Ln 4 Green House Effect and Global Warming

Extra Questions:Fill in the blanks

a. The increase in the earth's temperature is called as **global warming.**

b. Climate change will cause melting of polar **ice caps.**

c. The **ozone** layer lies between 20 and 40 km above the earth's surface

d. Burning of harmful fossil fuels causes ozone **depletion.**

e. The full form of CNG is **compressed natural gas**.

f. **Deforestation** is the process of cutting down of trees in large scale.

g. The full forms of CFC is **Chlorofluorocarbons**

Exercise

A. Fill in the blanks.

1. Carbon dioxide and **methane, nitrous oxide, water vapour and CFCs** are examples of greenhouse gases.

2. Global Warming is a major cause of climate change.

3. The **increase** in earth's temperature is called global warming.

4. The layer of atmosphere where ozone is found is called **stratosphere.**

5. The ozone layer protects us from the **ultraviolet rays** of the sun.

B. Write True or False.

1. Aeroplanes flying in the sky cause global warming. **Answer.** True.

2. Forest fires do not cause global warming. **Answer.** False.

Correct : Forest fires do cause global warming.

3. Ozone is found in the troposphere. **Answer.** False.

Correct : Ozone is found in the stratosphere.

4. The ozone layer is harmful for humans and animals. **Answer.** False.

Correct : The ozone layer is not harmful for humans and animals.

5. CFCs and BFCs protect the ozone layer. **Answer.** False.

Correct : CFCs and BFCs deplete the ozone layer.

C. Choose the correct option.

1. Oxygen/Carbon dioxide is a greenhouse gas.

Answer:

Carbon dioxide is a greenhouse gas.

2.Use of fossil fuels/hydroelectricity causes global warming.

Answer:

Use of fossil fuels causes global warming.

3.Cattle release methane / CFCs.

Answer:

Cattle release methane.

4.Global warming will reduce/increase climate change.

Answer:

Global warming will increase climate change.

5.The ozone layer is found between 20 and 40/40 and 60 km above the earth's surface.

Answer:

The ozone layer is found between 20 and 40 and above the earth's surface.

D. Match the following:

Answers:

1) CFCs
2) Comes from cattle
3) Disappearance of habitat
4) Remains of animals (change in text book as per given here)
5) Worsen climate (change in text book as per given here)

E. Answer the following questions in brief

1.Why do we call carbon dioxide a greenhouse gas?

Answer:

Carbon dioxide is called greenhouse gas because it absorbs
Infrared radiations. A greenhouse gas is a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range.

2.Name two more greenhouse gases.

Answer:

Methane and water vapour are other greenhouse gases.

3.How will countries like Bangladesh and Thailand be affected by global warming?

Answer:

Climate change will cause melting of polar ice caps with huge chunks of icebergs several kilometres across breaking off from the mainland. This is already taking place around the Arctic and in Antarctica. The result will be an increase in the volume of ocean waters. Countries like Bangladesh, Thailand and Malaysia and the Southeastern parts of USA like the States of Florida and Louisiana would be swamped by flood water along its shores.

4.What is responsible for causing a hole in the ozone layer?

Answer:

The release of large amount of CFCs or chlorofluorocarbons and BFCs or

bromofluorocarbons by industries are responsible for the formation of holes in the ozone layer.

5.Name some diseases that are caused due to exposure to ultraviolet rays of the sun.

Answer:

Exposure to UV rays can cause sunburn, cataract, hair loss, skin cancer and birth deformities.

F. Answer the following questions in one or two paragraphs

1.How is the greenhouse effect created?

Answer:

The 'greenhouse effect' takes place when the 'sun's rays heat the earth. This heat is absorbed by the surface of the earth and some of it is radiated back into the atmosphere. However, a part of this heat is trapped in the atmosphere by gases such as water vapour, carbon dioxide and methane while the rest escapes into space. These gases let in light from the sun but prevent the heat from escaping like the glass walls of a greenhouse. They also act like a mirror and reflect back to the earth some of the trapped heat energy. The more greenhouse gases (GHGs) are present in the atmosphere, the more heat is trapped, subsequently making the earth warmer.

2.State three causes that have led to an increase in greenhouse gases in the atmosphere.

Answer:

The causes that have led to the increase in greenhouse gases (GHGs) are:

1. Increase in industries
2. Increase in deforestation
3. Increase in atmospheric pollution due to emissions from chimneys of factories
4. Increase in natural disasters like floods, volcanic eruptions and earthquakes that release large amounts of smoke, dust and gases into the atmosphere
5. Increase in the methane content of the atmosphere because of large-scale cattle rearing, since cattle release methane
6. Expansion of cies and towns

3.What do you understand by the term 'global warming'?

Answer:

The greenhouse gases in the atmosphere trap a part of the heat radiated back by the earth, increasing its temperature. The increase in the earth's temperature is called global warming.

4.State some anthropogenic (man-made) causes of global warming.

Answer:

Man-made causes of global warming 'include burning of fossil fuels, cutting of forests,

using refrigerators, air conditioners, aerosols, factories belching smoke, increase in methane content of the atmosphere because of large-scale cattle rearing, expansion of cities and towns.

5.Global warming does not augur well for our planet earth. State at least three reasons to support this statement.

Answer:

Global warming is not good for our planet as

(a) It will worsen climate changes leading to food shortages.

(b) Many forms of wildlife are now' at risk and since climate change and deforestation are causing disappearance of their habitat.

(c) Climate change will cause melting of polar caps resulting in the increase in the volume of ocean waters.

G. Picture study.

1.Which region of the world is seen in the picture?

Answer:

Antarctica and Arctic Poles.

2.How is it going to be affected by global warming?

Answer:

Global warming causes melting of polar ice-caps with huge chunks of icebergs several kilometres across breaking off from the mainland resulting in increase in volume of ocean waters. The increase in the volume of ocean waters will result in rising of sea levels. Countries like Bangladesh, Thailand and Malaysia and the Southeastern parts of USA like the States of Florida and Louisiana would be swamped by flood water along their shores.

Ln 5 Study of Weather

Extra Questions:Name the following

- **a.** The average of atmospheric conditions of a large area is - **climate**
- **b.** Temperature is measured by the instrument – **thermometer**
- **c.** The climate that is greatly influenced by sea is – **maritime**
- **d.** The climate which has extreme hot or cold is – **continental**
- **e.** A stream of water in an ocean constantly flowing in a single direction is **- ocean currents**
- **f.** Equatorial low pressure belt is also called as **- Doldrums**
- **g.** The pressure belts that extends between 60 degree and 65 degree latitudes in both hemisphere is **sub polar low pressure belts.**
- **h.** It is the most common form of precipitation – **Rain**

i. It is a mixture of rain and snow – **Sleet**

j. Light rain with drops of smaller size is called- **Drizzle**

EXERCISES

A. Write true or false. Correct the false statements.

1. A rise in temperature causes more condensation while a fall in temperature results in evaporation. **Answer.** False.

Correct : Arise in temperature causes more evaporation while a fall in temperature results in condensation.

2. '4 o'clock showers' are caused by cyclonic rainfall. **Answer.** False.

Correct : '4 o'clock showers' are caused by convection currents.

3. Heavy rainfall occurs on the leeward or rain shadow side of a highland.

Answer. False

Correct : Little rainfall occurs on the leeward or rain shadow side of a highland.

4. The direction of wind blowing on the surface of the earth is affected by the Coriolis force. **Answer.** True.

5. Cyclones and anticyclones are examples of variable winds. **Answer.** True.

B. Fill in the blanks.

1. The temperature of a place depends upon its **latitude, altitude, distance from the sea,** ocean currents, **winds, cloud cover** and **slope** and **aspect.**

2. Pressure difference causes horizontal movement of air called **wind** and vertical movement of air called **current.**

3. Humidity refers to the amount of moisture or **water vapour** present in the air.

4. Planetary winds are also called permanent or **prevailing** winds.

5. The amount of cloud cover in the sky is expressed in **discs (shaded in different proportions).**

C. Answer the following questions in brief.

1.What are the elements that determine weather and climate?

Answer:

The elements that determine climate are the same as those weather, namely temperature, atmospheric pressure, humidity, precipitation, wind direction and speed, cloud cover, and sunshine.

2.Name the factors that determine the temperature at a place.

Answer:

The factors that affect the temperature of a place are latitude, altitude, distance from the sea, ocean currents, winds, cloud cover, and slope and aspect.

3.How do the following elements influence the weather of a place :

1. temperature
2. pressure?

Answer:

1. **Temperature :** When the temperature of a place increases, the air gets heated, expands and rises. This leads to a decrease in air pressure in the area. When the temperature falls, the air gets cold, contracts, and descends downwards. This leads to an increase in air pressure. Thus, air pressure decreases with an increase in temperature. This is the reason why areas close to the equator generally have low air pressure.
2. **Pressure :** Atmospheric pressure is the pressure that the atmopshere exerts on the surface of the earth because of its weight. There is a close relationship between pressure and temperature — high temperature means low pressure and vice versa. Pressure difference causes horizontal movement of air called wind and vertical movement of air called current, which together cause circulation of air in the atmosphere.

4.Name the various forms of precipitation.

Answer:

Rain, drizzle, snow, sleet, and hail are all different forms of precipitation.

5.How is cloud cover shown on a weather map? Give examples.

Answer:

The cloud cover in the sky is expressed in eighths of the total sky or oktas, which are shown in weather maps as discs shaded in different proportions.

D. Answer the following questions in one or two paragraph's.

1.How is weather different from climate?

Answer:

Weather and climate are closely related terms but have different meanings. Weather refers to the atmospheric conditions of a small area for a short period of time, usually 24 hours or one day, while climate is the average of the atmospheric conditions of a larger area, over a long period of time, usually 35 years.

2.What is condensation? Explain these different forms of condensation: fog, mist, and dew.

Answer:

Condensation is the process by which water vapour in the air gets converted into tiny droplets of water or ice. It is the opposite of evaporation. Evaporation takes place when air is dry, but condensation occurs only after air is saturated.

Fog and mist are formed at night, when air cools below its dew point near the earth's

surface. Fog is denser than mist and often dangerous because it reduces visibility. Dew forms in winter when the temperature is very low, but not below 0°C.

3. What do you understand by the term '4 o'clock showers'?

Answer:

In regions closer to the equator, the rate of evaporation is very high. Air gets heated because of the high temperature and starts rising in the form of convection currents. As it rises, it expands and cools. The cooling causes condensation, which results in heavy downpours. This rain is accompanied by thunder and lightning and since it mostly occurs around 4 p.m., it is often called the 4 o' clock showers'.

4. What are planetary winds? Give a brief description of the Westerlies in the northern hemisphere.

Answer:

Planetary winds are also called permanent or prevailing winds as they blow the year round in the same areas. Westerlies blow in the middle latitudes between 30° and 60° latitude, and originate from the high pressure area in the horse latitudes towards the poles. Under the effect of the coriolis force, they become the South Westerlies in the north hemisphere and Northern Westerlies in the southern hemisphere.

5. What are local winds? Give a few examples.

Answer:

Local Winds blow for a short period of time over a very small area. Some local winds like Loo, Simoom, Chinook, and are warm winds. Others such as the Bora, Mistral, Buran, and Pampero are cold winds.

G. Picture study

1. The diagram alongside illustrates one of the factors that affect temperature.What is it ?

Answer:

Aspect refers to the direction of a slope with respect to the sun's rays. In the northern hemisphere, all the south-facing slope receive the direct rays of the sun and are, therefore, warmer, while the north-facing slopes are cooler. In the southern hemisphere, all the north-facing slopes receive more sunlight than the south-facing slopes.

Ln 6 Recording of Weather

Extra Questions: Fill in the blanks

1. Temperature is measured in two scales-the **Fahrenheit** and Centigrade scale.
2. **Humidity** is the amount of water vapour in the atmosphere.

3. The instrument we use to measure relative humidity is called as **hygrometer.**
4. Dew is the form of **condensation**.
5. Wind speed is usually measured by an instrument called an **anemometer.**
6. The instrument used to measure the amount of rainfall is **rain guage.**
7. The joining points that show the same amount of rainfall received in a given period is **isohytes**

EXERCISES

A. Answer the following questions in brief

1.What is relative humidity? How does it differ from absolute humidity ?

Answer:

Relative humidity is the ratio of the actual amount of water vapour present in the air and the total amount the air can hold at a given temperature. It is expressed in percentage.

While absolute humidity is measured in grams per cubic metre.

2.What does a large difference between the temperatures of a dry bulb thermometer and a wet bulb thermometer of a hygrometer indicate?

Answer:

A large difference between the readings of the two thermometers means low relative humidity and a small difference between them means high relative humidity.

3.Differentiate between precipitation and condensation. Give one example of each.

Answer:

Condensation – Dew is a form of condensation. Condensation is the process by which water vapour in the air gets converted into tiny droplets of water or ice. Dew formsin winters when the temperature is very low but not below 0°C. Moist air comes in contact with the cold surfaces near the ground. The water vapour in the air changes to water and we see it as dew drops on grass or on plants. Dew drops are beneficial for plants. Precipitation – Precipitation is the falling of atmospheric moisture as a result of condensation. It has many forms such as rainfall, snowfall, and hail.

4.What are nimbus clouds?

Answer:

Nimbus are real rain clouds-thick, dark and black and spread out in layers. They cause continuous rain or snow.

5.What is the Beaufort scale?

Answer:

Beaufort scale is the scale that is used to estimate wind speed. The scale is based on the effect of the wind at different speeds.

B. Answer the following questions in one or two paragraphs

1.What is a hygrometer ?

Answer:

The instrument used for measuring relative humidity is called hygrometer. The hygrometer consists of wet and dry bulb thermometer. The dry bulb thermometer is an ordinary thermometer while the wet bulb thermometer is kept wet by a wick that dips into a container of distilled water. The wet bulb thermometer shows the lower temperature than the actual temperature as evaporation from the moist wick has a cooling effect. A larger difference between readings of two thermometers means low relative humidity and small difference means high relative humidity.

2.Describe the various types of clouds.

Answer:

The four types of clouds are :

(a) Cirrus clouds — These are feathery, fibrous clouds which form at very high levels of 5 to 10 km. They consist of tiny crystals of ice and look like wisps of cotton floating in the sky.

(b) Cumulus clouds — These are cauliflower-shaped clouds that have great vertical height and a flat base; they cause rainfall with lightning and thunder, and are usually white or grey in colour.

(c) Stratus clouds — These are sheet-like clouds that spread out 42 Arundeep's Self-Help to Voyage-7 over the whole sky. They usually form at low levels, less than 2 km. They are uniformly grey and dull.

(d) Nimbus clouds — These are the real rain clouds – thick, dark and black, and spread out in layers. They cause continuous rain or snow.

3.What is wind? What precautions must be taken while placing a wind vane?

Answer:

Wind is air in motion. A wind vane indicates the direction of the wind and consists of a rotating arm pivoted on a vertical rod. The arrow of the wind vane always points in the direction from which the wind blows and the wind is named accordingly. For example, if the pointer is pointing to the East, the wind is blowing from East to West and, therefore, this wind is called an easterly wind. Wind vanes are usually placed away from obstacles such as high buildings, trees, etc.

4.What are isohyets and isotherms ?

Answer:

Isohytes : A weather map, which shows, by the help of lines, the amount of rainfall a place receives. Each of these lines is made by joining points that show the same

amount of rainfall received in a given period. These lines are known as isohyets.

Isotherm : On the map, places experiencing the same temperature at a given time are connected with a line. This line is known as an isotherm. Each of these points on the line reflects one temperature reading, or an average of several readings, over a period of time.

5.What is a weather report ? How is weather forecast made? Why is weather forecast necessary ?

Answer:

When the weather conditions of the previous day are published, it is called a weather report. Weather forecasting is the application of science and technology to predict the state of the atmosphere for a given location. Nowadays it is made with the help of data gathered from weather satellites and radar systems. Forecasts help to plan what to wear, when to travel or which products to stock in super markets. It's specially important for farmers, builders, sailors or anyone else who works out doors.

F. Picture Study

Identify the four types of clouds shown in the photographs.

1. Which of these causes heavy rainfall?

Answer:

1.(a) Cirrus clouds

(b) Cumulus clouds

(c) Stratus clouds

(d) Nimbus clouds

2. Nimbus clouds causes heavy rainfalls.

Ln 7 Rocks

Extra Questions:Fill in the blanks:

a. The upper part of crust has silica and **aluminium.**

b. Mantle is rich in iron and **magnesium**.

c. Igneous rocks are formed by the cooling and solidification of **molten rock**.

d. The rock which is formed by the high temperature and pressure is **metamorphic rock.**

e. Rocks contains variety of **minerals.**

f. **Sedimentary** rock are formed by the accumulation of sediment under water on the water bodies.

EXERCISES

C. Answer the following questions in brief:

Why is diamond clear and hard while graphite is soft ? Why is coal hard and chunky ?

Answer:

Carbon atoms in diamond are bonded in a strong tetrahedron pattern making it hard and clear whereas carbon atoms in graphite are bonded in weak covalent bonds making it soft and black. Coal is a combustible sedimentary rock occurring in rock strata in layers or veins called coal beds. Because of pressure and elevated temperature the carbon becomes hard and chunky.

Write the importance of rocks for the construction business.

Answer:

Rocks such as marble and granite are used in construction industries. They are cut into stones and are used for building houses, dams, roads, etc. Rocks also provide raw materials such as limestone and gypsum used in the manufacturing of cement

1.What is crust ?

Answer:

The outermost layer of the Earth is the crust. Crust is the thinnest layer of the earth.

2.Differentiate between **SIAL** and **SIMA.**

Answer:

SIAL

1. It is the upper layer of the earth.
2. it is made up of silica and aluminium.

SIMA

1. It is the lower layer of the earth.
2. It is made up of magnesium and silica.

3.State two characteristics of the mantle.

Answer:

1. The mantle is semi-solid.
2. It is rich in iron and magnesium.
3. This layer is about 2,850 km wide. Its average density is between 3.5 and 5.5.

4.What is the difference between the inner and the outer core ?

Answer:

Inner core

1. Inner most layer of the Earth.
2. Solid ball of iron and nickel.
3. Has a radius of 1220 km.

Outer core

1. Surrounds the inner core.
2. Made of liquid iron and nickel.
3. Has a radius of Approx. 2300 km.

5. What are minerals?

Answer:

Minerals are natural inorganic substances having a crystalline form with definite physical and chemical properties. The most common minerals in the earth's crust are silica, quartz, feldspar, mica, calcite, dolomite, gypsum, etc. There are about 2,000 minerals in the earth's crust and these combine differently to form various kinds of rocks.

6. Give an example of an intrusive igneous rock.

Answer:

Instrusive rocks, which form large crystals at some depth in the earth's crust example : granite, basalt.

7. Classify the following rocks as igneous, sedimentary, and metamorphic: gneiss, coal, shale, granite, gypsum, marble, sandstone, basalt, limestone, schist

Answer:

Minerals — Rocks
Gneiss — Metamorphic
Coal — Sedimentary
Shale — Sedimentary
Granite — Igneous
Gypsum — Sedimentary
Marble — Metamorphic
Sandstone — Sedimentary
Basalt — Igneous
Limestone — Sedimentary
Schist — Metamorphic

D. Answer the following questions in one or two paragraphs :

1. Explain the structure of the earth's interior ?

Answer:

The earth's interior is divided into three main layers — the crust is the outermost layer, the mantle is the intermediate layer, and the core is the innermost layer of the earth.

2. How are rocks different from minerals?

Answer:

Minerals are natural inorganic substances having a crystalline form with definite physical and chemical properties whereas rocks are made up of a combination of different minerals compacted together. There are about 2,000 minerals in the earth's crust and these combine differently to form various kinds of rocks.

3.How are igneous rocks formed?

Answer:

Igneous rocks are formed by the cooling and solidification of molten rock called magma, which lies beneath the earth's crust. These rocks are crystalline and compact. They do not occur in layers or strata nor do they contain fossils.

The cooling and solidification may take place at some depth within the earth or at the surface. The molten magma that reaches the surface of the earth is called lava. Thus, there are two types of igneous rocks classified on the basis of their place of origin – intrusive rocks, which form at some depth in the earth's crust and extrusive rocks which form at or near the surface of the earth.

4.How do acidic igneous rocks differ from basic igneous rocks ?

Answer:

Igneous rocks may also be classified as acidic or basic depending on their composition. The acidic rocks contain more than 65% silica and very low percentage of oxides. These are Arundeep's Self-Help to Voyage-7 less dense and light coloured. For example, granite. The basic rocks contain low percentage of silica and high percentage of oxides. These are dense and dark coloured. For example, basalt.

5.How are sedimentary rocks formed ?

Answer:

Sedimentary rocks are formed from sediments accumulated over long periods, usually under water on the floors of shallow seas, rivers and lakes. These rocks are non-crystalline and are found in layers or strata and contain fossils. Conglomerate, sandstone, limestone, chalk, calcite, and dolomite are example of sedimentary rocks. Sedimentary rocks are divided into various types depending on how they are formed.

1. **Mechanically formed sedimentary rocks :**
   These rocks have been formed by the accumulation of materials derived from other rocks which have been cemented together.
   Examples – conglomerate (rounded fragments), breccia (angular fragments).
2. **Organically formed sedimentary rocks :**
   These rocks have been formed by the accumulation of the remains of living organisms.
   Examples – calcareous rocks such as limestone and chalk.

3. **Chemically formed sedimentary rocks:**
   These rocks have been commonly formed by the process of evaporation of water containing salts in solution.
   Examples – rock salt, gypsum, potash, nitrates, calcite, and dolomite.

6.What are metamorphic rocks ?

Answer:

Metamorphic rocks are those rocks which are formed by the metamorphism of pre-existing rocks due to high temperature or pressure or both. Igneous and sedimentary rocks completely changes over long periods of time because of movements in the earth's crust and volcanic or mountain building activity.

Transformation of rocks due to high temperature is called thermal metamorphism. Alteration of parent rock due to pressure exerted on rocks from the earth's movements is called dynamic metamorphism.

E. Picture study

The photograph shows you a type of rock that is widely used in the construction industry.

1.Name the type of rock.

Answer:

The type of rock is chemically formed sedimentary rock as limestone becomes marble. It is marble.

2.How is it formed ?

Answer:

Sedimentary rocks are formed from sediment accumulated over long periods, usually under water on the floors of shallow seas, rivers, and lakes. These rocks are fromed by the process of evaporation of water containing in limestone which becomes marble.

Ln 8 Weathering and Soil

Extra Questions:Name the following:

1. The process of filling up of depression areas is - **aggradation**.
2. The process by which rock materials from the earth's surface are removed – **Denudation or degration**
3. The weathering on which rock break up without any change in their chemical composition – **Physical or mechanical weathering**
4. The process when carbon dioxide in the atmosphere dissolves in rainwater – **Carbonation**
5. Plant roots and burrowing animals causes weathering – **Biological weathering**

6. In this methid soil is conserved by making walls embankments made of mud – **Contour bunding.**
7. The washing away of the layers of soil by various agents like running water and wind – **Soil erosion.**
8. The method to conserve soil by giving rest to the land in order to rejuvenate the land- **fallowing**

EXERCISES

B. Distinguish between each of the following pairs

1.Degradation and aggradation

Answer:

Degradation :

The process by which rock materials from the earth's surface are removed resulting in general lowering of land surfaces.

Aggradation :

The process by which the rock material removed from the earth's surface and then deposited in depressions such as valleys, lakes and sea beds. The depression fills

2.Weathering and erosion

Answer:

Weathering :

It is the process by which rocks on the land surface break down or crumble because of the action of the elements of weather such as rain, frost and temperature changes.

Erosion :

It is the process by which the weathered materials are transported elsewhere by agents such as running water, moving ice waves, and winds.

3.Granular disintegration and exfoliation

Answer:

Granular disintegration :

A form of weathering where the grains of a rock become loosened and fall out to leave a pitted and uneven surface.

Exfoliation :

When the surface layers of rounded and boulders gradually peel off in layers due to expansion of the outer layer during the day and the contraction of the same layer during night, the process is called exfoliation.

4.Hydration and solution

Answer:

Hydration :

This occurs when water itself chemically combines with some minerals present in rocks. Thus, crystalline minerals, such as feldspar and potash, absorb water and become a powdery mass due to the process of hydration, resulting in their erosion.

Solution :

This is the simplest form of chemical weathering by which some minerals dissolve in water when rainwater falls on rocks or when river water flows over rocks. The soluble minerals dissolve and are removed, .resulting in the breakup of the rocks.

5.Soil erosion and soil conservation

Answer:

Soil erosion :

It refers to the washing away or removal of the layers of soil by various agents like running water and wind.

Soil conservation :

It refers to the protection of soil against erosion and exhaustion because of deforestation, excessive grazing, running

C. Give geographical reasons

1.Temperature changes result in physical weathering.

Answer:

Temperature changes result in expansion and contraction of rocks during day and night resulting in degradation of rocks. In the temperate latitudes the frost shatters the rocks.

2.Gases in the atmosphere affect weathering.

Answer:

The minerals contained in the rocks react with the gases and moisture in the air like oxygen reacts with iron and causes the rocks to rust and get eroded.

3.Human activities affect weathering.

Answer:

Human activities like mining, quarrying deforestation, tunnelling, road construction and farming affect the weathering.

Question 4.

Soil is a very important resource.

Answer:

Soil is an important resource as human beings depend on it for their basic needs of food, shelter and clothing. It takes thousands of years for a thin layer of soil to form.

5.There is a need for soil conservation.

Answer:

Soil should be conserved as humans depend directly or indirectly on soil for their basic needs of food, shelter and clothing.

D. Answer the following questions in brief

1.Name any four agents of erosion.

Answer:

Soil erosion also refers to the loss of fertility of soil, which makes the soil infertile and exhausted. Cutting down of trees and forests, overgrazing by animals, floods, and improper farming practices are some of the main causes of soil erosion.

2.List any three factors that affect weathering.

Answer:

Factors that affect weathering are :

1. Local climate
2. Mineral composition
3. Structure of rock
4. Human activities
5. Amount of exposed or bare rocks surface, and human activities.

3.In which regions of the world is 'frost action' the common form of weathering?

Answer:

In temperate latitudes frost action is common form of weathering.

4.Which is the most important effect of weathering?

Answer:

Landslides and soil erosion are two major effects of weathering.

5.What are the components of topsoil?

Answer:

The topmost layer is the topsoil (Layer D) which consists of clay, silt, sand and humus.

6.Name the various methods of conserving soil.

Answer:

The various methods of conserving soil are :

Contour tilling, terrace farming, strip cropping, contour bunding, afforestation, crop rotation, fallowing and controlled grazing.

7.Distinguish between contour tilling and contour bunding.

Answer:

Contour Tilling — In this method the farmer tills or ploughs
the fields along the contours of the land rather than tilling up and down the slope. Contour tilling is practised in hilly areas rather than the plains. It prevents the soil from being washed away by water or by surface run-off as the contour acts like a bund. The

contour also facilitates the percolation of water into the soil.

Contour Bunding — Soil is conserved by making bunds or walls or embankments made of mud along contour lines to prevent water from draining out of the cultivated field, thereby preventing erosion.

8.What do you understand by controlled grazing ?

Answer:

Controlled grazing is a simple method of soil conservation, It is to restrict the grazing of cattle, sheep and goats on grasslands and within forests. When cattle graze on fields, grass and smaller plants get tom from their roots, leaving the soil loose and exposed to wind and water erosion. Moreover, the pressure of the animals hooves on the soil makes it lose its cohesion and structure, exposing it to the forces of wind and water. Land meant for grazing of cattle should be specially selected and fenced off.

E. Answer the following questions in one or two paragraphs

1.What is gradation? Describe the two processes involved in gradation.

Answer:

Gradation is the process of levelling the land by means of moving agents like rivers, or wearing away and lowlands are raised by adding the eroded material by the process of deposition. This is because there is constant earth movement which raises mountains and winds, seas and waves. The highlands are made low by erosion and this process is called degradation and materials are deposited elsewhere in depressions like valleys, lakes, etc. and these lowlands are raised by the process called aggradation.

2.Describe the process that leads to exfoliation.

Answer:

When the surface layers of rounded rocks and boulders gradually peel off in layers is called exfoliation. This occurs due to expansion of the outer layer during the day and the contraction of the same layer during the night, repeatedly over a period of time.

3.Discuss the role of water in the process of chemical weathering.

Answer:

Water plays an important role in chemical weathering. The carbon dioxide in atmosphere dissolves in rainwater and form carbonic acid and reacts with minerals in the rocks. The soluble minerals dissolve in water such as feedspar and potash absorb water and become a powdery mass. Similarily soluble minerals dissolve and are removed, resulting in the breakup of the rocks. Rock salt, gypsum, and silica are examples of minerals that are highly soluble and when rainfall falls they decompose.

4.How do animals and plants assist in weathering?

Answer:

The decaying remains of dead plants in soil tend to form organic acid which when dissolved in water cause chemical weathering. Ants, earthworms and burrowing animals such as rats and rabbits loosen soil and make tunnels causing weathering.

5.What is meant by the terms 'soil erosion' and 'soil conservation'?

Answer:

Soil erosion refers to washing away or removal of the layer of soil by various agents like running water and wind.

Sheet erosion and gully erosion are the two most common ways by which soil gets eroded. When there is heavy rainfall, the top layer of soil over large areas gets washed away. This is known as sheet erosion. When rainwater in region flows down the slopes making deep and narrow furrows, it is called gully erosion. Soil erosion also refers to the loss of fertility of soil, which makes the soil infertile and exhausted.

Cutting down the trees and forests, overgrazing by animals, floods, and improper farming practices are some of the main causes of soil erosion.

Soil conservation is the protecting of soil against erosion and exhaustion by planting trees, shrubs and grass on hill slopes.

Soil can be conserved by controlling grazing of cattle and use of proper farming methods such as the levelling of fields, terracing of hill slopes, construction of mud walls or bunds and ploughing fields in circles.

6.Why is soil conservation important ? Give three reasons.

Answer:

Soil conservation is very important because soil consists of
mineral particles, moisture, living organisms like bacteria and earthworms, and decayed organic matter. It is one of the most important resources as human beings-depend on it, both directly and indirectly, for their basic needs of food, shelter, and clothing. It takes thousands of years for even a thin layer of soil to form.

7.Explain any two methods of soil conservation briefly.

Answer:

1. **Contour Tilling —** In this method the farmer tills or ploughs
   the fields along the contours of the land rather than tilling up and down the slope. Contour tilling is practised in hilly areas rather than the plains. It prevents the soil from being washed away by water or by surface run-off as the contour acts like a bund. The contour also facilitates the percolation of water into the soil.
2. **Terrace Farming —** Terrace farming involves making terraces or steps on a hill or mountain by cutting into the side of the hill or mountain. Since the land is

made flat, it reduces surface run-off, thereby preventing erosion. It also facilitates the absorption of water into the soil. Terrace cultivation is common on mountain slopes all over the world.

3. **Contour Bunding —** Soil is conserved by making bunds or walls or embankments made of mud along contour lines to prevent water from draining out of the cultivated field, thereby preventing erosion.