8th Science Lesson 11 Questions in English

11] Air

1. Which is a mixture of gases that surrounds our planet earth?

a) Gravity
b) Ocean
c) Air
d) Ozone

Explanation

Air is a mixture of gases that surrounds our planet earth. It is essential for the survival of all the living things.

2. Air contain how many percentages of nitrogen?

a) 78.09%
b) 31.24%
c) 20.95%
d) 0.93%

Explanation

Air contains 78.09% of nitrogen.

3. Air contain how many percentages of oxygen?

a) 31.24%
b) 20.95%
c) 0.93%
d) 14.92%

Explanation

Air contains 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.04% carbon dioxide and small number of other gases. We breath in oxygen and breath out carbon dioxide.

4. Plants use which among the following gases for photosynthesis?

a) Nitrogen
b) Carbon dioxide
c) Sulphur dioxide
d) Hydrogen

Explanation

Plants in turn use carbon dioxide for photosynthesis and release oxygen into the atmosphere. Since men have been cutting down trees for their needs, the amount of carbon dioxide in the atmosphere is increasing. This is responsible for the raising of atmospheric temperature.

5. Which among the following are the gases released by industries and vehicles into atmosphere that has resulted in effects like global warming and acid rain?

a) **Carbon monoxide and Sulphur dioxide**
b) Nitrogen dioxide and Hydro sulphate
c) Hydrogen peroxide and Carbon monoxide
d) Nitrogen peroxide and Carbon monoxide

Explanation

Industries and vehicles release gases like carbon monoxide and sulphur dioxide into the atmosphere. This has resulted in effects like global warming and acid rain which affect us in many ways. In total, the quality of air is gone in the modern days.

6. Who Swedish scientist first discovered oxygen in 1772 and called oxygen as gas fire air?

a) Lavoisier
b) Humphry Davy
c) **C. W. Scheele**
d) Joseph Priestley

Explanation

All living things in the world need oxygen. We cannot imagine the world without oxygen. Swedish chemist C.W. Scheele first discovered oxygen in 1772. He called the gas fire air or vital life because it was found to support the process of burning.

7. Oxygen was independently discovered by which British scientist in 1774?

a) Lavoisier
b) Humphry Davy
c) Rutherford
d) **Joseph Priestley**

Explanation

Oxygen was independently discovered by the British scientist Joseph Priestley in 1774.

8. Who among the following named oxygen?

a) Robert Bunsen
b) **Lavoisier**

c) Humphry Davy
d) Joseph Priestley

Explanation

Lavoisier named oxygen. The name oxygen comes from the Greek word 'oxygenes' which means 'acid producer'. It is called so because early chemists thought that oxygen is necessary for all acids.

9. Which among the following element is more abundant than oxygen in the universe?

a) Argon
b) Nitrogen
c) Helium
d) Carbon

Explanation

Oxygen is the third most abundant element after Hydrogen and Helium in the universe. It occurs both in free state and combined state.

10. Oxygen is present in free state as what in atmosphere?

a) O_2
b) O_3
c) H_2O
d) All the above

Explanation

Oxygen is present in free state as dioxygen molecule (O2) in the atmosphere. Most of this has been produced by the process photosynthesis in which the chlorophyll present in the leaves of plants uses solar energy to produce glucose.

11. Complete the following equation; $6CO_2 + 6H_2O$ + Energy from the Sun → ?

a) $C_6 H_{12} O_6 + 6O_2$
b) $C_6H_{12}O_{12}$ + O2
c) $2C_3H_6O_6$ + O2
d) $C_{12}H_6O_3$ + 6O2

Explanation

$6CO_2 + 6H_2O$ + Energy from the Sun → $C_6H_{12}O_6 + 6O_2$.

12. In combined state oxygen is present in the earth's crust as _____

a) Magnate

b) Corbat
c) Silicate
d) Quates

Explanation

In combined state it is present in the earth's crust as silicates and metal oxides. It is also found in the water on the surface of the earth.

13. Which among the following is the formula of Ozone?

a) O_2
b) O_3
c) O_5
d) OH

Explanation

Tri oxygen molecule (O_3) known as ozone is present in the upper layers of the atmosphere.

14. What is the percentage of Oxygen in free state in atmospheric air?

a) 14%
b) 21%
c) 36%
d) 53%

Explanation

Oxygen in free state in Atmospheric air is 21 % and in water is 88 – 90 %.

15. Which among the following is not the Physical property of Oxygen?

a) Oxygen is a colourless, odourless and tasteless gas.
b) Oxygen is a good conductor of heat and electricity
c) Oxygen dissolves readily in cold water.
d) Oxygen is denser than air and supports combustion.

Explanation

Oxygen is a poor conductor of heat and electricity.

16. Oxygen can be made into liquid (liquified) at _____

a) High pressure and Low temperature
b) Low pressure and High temperature
c) High pressure and High temperature
d) Low pressure and Low temperature

Explanation

Oxygen can be made into liquid (liquified) at high pressure and low temperature.

17. Which among the following statement is correct

a) Oxygen is a non-combustible gas as it does not burn on its own. It supports the combustion of other substances. If oxygen has the capacity to burn itself, striking a match stick will be enough to burn all the oxygen in our planet's atmosphere.
b) Oxygen reacts with metals like sodium, potassium, magnesium, aluminium, iron etc., to form their corresponding metal oxides which are generally basic in nature. But the metals differ in their reactivity towards oxygen.
Metal + Oxygen → Metal oxide. Eg: $4Na + O_2 \rightarrow 2Na_2O$
c) Oxygen reacts with various non-metals like hydrogen, nitrogen, carbon, sulphur, phosphorus etc., to give corresponding non-metallic oxides which are generally acidic in nature.
Non-metal + Oxygen →Non-metallic oxide. E.g; $C + O_2 \rightarrow CO_2$
    a) Both 1 and 2
    b) Both 1 and 3
    c) Both 2 and 3
    d) All 1, 2 and 3

18. Which among the following react with oxygen to form carbon dioxide and water vapour?

a) Nitrogen
b) Hydrocarbon
c) Methane
d) Sulphate

Explanation

Hydrocarbons (compound containing C and H) react with oxygen to form carbon dioxide and water vapour. E.g Wood, Petrol, Diesel, LPG, etc. When they burn in oxygen, they produce heat and light energy. Hence, they serve as fuel.

19. The process of conversion of iron into its hydrated form of oxide in the presence of air and moisture (humid atmosphere) is called ____

a) Oxidising
b) Combustion
c) Rusting
d) All the above

Explanation

The process of conversion of iron into its hydrated form of oxide in the presence of air and moisture (humid atmosphere) is called rusting. Rust is hydrated ferric oxide.

$4Fe + 3O_2 \rightarrow 2Fe_2O_3$

$Fe_2O_3 + X\ H_2O \rightarrow Fe_2\ O_3 \cdot X\ H_2O$

20. Which among the following is incorrect

a) K at room temperature reacts with oxygen to form Potassium Oxide (K_2O)
b) Mg on Heating slightly reacts with oxygen to form Magnesium Oxide (MgO)
c) Ca on Heating slightly reacts with oxygen to form Calcium Oxide (Ca O)
d) Pt at High temperature reacts with oxygen to form Platinum Oxide (Pt O)

Explanation

Au and Pt Even at high temperature it does not react with oxygen. Where Fe, Cu and Ag at high temperature reacts with oxygen to form Iron Oxide (Fe_3O_4) Cupric Oxide (Cu O) Silver Oxide (Ag_2O).

21. Which among the following is not the uses of Oxygen?

a) Oxygen is used as oxy-acetylene light for cutting and welding metals.
b) Oxygen is used to add carbon impurities from steel.
c) Mixed with powdered charcoal it is used as explosives.
d) Oxygen is used in the synthesis of methanol and ammonia

Explanation

Oxygen is used to remove carbon impurities from steel. It is used to oxidize rocket fuel. It is used for artificial respiration by scuba divers, mountaineers, astronauts, patients etc.

22. Which is an essential element present in proteins and nucleic acids which are the 'building blocks' of all living things?

a) Helium
b) Argon
c) Nitrogen
d) Sulphate

Explanation

Nitrogen is one of the most important elements. Animals and plants need nitrogen for their growth. All living organisms (including us) contain nitrogen. It is an essential element present in proteins and nucleic acids which are the 'building blocks' of all living things.

23. Which Swedish scientist was the first to isolate nitrogen from the air in 1722?

a) Lavoisier
b) Humphry Davy
c) Carl Wilhelm Scheele
d) Joseph Priestley

Explanation

Nitrogen was first isolated from the air by Swedish chemist Carl Wilhelm Scheele in 1772. The name 'nitrogen' is derived from the Greek words 'nitron' and 'gene' meaning 'I produce nitre'. Nitre is potassium nitrate compound of nitrogen.

24. Who suggested the name azote for Nitrogen, from the Greek word meaning 'no life?

a) Lavoisier
b) Humphry Davy
c) Carl Wilhelm Scheele
d) Joseph Priestley

Explanation

Antoine Lavoisier suggested the name azote, from the Greek word meaning 'no life'.

25. Which is the most abundant element on the earth by mass?

a) Oxygen
b) Nitrogen
c) Helium
d) Carbon dioxide

Explanation

Oxygen is the most abundant element on the earth by mass.

26. What is the position of nitrogen as the most abundant element in the human body by mass?

a) First
b) Second
c) Fourth
d) Sixth

Explanation

Nitrogen is the fourth most abundant element in the human body by mass. It accounts for about three percent of the mass of the human body. It is thought to be the seventh most abundant element in the universe by mass.

27. Which is the largest moon of Saturn, has an atmosphere made up of 98% Nitrogen?

a) Ganymede
b) Europa
c) Phobos
d) Titan

Explanation

Titan, the largest moon of Saturn, has an atmosphere made up of 98% Nitrogen.

28. Nitrogen exists in free state in the atmospheric air as _____

a) Dinitrogen
b) Nitrous oxide
c) Nitroaniline
d) All the above

Explanation

Nitrogen occurs both in free state and combined state. Nitrogen exists in free state in the atmospheric air as dinitrogen (N2). It is present in volcanic gases and gases evolved by burning of coal.

29. Which among the following is the formula of chile saltpetre?

a) $NaNo_3$
b) KNO_3
c) $MgNo_4$
d) $CaNo_2$

Explanation

Nitrogen is present in combined state in the form of minerals like nitre (KNO_3) and chile saltpetre ($NaNO_3$). It is present in organic matters such as protein, enzymes, nucleic acid etc.

30. Which among the following is not the physical property of nitrogen?

a) Nitrogen is a colourless, tasteless and odourless gas.
b) Nitrogen is highly insoluble in water.
c) Nitrogen becomes a liquid at low temperature and looks like water
d) Nitrogen is slightly lighter than air.

Explanation

Nitrogen is slightly lighter than air. When it freezes, it becomes a white solid. It is neutral to litmus like oxygen.

31. Which among the following statement is incorrect

1) Nitrogen gets circulated in the air, soil and living things as the element itself or in the form of its compounds. Just as there is a circulation of carbon in nature so also there is a circulation of nitrogen. It is essential for the proper growth of all plants. The plants cannot make use of the elemental nitrogen from the air as such.
2) The plants require insoluble compounds of nitrogen. Thus, plants depend on other processes to supply them with nitrates. Any process that converts nitrogen in the air into a useful nitrogen compound is called nitrogen mixing. Mixing of nitrogen is carried out both naturally and by man.
    a) Only 1
    b) Only 2
    c) Both 1 and 2
    d) None

Explanation

The plants require soluble compounds of nitrogen. Thus, plants depend on other processes to supply them with nitrates. Any process that converts nitrogen in the air into a useful nitrogen compound is called nitrogen fixation. Fixation of nitrogen is carried out both naturally and by man.

32. Which among the following is incorrect about nitrogen?

a) Nitrogen provides an inert atmosphere for conducting certain chemical reactions.
b) Gaseous nitrogen is used as a refrigerant.
c) Nitrogen is used to prepare ammonia (by Haber's process) which is then converted into fertilizers and nitric acid.
d) Nitrogen is used for filling the space above mercury in high temperature thermometer to reduce the evaporation of mercury.

Explanation

Liquid nitrogen is used as a refrigerant.

33. Which among the following does not contains nitrogen?

a) TNT
b) Nitro-glycerine
c) Gun powder
d) None of the above

Explanation

Many explosives such as TNT (Trinitrotoluene), nitro-glycerine, and gun powder contain nitrogen. It is used for the preservation of fresh foods, manufacturing of stainless steel, reducing fire hazards, and as part of the gas in incandescent light bulbs.

34. Which among the following statement is correct?

1) Nitrogen is active at ordinary conditions. It combines with many elements at low temperature and pressure or in the presence of catalyst. Nitrogen is combustible not a supporter of combustion. So, nitrogen in the air moderates the rate of combustion.
2) Nitrogen reacts with metals like lithium, calcium, magnesium etc., at high temperature to form their corresponding metal nitrides. Metal + Nitrogen →Metal nitride
   Example; $3Ca + N_2 \rightarrow Ca_3N_2$
3) Reaction with non-metals Nitrogen reacts with non-metals like hydrogen, oxygen etc., at high temperature to form their corresponding nitrogen compounds.
   Non-metal + Nitrogen → nitrogen compound. Example; $3H_2 + N_2 \rightarrow 2NH_3$
   a) Both 1 and 2
   b) Both 1 and 3
   c) Both 2 and 3
   d) All 1, 2 and 3

Explanation

Nitrogen is inactive at ordinary conditions. It combines with many elements at high temperature and pressure or in the presence of catalyst. Nitrogen is neither combustible nor a supporter of combustion. So, nitrogen in the air moderates the rate of combustion.

35. Which is evolved by the plants and animals during respiration and is produced during fermentation reactions?

a) Nitrogen
b) Carbon dioxide
c) Hydrogen
d) Oxygen

Explanation

Carbon dioxide is present in air to the extent of about 0.03% in volume. It is evolved by the plants and animals during respiration and is produced during fermentation reactions.

36. Which among the following statement is correct

1) Carbon dioxide is a chemical compound in which one carbon and two oxygen atoms are bonded together. It is a gas at room temperature. It is represented by the formula CO_2. It is found in the earth's atmosphere and it sends back the solar energy which is reflected by the surface of the earth, to make it possible for living organisms to survive.
2) Human CO_2 emissions upset the natural balance of the carbon cycle. Man-made CO_2 in the atmosphere has increased global temperatures which is warming the planet. While CO_2 derived from fossil-fuel is a very small component of the global carbon cycle, the extra CO_2 is cumulative because the natural carbon exchange cannot absorb all the additional CO_2.
3) Much of the naturally occurring CO_2 is emitted from the marine vegetations. CO_2 may also originate from the bio degradation of oil and gases. When carbon dioxide accumulates

more in the atmosphere it produces great vegetation throughout earth and improves air circulation.

a) **Both 1 and 2**
b) Both 1 and 3
c) Both 2 and 3
d) All 1, 2 and 3

Explanation

Much of the naturally occurring CO2 is emitted from the magma through volcanoes. CO2 may also originate from the bio degradation of oil and gases. When carbon dioxide accumulates more in the atmosphere it produces harmful effects.

37. The process of conversion of solid into vapour without reaching liquid state is called ___

a) Condensation
b) Sublimation
c) Melting
d) Freezing

Explanation

The process of conversion of solid into vapour without reaching liquid state is called sublimation.

38. Which among the following is not the physical property of carbon dioxide?

a) Carbon dioxide is a colourless and odourless gas.
b) Carbon dioxide is heavier than air and does not support combustion.
c) Carbon dioxide is fairly soluble in water and turns red litmus slightly red. So, it is alkaline in nature.
d) Carbon dioxide can easily be liquified under high pressure and can also be solidified. This solid form of CO_2 is called dry ice which undergoes sublimation.

Explanation

Carbon dioxide fairly soluble in water and turns blue litmus slightly red. So, it is acidic in nature. Carbon dioxide is non-combustible and not a supporter of combustion.

39. Complete the following equation; $2NaOH + CO_2 \rightarrow$?

a) $Na_2CO_3 + H_2O$
b) $Na\ CO + OH + NaO_2$
c) $Na_2CO_3 + OH$
d) $NaCO_3 + H_2O$

Explanation

Sodium hydroxide (base) is neutralized by carbon dioxide (acidic) to form sodium carbonate (salt) and water.

Base + Acid → Salt + Water

$2NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O$.

40. Complete the following equation; $4Na + 3CO_2 \rightarrow$?

a) $3Na_2CO_3 + C$
b) $2Na_2CO_3 + C$
c) $Na_4CO_2 + CO$
d) $Na_2CO_3 + C_4$

Explanation

Lighter metals like sodium, potassium and calcium, combine with CO2 to form corresponding carbonates whereas magnesium gives its oxide and carbon.

Example; i) $4Na + 3CO_2 \rightarrow 2Na_2CO_3$(Sodium carbonate) + C

ii) $2Mg + CO_2 \rightarrow 2MgO + C$

(Magnesium oxide)

41. Which planet atmosphere consists of roughly 96-97% carbon dioxide?

a) Mars
b) Venus
c) Jupiter
d) Neptune

Explanation

Venus' atmosphere consists of roughly 96-97% carbon dioxide. Because of the amount of carbon dioxide present, the surface of Venus continually retains heat and as such, the surface temperature of Venus is roughly 462°C, making it the hottest planet in our solar system.

42. When a limited amount of CO_2 is passed through lime water, it turns milky due to the formation of insoluble ____

a) Calcium sulphate
b) Carbon chloride
c) Calcium carbonate
d) Carbon peroxide

Explanation

When a limited amount of CO_2 is passed through lime water, it turns milky due to the formation of insoluble calcium carbonate

$Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$.

43. Which among the following is incorrect about carbon dioxide?

a) CO_2 is used to prepare soft drinks or aerated drinks.
b) Carbon dioxide is used in manufacturing sodium carbonate by Solvay process.
c) Solid carbon dioxide, called as dry ice is used as a refrigerant. The gas is so cold that moisture in the air condenses on it, creating a dense fog which is used in stage shows and movie effects.
d) Carbon dioxide is used along with sulphate in the manufacture of fertilizers like urea.

Explanation

Carbon dioxide is used along with ammonia in the manufacture of fertilizers like urea. CO_2 can be used in the preservation of food grains, fruits etc.

44. When an excess amount of CO2 is passed through lime water, it first turns milky and the milkiness disappears due to the formation of soluble ____

a) calcium di-carbonate
b) calcium ammonia carbonate
c) Calcium hydrogen carbonate
d) Carbon peroxide

Explanation

When an excess amount of CO2 is passed through lime water, it first turns milky and the milkiness disappears due to the formation of soluble calcium hydrogen carbonate, $Ca(HCO_3)_2$.

45. Aerated water is nothing but carbon dioxide dissolved in water under pressure also called as _____

a) Lime water
b) Soda water
c) Distilled water
d) All the above

Explanation

Aerated water is nothing but carbon dioxide dissolved in water under pressure. This is also called 'soda water'.

46. The solar radiation is absorbed by the surface of land and ocean. In turn, they release infra-red radiation or heat into the atmosphere, some gases absorb this radiation and reradiate in all direction, these gases are called _____

a) Ozone gas
b) Yellow gases
c) Greenhouse gases
d) All the above

Explanation

The solar radiation is absorbed by the surface of land and ocean. In turn, they release infra-red radiation or heat into the atmosphere. Certain gaseous molecules present in the atmosphere absorb the infra-red rays and reradiate the heat in all directions. Hence, these gases maintain the temperature of earth's surface. The gases which absorb these radiations are called greenhouse gases and this effect is called greenhouse effect.

47. Which among the following is not the greenhouse gas?

a) CO_2
b) N_2O
c) CH_4
d) O_2

Explanation

The greenhouse gases are CO2, N2O, CH4, CFC (Chloro-Fluro carbon) etc. The increase in the levels of these gases results in the gradual increase of temperature of the earth's surface.

48. The increased greenhouse effect is caused due to increase in the air pollutants and it results in the average increase of temperature of the atmosphere. This is called as ____

a) Deforestation
b) Global warming
c) Iceberg
d) Frosting

Explanation

The increased greenhouse effect is caused due to increase in the air pollutants and it results in the average increase of temperature of the atmosphere. This is called as Global warming.

49. Which among the following is incorrect regarding Global warming?

a) Melting of ice cap and glaciers
b) Decrease in frequency of floods, soil erosion and unseasonal rains

c) Loss of biodiversity due to the extinction of coral reefs and other key species.
d) Spreading of waterborne and insect borne diseases.

Explanation

Increase in frequency of floods, soil erosion and unseasonal rains.

50. Which among the following is not the preventive measures of Global warming?

a) Reduction in the use of fossil fuels.
b) Controlling afforestation.
c) Restricting the use of CFCs
d) Reducing, reusing and recycling resources.

Explanation

In order to save the earth and its resources we need to take certain measures. Some of the measures are given below. 1. Reduction in the use of fossil fuels. 2. Controlling deforestation. 3. Restricting the use of CFCs. 4. Planting more trees. 5. Reducing, reusing and recycling resources.

51. Pollutants such as oxides of nitrogen and sulphur in the air released by factories, burning fossil fuels, eruption of volcanoes etc., dissolve in rain water and form _____

a) Magma
b) Acidic rain
c) Ozone
d) None of the above

Explanation

Rain water is actually the purest form of water. However, pollutants such as oxides of nitrogen and sulphur in the air released by factories, burning fossil fuels, eruption of volcanoes etc., dissolve in rain water and form nitric acid and sulphuric acid which adds up to the acidity of rain water. Hence, it results in acid rain.

52. Which among the following is incorrect about acid rain?

a) Acid rain irritates eyes and skin of human beings.
b) Acid rain accelerate germination and growth of seedlings
c) Acid rain changes the fertility of the soil, destroys plants and aquatic life.
d) Acid rain causes corrosion of many buildings, bridges, etc.

Explanation

Acid rain inhibits germination and growth of seedlings.

53. Acid rain has pH less than ____

a) 7.2
b) 6.7
c) 8.1
d) 5.6

Explanation

Acid rain has pH less than 5.6 whereas pH of pure rain water is around 5.6 due to dissolution of atmospheric CO_2 in it.

54. Which among the following is not the preventive measures of acid rain?

a) Minimizing the usage of fossil fuel such as petrol, diesel etc.,
b) Using CNG (Compressed Natural Gas).
c) Using conventional source of energy.
d) Proper disposal of the industrial wastes

Explanation

Using non-conventional source of energy.

55. The process of synthesis of ammonia from nitrogen and hydrogen with the help of catalyst under 500 atm pressure and 550˚C temperature is known as _____

a) Bosch's process
b) Levi's process
c) Pascal's process
d) Haber's process

Explanation

The process of synthesis of ammonia from nitrogen and hydrogen with the help of catalyst under 500 atm pressure and 550˚C temperature is known as Haber's process.

56. Which convert atmospheric nitrogen directly into soluble nitrogen compounds?

a) Fungi
b) Virus
c) Bacteria
d) Spores

Explanation

Bacteria convert atmospheric nitrogen directly into soluble nitrogen compounds.