardness and rigidity.

54. Why graphite is softer than diamond?

a) Three carbon atoms are bonded through covalent bonds.
b) Hexagonal layer arrangement
c) Weak Vander Waals forces
d) All the above
Explanation
Graphite: In graphite, each carbon atom is bonded to three other carbon atoms through covalent bonds in the same plane. This arrangement forms hexagonal layers which are held together one over other by weak Vander Waals forces. Since the layers are held by weak forces graphite is softer than diamond.

55. How many carbon atoms are present in the Buckminster fullerene?
a) 30
b) 50
c) 60
d) 20
Explanation
Fullerene: The third crystalline allotrope of carbon is fullerene. The best known fullerene is Buckminster fullerene, which consists of 60 carbon atoms joined together in a series of 5- and 6-membered to form spherical molecule resembling a soccer ball. So its formula is C60.

56. What is the shape of the molecular arrangement of the Buckminster fullerene?
a) Linear
b) Spherical
c) Ring
d) Tree
Explanation
The best known fullerene is Buckminster fullerene, which consists of 60 carbon atoms joined together in a series of 5- and 6- membered to form spherical molecule resembling a soccer ball.

57. What is the pet name for the Buckminster fullerene?
a) Bucky Ball
b) Bucky tubes
c) Bucky Onions
d) Magic molecule
Explanation
The allotrope was named as Buckminster fullerene after the American architect Buckminster fuller. Because its structure reminded the framework of dome shaped halls designed by Fuller for large international exhibitions, it is called by the pet name Bucky Ball.

58. Which is the highest fullerene available?

a) C70
b) C540
c) C80
d) C200
Explanation
A large family of fullerenes exists, starting at C20 and reaching up to C540.

59. Choose the Incorrect statements regarding Diamond.
i) Each carbon in diamond has four covalent bonds.
ii) Diamonds are Hard, heavy and transparent.
iii) It is a conductor of heat and electricity.
a) i only
b) ii only
c) iii only
d) None of the above
Explanation

Diamond
Each carbon has four covalent bonds.
Hard, heavy and transparent.
It has tetrahedral units linked in three dimension.
It is a non-conductor of heat and electricity.

60. The Graphite,
i) Each carbon has three covalent bonds
ii) Planar layers of hexagon units.
iii) Soft, slippery to touch and opaque.
a) i only
b) ii only
c) iii only
d) All the above
Explanation

Graphite
Each carbon has three covalent bonds.
Soft , slippery to touch and opaque.
It has planar layers of hexagon units.
It is a conductor of heat and electricity.

61. What is the shape of arrangement of the carbon atoms in the Graphene?

a) Spherical
b) Loop
c) Honeycomb
d) Ring
Explanation
Graphene is most recently produced allotrope of carbon which consists of honeycomb shaped hexagonal ring repeatedly arranged in a plane.

62. Assertion (A): Graphene is the thinnest compound and the lightest known material.
Reasoning (R): Graphene is stronger than steel.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
Graphene is the thinnest compound known to man at one atom thick. It is the lightest material known (with 1 square metres weighing around 0.77 milligrams) and the strongest compound discovered (100-300 times stronger than steel). It is a best conductor of heat at room temperature.

63. Which of these results in the stacking of graphene layers?
a) Graphite
b) Coal
c) Diamond
d) Fullerene
Explanation
Layers of graphene are stacked on top of each other to form graphite, with an inter planar spacing of 0.335 nanometers. The separate layers of graphene in graphite are held together by Vander Waals forces.

64. What is the property of an amorphous form of carbon?
a) Ring arrangement of atoms
b) Linear arrangement of atoms
c) Random arrangements of atoms
d) Spherical arrangement of atoms
Explanation
In amorphous form of carbon, carbon atoms are arranged in random manner. These forms of carbon are obtained when wood is heated in the absence of air. E.g., charcoal

65. Assertion (A): All the Allotropic compounds of carbon are available as hard solids
Reasoning (R): Carbon is a metal compound.

a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
Carbon is a non-metal found in various allotropic forms from soft powder to hard solid.

66. In which of these forms the allotropic carbon compounds are available?
a) Solid
b) Liquid
c) Gas
d) All the above
Explanation
All the allotropic forms of carbon are solids whereas its compounds exist in solid, liquid and gaseous state.

67. Which of the carbon forms are black in color?
a) Amorphous
b) Isomers
c) Crystalline
d) Carbon compounds
Explanation
Amorphous forms of carbon and graphite are almost black in color and opaque. Diamond is transparent and shiny.

68. The _____ forms of carbon have low _____.
a) Crystalline, Melting point
b) Amorphous, Melting and Boiling point
c) Crystalline, Boiling point
d) Amorphous, Boiling point
Explanation
Carbon amorphous forms have low melting and boiling point compared to crystalline forms.

69. Assertion (A): Carbon is insoluble in water and other solvents.
Reasoning (R): Ethanol is a compound of carbon is soluble in water.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation

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.

70. Choose the Incorrect statements.
i) Elemental carbon undergoes no reaction at room temperature.
ii) Carbon compounds are limited number of reactions at elevated temperatures.
iii) Carbon compounds undergo large number of reactions at room temperature.
a) i only
b) ii only
c) iii only
d) None of the above
Explanation
Elemental carbon undergoes no reaction at room temperature and limited number of reactions at elevated temperatures. But its compounds undergo large number of reactions even at room temperature.

71. Which of this reaction produces the oxides of carbon?
a) Neutralization
b) Oxidation
c) Double replacement
d) Decomposition
Explanation
Oxidation – (Reaction with oxygen) Carbon combines with oxygen to form its oxides like carbon monoxide (CO) and carbon dioxide (CO2) with evolution of heat.

72. Which of this carbon produces flame in the combustion?
a) Inorganic compounds
b) Organic compounds
c) Crystalline compounds
d) Amorphous
Explanation
Organic carbon compounds like hydrocarbon also undergo oxidation to form oxides and steam with evolution of heat and flame. This is otherwise called combustion.
$2C(s) + O2(g) \rightarrow 2CO(g) + \text{heat}$
$C(s) + O2(g) \rightarrow CO2(g) + \text{heat}$
$CH4(g) + 2O2(g) \rightarrow CO2(g) + 2H2O(g) + \text{heat}$

73. Which of these are resulted in the reaction of steam and carbon?
a) Carbon monoxide, Hydrogen
b) Carbon monoxide, water

c) Carbon dioxide, Nitrogen
d) Carbon dioxide, water
Explanation
Carbon reacts with steam to form carbon monoxide and hydrogen. $C(s) + H2O(g) \rightarrow CO(g) + H2(g)$

74. What is the other name of the carbon monoxide and hydrogen mixture?
a) Sea water
b) Sea foam
c) Water gas
d) Smog
Explanation
The mixture of carbon monoxide and hydrogen is called water gas.

75. In which of these conditions carbon reacts with sulphur?
a) Room temperature
b) High temperature
c) Low temperature
d) Elevated temperature
Explanation
With sulphur, carbon forms its disulphide at high temperature.
$C(s) + 2S(g) \rightarrow CS2(g)$
76. Which of these react with carbon and produces its carbides?
a) Iron
b) Tungsten
c) Titanium
d) All the above
Explanation
At elevated temperatures carbon reacts with some metals like iron, tungsten, titanium to form their carbides. Tungsten + Carbon → Tungsten carbide

77. Which of this carbon compound is not harmful to human?
a) Plastic
b) Calcium carbonate
c) Cyanide
d) Carbon monoxide
Explanation
Even though carbon and its compounds are vital for modern life, some of its compounds like CO, cyanide and certain types of plastics are harmful to humans.

78. Choose the Incorrect statements.

i) Plastics are major class of catenated Inorganic carbon compounds.
ii) Plastics are made from the long chain compounds called as polymer resins.
a) i only
b) ii only
c) Both i and ii
d) Neither i nor ii
Explanation
Plastics are a major class of catenated organic carbon compounds. They are made from long chain organic compounds called 'polymer resins' with chemical additives that give them different properties.

79. Why the plastic materials are recycled?
a) Breaking down microbes for plastics are few in nature.
b) Complex atomic structure
c) Hazardous compounds
d) None of the above
Explanation
Drawbacks of plastics: Plastics take a very long time to fully break down in nature. The microbes that break down plastic are too few in nature to deal with the quantity of plastics we produce.

80. What are the environmental effects of plastic usage?
a) Some chemical additives to plastics are harmful for human health.
b) Burning of plastics releases toxic gases result in climate change.
c) One time use plastics pollute the environment.
d) All the above
Explanation
A lot of plastic does not get recycled and ends up polluting the environment. Some types of plastics contain harmful chemical additives that are not good for human health. Burning of plastics releases toxic gases that are harmful to our health and contribute to climate change. One-time use and throwaway plastics end up littering and polluting the environment.

81. Which of these represent the type of polymer used to make the plastic?
a) Color of the plastic
b) Manufacturing date
c) Resin codes
d) Usage of the plastics
Explanation
In order to know which plastics are harmful, you will need to learn the secret 'language' of plastics (resin codes).The resin code represents the type of polymer used to make the plastic.

82. In which year the resin codes of plastics were designed?
a) 1976
b) 1988
c) 1955
d) 1945
Explanation
The resin codes of plastics were designed in 1988 and are a uniform way of classifying the different types of plastic which help recyclers in the sorting process.

83. Assertion (A): The Resin codes are represented by three chasing arrows in a triangle with a number or alphabet.
Reasoning (R): The number or alphabet represents the recycle level of the plastic.
a) Both A and R is True and R is the correct explanation of A.
b) Both A and R is True but R is not the correct explanation of A.
c) A is True but R is False.
d) Both A and R is False.
Explanation
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 (an acronym of that plastic type). This is usually difficult to find. It can be found on the label or bottom of a plastic item. The resin codes look very similar to the recycling symbol, but this does not mean that all plastics with a code can be recycled.

84. What are the maximum numbers used in resin codes?
a) 5
b) 7
c) 6
d) 3
Explanation
The resin codes are numbered from 1 to 7. Resin codes #1 to #6 each identify a certain type of plastic that is often used in products. Resin code #7 is a category which is used for every other plastic (since 1988) that does not fit into the categories #1 to #6.

85. Choose the Incorrect statements.
i) Some type of plastics contains harmful chemicals to human health.
ii) Plastics are harmful only when they are burned.
iii) One time use plastics cause pollution to the environment.
a) i only
b) ii only
c) iii only
d) All the above

Explanation

Plastics in our everyday life can be harmful for two reasons. The first reason is that some types of plastic contain chemicals that are harmful to our health. The second reason is that a lot of plastics are designed to be used just for one time. This use and throwaway plastic cause's pollution to our environment.

86. Match

A. PC/ABS	i) 6
B. PVC	ii) 7
C. PS	iii) 3

a) ii, iii, i

b) i, iii, ii

c) iii, ii, i

d) iii, i, ii

Explanation

There are three types of plastic that use toxic and harmful chemicals. These chemicals are added to plastics to give them certain qualities such as flexibility, strength, color and fire or UV resistance. The three unsafe plastics are: PVC (resin code #3), PS (resin code #6 also commonly called Thermocol) and PC/ABS (resin code #7).

87. Which is not true regarding the PVC?

a) Polyvinyl chloride plastics are called as PVC.

b) Burning PVC releases dioxins.

c) Light metals are added to PVC.

d) Phthalates is a chemical additive added to PVC.

Explanation

PVC – Polyvinyl Chloride plastics: Phthalates (chemical additive) copy our hormones. Burning PVC releases dioxins (one of the most toxic chemicals known to humans).

88. Which of these metals are not added to PVC plastic?

a) Cadmium

b) Lithium

c) Lead

d) Tin

Explanation

Heavy metals like cadmium & lead are added to PVC.

89. What is the basis of the PS plastics?

a) Styrene

b) Organic compounds

c) Metals
d) Non metals
Explanation
PS (Polystyrene plastics) Styrene is a building block of this plastic and may cause cancer.

91. What are the disadvantages of PS plastics?
a) It takes up to 1 million years to break down.
b) Styrene in PS may cause cancer to human.
c) Hot and oily foods result in high amount of toxic in food items.
d) All the above
Explanation
PS plastics takes very long time to break-down (100- 1 million years). Higher amounts of toxic styrene leak into our food and drinks when they are hot or oily.

92. What does the Polycarbonate plastics contain?
a) Bisphenol A
b) Ethanol
c) Ether
d) Styrene
Explanation
PC – Polycarbonate plastics: PC plastic contains Bisphenol A (BPA). BPA leaks out of PC products used for food and drinks.

93. What is the effect of BPA of polycarbonate carbonates in the human body?
a) Increases cancer cells
b) Decreases the white blood cells
c) Hormonal changes
d) Affects the nervous system
Explanation
BPA increases or decreases certain hormones and changes the way our bodies work.

94. Choose the correct statements regarding ABS plastics.
i) The Styrene in ABS damages the human skin, digestive system and lungs.
ii) Brominated Flame Retardants are added often in ABS.
iii) Toxic chemicals leak from this type of plastic.
a) i only
b) ii only
c) iii only
d) All the above
Explanation

ABS – Acrylonitrile Butadiene Styrene

• Styrene causes problems for our eyes, skin, digestive system and lungs.
• Brominated Flame Retardants (BFRs) are often added.
• Studies show that toxic chemicals leak from this plastic.

95. By which year amendment the Government of India took initiatives to stop plastic pollution?

a) 1988

b) 1972

c) 1956

d) 1977

Explanation

The Government of India is progressively taking various legal initiatives to stop plastic pollution by making some provisions and amendments in the Environment (Protection) Act, 1988.

96. Which of this department of Tamil Nadu government passed the GO to ban the usage of plastic items?

a) Rural Development and Panchayat Raj Department

b) Agriculture Department

c) Environment and Forests Department

d) Social Reforms Department

Explanation

With reference to this act, Government of Tamil Nadu has taken a step forward to ban the usage of some kind of plastic items (Environment and Forests Department, T.N. G.O. No: 84, dated 25/06/2018).

97. When the Tamil Nadu Government banned the usage of one-time use and throwaway plastics?

a) August 15, 2019

b) January 1, 2019

c) January 15, 2018

d) November 1, 2017

Explanation

As per the government order cited above, the Tamil Nadu Government has banned the usage of one-time use and throwaway plastics from 1st January 2019. This excellent legislation is designed to protect Tamil Nadu from plastic pollution.

98. Which of this item is not banned in Tamil Nadu?

a) Plastic Sheets

b) Plastic Straws

c) Plastic carry bags and Plates

d) PVC pipes

Explanation

As per the key aspects of new rules along with science-based facts these items have been banned in Tamil Nadu **Plastic carry bags, Plastic plates, Water pouches, Plastic straws and Plastic sheets.**

99. By which of these material most of the plastic one-time plates are made?

a) Polystyrene

b) Bisphenol A

c) Brominated Flame Retardants

d) Lead

Explanation

Most of the one-time use plates are made from Polystyrene (resin code # 6) which is harmful to our health.

100. What are the safety measures for plastic usage in daily life?

a) Do not litter the environment by throwing and burning the plastic items.

b) Avoid using one-time use or throwaway plastics, tea cups, Thermocol plates and plastic straws.

c) Educate to identify the resin codes and avoid unsafe plastics.

d) All the above

Explanation

RULES TO PRACTICE IN DAILY LIFE

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