Assignments in Science Class IX (Term II)

14 Natural Resources

IMPORTANT NOTES

1. The gifts of nature like air, water, soil, minerals, coal, petroleum, animals and plants are called **natural resources.**
2. Natural resources are broadly classified into **inexhaustible natural resources** and **exhaustible natural resources.**
3. Ever-increasing population along with industrialisation and consequent urbanisation have compelled human beings to over-exploit these natural resources.
4. The natural resources which are present in the nature in unlimited quantity and which normally cannot be exhausted by human activities are called inexhaustible natural resources, e.g. air, water, solar energy, etc.
5. The natural resources which can degrade in quantity and quality due to human activities are called **exhaustible natural resources.** e.g. soil, forest, minerals, coal, etc.
6. Air is a mixture of nitrogen (78%), oxygen (21%), carbon dioxide, ammonia, ozone, noble gases and moisture.
7. The envelope of air that surrounds the earth is called **atmosphere.**
8. Water is the prime natural resource, basic human need and precious national asset.
9. The ground water and surface water available to us come from the rainfall and snow which is a continuous process through hydrological cycle.
10. Depending on the annual rainfall, India has been divided into four regions — wet zone, intermediate zone, semi-arid zone and arid zone.
11. Soil is the upper crust of earth.
12. The six major soil types found in India are

    (i) alluvial soil, (ii) black soil, (iii) red soil, (iv) mountain soil, (v) desert soil and (vi) laterite soil.
13. Coal, petroleum, iron, aluminium, copper, silver and gold are among the important natural resources.
14. Chief sources of energy are coal, petroleum, natural gas, hydel power, solar, wind and nuclear power.
15. Energy resources can be classified into two main categories — **non renewable/conventional resources of energy and renewable/non-conventional resources of energy.**
16. The pollution-free sources of energy like solar radiation, wind power, biomass and nuclear power are **renewable energy resources.**
17. Hydel power is the next biggest source of energy after thermal power.
18. Researchers are being involved to develop new non-conventional energy sources/devices.
19. The term **flora** is used for plants and **fauna** for animal species — it includes all types of plants and animals living in a natural habitat.
20. Our forest cover is estimated to be **63.591 million hectare sq. km** that comes to be approximately 1/5th of the total geographical area of the country.
21. The movement of air from one region to another region causes **winds.**
22. The circulation of water in the form of water vapour, clouds, rain and snow forms the **water cycle.**
23. Major sources of air pollution are burning of fossil fuels (coal and petroleum products), automobiles, thermal power plants and industries.
24. Burning of fossil fuels like coal and petroleum releases oxides of nitrogen and sulphur which are responsible for **acid rain.**
25. Air containing suspended particles of unburnt carbon and other particles released by the burning of fossil fuels is called **smog.**
26. Lichens are known as **indicator of pollution** because they are sensitive to the level of sulphur dioxide in air.
27. The level below the soil surface where the rocks are saturated with water is known as the **zone of saturation** and the upper level of the zone of saturation is called **water table.**
28. The increase in concentration of harmful, non biodegradable chemical substances in the body of living organisms throughout the trophic levels of a food chain is called **biological magnification.**

29. The excessive growth of phytoplankton in water bodies because of discharge of sewage and detergents in it brings about a reduction in dissolved oxygen which affects other aquatic organisms. This is called **eutrophication.**

30. Conversion of rocks into soil by physical or biological means is called **weathering.**

31. A fertile soil which contains a mixture of all the different sized particles is called **loam or loamy soil.**

32. **Strip-cropping** means planting of crops in rows or strips to check flow of water and soil pollution.

33. A cyclic flow of nutrients between non-living environment and living organisms is called biogeochemical cycle.

34. Rise in the Earth's temperature because of increase in the concentration of carbon dioxide in the atmosphere is known as green house effect.

35. The process of converting atmospheric nitrogen into nitrates with the help of a few symbiotic bacteria which live in the root nodules of **leguminous plants** and nitrites is called **nitrogen fixation.**

36. **Ammonification** is conversion of complex organic compounds like proteins into ammonia (NH_3).

37. **Nitrification** is conversion of ammonia into nitrites and nitrates.

38. **Denitrification** is conversion of nitrate salts present in the soil and water to free nitrogen gas.

39. Ozone layer surrounds the earth, at height of 25-30 km from the earth's surface. It protects Earth from ultraviolet light.

40. Chlorofluorocarbons (CFCs) are mainly responsible for the depletion of ozone layer. Nitrogen monoxide (NO) and some other gases also deplete the ozone layer.

ASSIGNMENTS FOR SUMMATIVE ASSESSMENT

I. VERY SHORT ANSWER QUESTIONS (1 Mark)

OTHER IMPORTANT QUESTIONS

1. What are the types of natural resources?
2. Why plants do not utilise nitrogen directly from atmosphere?
3. Name the process in which water vapour changes to a liquid.
4. Which gas is the chief component of Earth's atmosphere?
5. Name the substance that reduces the amount of dissolved oxygen in water.
6. Which gas is formed in the layers of Earth due to bacterial decomposition in the absence of oxygen?
7. Name the rays essential for formation of ozone in atmosphere.
8. Name the elements present in fossil fuels, which cause air pollution.
9. In a coastal region, what would be the direction of wind during the day?
10. When clouds cool down, water droplets fall to the land as rain, hail or snow. Name the phenomenon.
11. Name the organisms found to be very sensitive to the levels of contaminants like sulphur dioxide in the air.
12. What do you mean by humus?
13. Give two examples of exhaustible natural resources.
14. Name two atmospheric gases responsible for causing acid rain.
15. How would you define the term atmosphere?
16. What do you understand by the term 'Natural resources'?
17. What is strip-cropping?
18. What portion of our country's geographical area is covered by forest?
19. Name any two examples of inexhaustible natural resources.
20. How much air is required by a normal human being in one day?

II. SHORT ANSWER QUESTIONS - I (2 Marks)

PREVIOUS YEAR' QUESTIONS

1. What is soil erosion ? List two activities which cause soil erosion. **[2011 (T-II)]**

2. What is green house effect ? How is it caused ? **[2011 (T-II)]**

3. (i) Many municipal Corporations are trying water harvesting to improve the availability of water. Give reason.

(ii) Rain water sometimes contains traces of acid. Why ? Explain in brief. **[2011 (T-II)]**

4. (i) Define the term 'Smog'.

(ii) Name two types of diseases caused by regularly breathing the polluted air. **[2011 (T-II)]**

5. Give reasons of the following :

(i) We are lucky that ozone is not stable near the earth's surface.

(ii) The combustion of fossil fuels increases the amount of suspended particles in air. **[2011 (T-II)]**

6. (i) Why is water so necessary for all living organisms ? Mention any two points in support of your answer.

(ii) 'Water is known as A Wonder Liquid'. Justify this statement by giving any two reasons. **[2011 (T-II)]**

7. What is atmospheric fixation of Nitrogen ? **[2011 (T-II)]**

8. (a) What is soil erosion ? State any one way by which it can be prevented.

(b) What is humus ? What is the role of earth worms in increasing the quantity of humus ? **[2011 (T-II)]**

9. (a) List two ways by which carbon dioxide is 'fixed' in the environment.

(b) Name two diseases caused due to an increased content of pollutants in the air produced due to the burning of fossil fuels. **[2011 (T-II)]**

10. The heaps of solid waste are a menace. Give two reasons. **[2011 (T-II)]**

11. How addition of undesirable substances and change in temperature affect the water life. **[2011 (T-II)]**

12. State any two harmful effects each of :

(a) Air pollution and (b) Water pollution **[2011 (T-II)]**

13. (a) What is the role of atmosphere in climate control ?

(b) What percentage of nitrogen and oxygen is present in air ? **[2011 (T-II)]**

14. Mention any two human activities which are responsible for water pollution. **[2011 (T-II)]**

15. (a) Mention the role of ozone layer in the atmosphere.

(b) Give reason Lichens do not grow in Delhi whereas they commonly grow in Manali or Darjeeling. **[2011 (T-II)]**

16. What causes acid rain? Mantion any damage caused by it on living organisms. **[2011 (T-II)]**

17. (a) What is Green House Effect ?

(b) Name compounds causing depletion of Ozone layer ? **[2011 (T-II)]**

18. How do Sun and wind influence the formation of soil ? **[2011 (T-II)]**

19. List any two consequences of global warming. **[2011 (T-II)]**

20. Mention any four measures that should be taken to maintain the soil fertility. **[2011 (T-II)]**

21. Give the chemical formula of ozone. What is its role in atmosphere ? **[2011 (T-II)]**

22. (a) How the presence of pollutants present in the air does affect our health ?

(b) Name two air pollutants which when dissolve with water gives rise to acid rain. **[2011 (T-II)]**

23. Name two measures that can be taken to reduce water pollution. **[2011 (T-II)]**

24. Suggest two methods to control air pollution. **[2011 (T-II)]**

25. Differentiate between biodegradable and non-biodegradable pollutants. **[2011 (T-II)]**

26. (a) Name the process that returns oxygen to the atmosphere.

(b) Write the condition responsible for poor visibility in cold weather. **[2011 (T-II)]**

27. Which symbiotic life forms can grow on stones and help in the formation of soil ? Write the mode of their action for making soil from rocks. **[2011 (T-II)]**

28. (a) Why does moon have very cold and very hot temperature variations i.e. from –190°C to

110°C even though it is at the same distance from the sun as earth ?

(b) Why does Mathura refinery pose problem to the Taj Mahal ? **[2011 (T-II)]**

29. Explain the role of atmosphere as a blanket. List the factors deciding the rainfall patterns. **[2011 (T-II)]**

30. State the effect of the following on aquatic organisms–

(a) Removal of dissolved oxygen

(b) Change in temperature **[2011 (T-II)]**

31. How do forest play an important role in maintaining water cycle. **[2011 (T-II)]**

32. Name the two gases given out by burning of fossil fuels which dissolve in rain water to form acid rain. **[2011 (T-II)]**

32. Why is atmosphere essontial for life? Write two points in support of your answer. **[2011 (T-II)]**

33. List any four activities that you think would lead to air pollution. **[2011 (T-II)]**

34. How are clouds formed ? **[2011 (T-II)]**

35. (a) Why do terrestrial forms require fresh water ?

(b) Mention any two processes involved in water cycle. **[2011 (T-II)]**

36. How do fossil fuel cause air-pollution ? **[2011 (T-II)]**

37. What is top soil ? Mention any two factors that decide which plants will thrive on that soil. **[2011 (T-II)]**

OTHER IMPORTANT QUESTIONS

1. How do the rivers from land, add minerals to sea water?

2. How can we prevent the loss of top soil?

3. Why does the percentage of gases like oxygen, nitrogen and carbon dioxide remain almost the same in the atmosphere?

4. Lichens are called pioneer colonisers of bare rock. How can they help in formation of soil?

5. Why do people love to fly kites near the seashore?

6. Why does water need conservation even though large oceans surround the land masses?

7. "Soil is formed by water." If you agree to this statement then give reasons.

8. During summer, if you go near the lake, you feel relief from the heat. Why?

III. SHORT ANSWER QUESTIONS - II (3 Marks)

PREVIOUS YEARS' QUESTION

1. (a) "The flow of energy is unidirectional whereas the biogeochemical transfer is cyclic". Explain why ?

(b) Justify the statement _____ "The nitrogen cycle is supposed to be an ideal cycle in the biosphere". **[2011 (T-II)]**

2. List three ways to control soil pollution. **[2011 (T-II)]**

OTHER IMPORTANT QUESTIONS

1. In coastal area, wind current moves from the sea towards the land during day; but during night it moves from land to the sea. Discuss the reason.

2. Following are a few organisms

(a) lichen (b) mosses (c) mango tree (d) actus

Which among the above can grow on stones; and also help in formation of soil? Write the mode of their action for making soil.

3. Why does moon have very cold and very hot temperature variations, eg. from –190°C to 110°C even though it is at the same distance from the Sun as the Earth is?

4. There is mass mortality of fishes in a pond. What may be the reasons?

5. Soil formation is done by both abiotic and biotic factors. List the names of these factors by classifying them as abiotic and biotic?

6. All the living organisms are basically made up of C, N, S, P, H and O. How do they enter the living forms? Discuss.

7. Why does the percentage of gases like oxygen, nitrogen and carbon dioxide remain almost the same in the atmosphere?

8. Why are root nodules useful for the plants?

IV. LONG ANSWER QUESTIONS (5 Marks)

PREVIOUS YEARS' QUESTIONS

1. Many human activities lead to increasing levels of pollutions of air, water bodies and soil. "Isolating these activities to specific and limited areas would not help in reducing pollution". Justify this statement giving at least five reasons. **[2011 (T-II)]**

2. Explain with the help of a labelled diagram carbon cycle in nature. **[2011 (T-II)]**

3. (i) Describe green house effect. How the presence of green house gases would lead to global warming ? Explain.

(ii) Draw a neat labelled diagram of water cycle in nature. **[2011 (T-II)]**

4. (i) With the help of a neat labelled diagram, depict the cycling of carbon in nature.

(ii) Mention the two ways in which carbon dioxide is fixed in the environment. **[2011 (T-II)]**

5. (i) Make neat and labelled sketch of Nitrogen cycle in nature.

(ii) Describe in brief the role of Nitrogen fixing bacteria and of lightening in fixing atmospheric nitrogen. **[2011 (T-II)]**

6. (a) In coastal area, wind current moves from sea towards the land during day; but during night it moves from land to sea. Discuss the reason.

(b) How are CFCs harmful for the environment and living beings ? **[2011 (T-II)]**

7. (a) What are the forms of oxygen found in the atmosphere ?

(b) "Forests influence the quality of our air, soil and water resources". Justify the statement. **[2011 (T-II)]**

8. (a) Mention the two forms of oxygen found in atmosphere.

(b) Name the form of oxygen absorbing U.V. rays.

(c) Draw flow diagram of oxygen cycle. **[2011 (T-II)]**

9. (a) What do you understand by ozone layer depletion ?

(b) What is air pollution ? How does air pollution affect animal and plant life ? **[2011 (T-II)]**

10. (a) Draw a labelled diagram to show carbon cycle in nature.

(b) What are the two ways by which CO_2 is returned to the atmosphere ? **[2011 (T-II)]**

11. What are the causes of increase in the concentration of carbon dioxide in the atmosphere? How is carbon dioxide converted into organic compounds? Justify with the help of a labelled diagram. **[2011 (T-II)]**

12. Why is circulation of water necessary in the environment ? Discuss any two human activities which are disturbing the water cycle. **[2011 (T-II)]**

13. With the help of a labelled diagram show the cycling of carbon in nature. What are the two ways in which carbon di-oxide is fixed in the environment. **[2011 (T-II)]**

14. (a) With the help of diagram depict the oxygen cycle in nature.

(b) What is the % of oxygen present in atmosphere ?

(c) What is the role of ozone layer and how is it getting depleted ? **[2011 (T-II)]**

15. How do clouds formed in the sky ? Draw the biogeochemical cycle involved in it. What are the different states in which water is found in the water cycle ? **[2011 (T-II)]**

16. What are biogeochemical cycles ? Draw a labelled diagram to illustrate cycling of oxygen in nature. Write the means of returning oxygen to the atmosphere. **[2011 (T-II)]**

17. What is nitrogen fixation ? Why do plant need to fix nitrogen ? Draw a labelled diagram to illustrate nitrogen - cycle. **[2011 (T-II)]**

18. (a) Draw a labelled diagram of carbon cycle in nature.

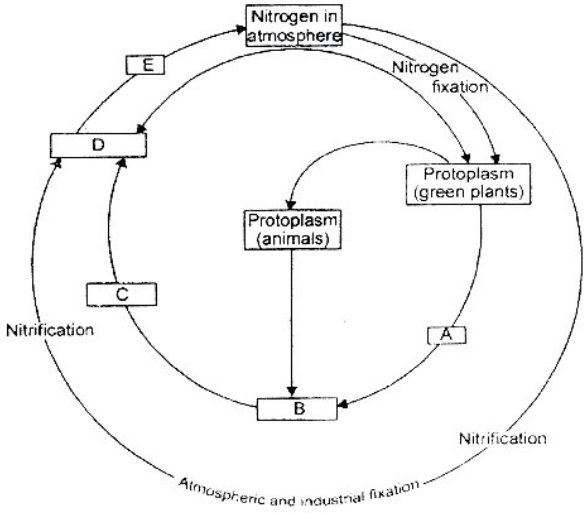
(b) Describe the role of photosynthesis and respiration in carbon cycle. **[2011 (T-II)]**

19. (a) Study the given figure of Nitrogen cycle and mention what do A, B, C, D, E represents.

(b) What will happen if step A does not occur?

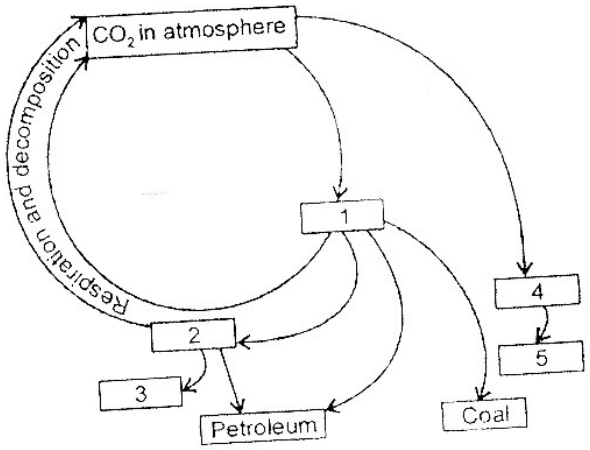
(c) Write the role of N_2 fixing bacteria in the Biosphere.

(d) Name two biologically important compounds that contains both O_2 and N_2. **[2011 (T-II)]**



Nitrogen cycle in Nature

20. (a) What do the blanks 1, 2, 3, 4 and 5 in the given cycle stand for ?



(b) Name two natural and one man made process by which CO_2 returns to the atmosphere.

(c) Carbon dioxide is necessary for plants but it is also a pollutant justify your answer. **[2011 (T-II)]**

21. (a) Draw ntirogen-cycle. **[2011 (T-II)]**

(b) Why step farming is common in hills.

22. (a) Differentiate between Biodegradable and Non biodegradable substances.

(b) How is acid rain causing harm to 'Taj Mahal'.

(c) What is Smog. **[2011 (T-II)]**

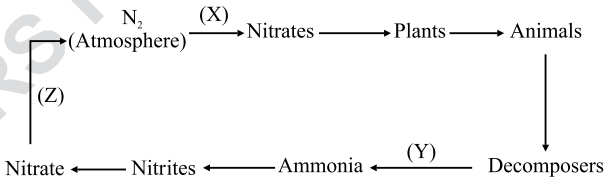
23. (i) Illustrate Nitrogen cycle in biosphere.

(ii) Why is Nitrogen cycle said to be a perfect cycle ? Name two leguminous plants which can fix free nitrogen. **[2011 (T-II)]**

24. (i) How does energy enter the biosphere ?

(ii) Name one natural and one man made process by which CO_2 returns to atmosphere.

(iii) In the following bio-geochemical cycle, name and define the process makred as (X), (Y), (Z). **[2011 (T-II)]**



25. (a) How do forests influence the following :

(i) air (ii) soil

(iii) water **[2011 (T-II)]**

OTHER IMPORTANT QUESTIONS

1. How do fossil fuels cause air pollution?

2. What are the causes of water pollution? Discuss how you can contribute in reducing water pollution.

3. A motor car, with its glass totally closed, is parked directly under the sun.

The inside temperature of the car rises very high. Explain why?

4. Carbon dioxide is necessary for plants. Why do we consider it as a pollutant?

ASSIGNMENTS FOR FORMATIVE ASSESSMENT

A. Puzzle

1. Look across, up and down in the grid to find the answers of the following questions.

(i) An insect responsible for making humus in the soil.

(ii) Visibility is lowered due its formation during winter.

(iii) It is added to the soil to increase its fertility but excess of it can destroy the soil structure.

(iv) The gas makes up 78% of the atmosphere.

(v) The gas absorbs harmful radiations from reaching the surface of the earth.

(vi) It is incorporated into life forms through the process of photosynthesis.

(vii) A fossil fuel.

(viii) It occurs due to condensation and precipitation of water droplets.

R	I	E	A	R	T	H	W	O	R	M
A	V	Z	N	P	X	I	L	Z	M	E
I	T	C	P	Q	L	S	M	O	G	X
N	L	A	I	X	D	O	R	N	S	T
F	E	R	T	I	L	I	Z	E	R	Y
A	X	B	R	M	N	Z	L	P	O	X
L	N	O	D	V	X	C	R	T	Z	A
L	Y	N	I	T	R	O	G	E	N	C
L	Q	R	M	Z	T	A	L	X	R	P
V	L	I	D	X	R	L	S	T	M	N

2. Renewable and non-renewable natural resources.

Renewable resources can be recovered after depletion while non-renewable resources may not get renewed or may take thousands of years for renewal.

Unscramble the following and write down the names of ten such resources. Sort them as renewable (R) and non-renewable (N).

(i) TAREW : _____

(ii) UNS : _____

(iii) COLA : _____

(iv) INDW : _____

(v) RAI : _____

(vi) IOLS : _____

(vii) DLFEIWIL : _____

(viii) SNEARLIM : _____

(ix) OTFESR : _____

(x) MUETPELOR : _____

3. Five waterborne diseases are hidden in the grid below. Find them and write down their names in the space provided.

(i) _____

(ii) _____

(iii) _____

(iv) _____

(v) _____

T	E	S	S	N	E	E	Z	A
Y	J	A	U	N	D	I	C	E
P	E	R	N	E	Y	F	O	O
H	J	E	T	W	S	L	L	H
O	U	L	A	B	E	U	D	R
I	N	O	N	E	C	E	O	R
D	U	H	N	R	T	V	P	A
A	M	C	I	G	F	E	I	I
Y	R	E	T	N	E	S	Y	D

4. Algal Bloom : In places where there is stagnant water, a green layer forms on the water surface. This layer is formed due to the growth of algae and it uses up all the oxygen of the water. This results in the suffocation and death of fishes. There is a specific name for such a process.

To spell it, first write down the letters that occur before each of the given letters. Then unscramble the word, to get the name of the process. (You can use a letter more than once)

B D F I J O P Q S U V

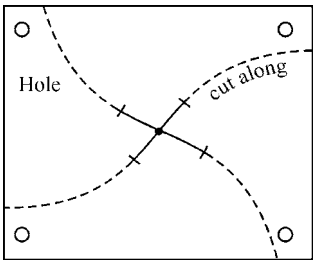
B. Group Activities

1. To make a windmill

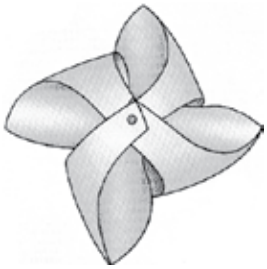
Requirements – Stiff paper, a stick, a nail (iron) 38mm ($1\frac{1}{2}$ inches) long, a cap of small plastic bottle.

Method :-

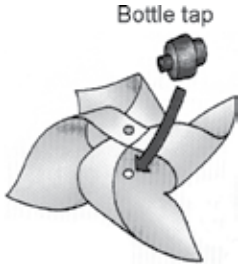
- Mark on the paper as given in the picture and cut the paper till the half towards the centre.



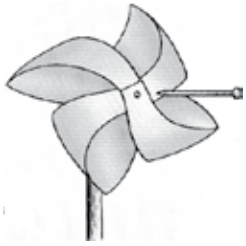
- Fold each corner towards the centre.



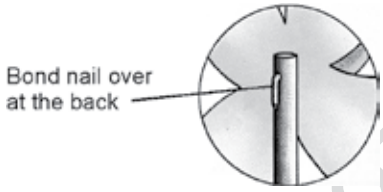
- Fix the top of the washing-up liquid bottle into the middle of the windmill and push the small end through the back of the windmill.



- Push the nail through the middle of the washing-up liquid cap and ask an adult to hammer it into the stick.



- What happens when you blow on the windmill? Does it work better when you blow from the front or from the side? Put it outside so you can see how fast the wind is blowing.



2. To check how much polluted the air is.

Tiny plants called lichens can show you how polluted the air is.

(a) When an alga (Pleurococcus) forms a powdery green film on the trunk (stem) of trees, it indicates that the air is polluted.

(b) When the lichens (crusty, grey) grow in the centres of towns and can survive, it indicates that the air is dirty.

(c) When flat, rounded lichens grow on the stem of trees, they indicate that the environment has pollution but in less quantity.

(d) The presence of bushy green or grey lichens on the stem of trees indicates that the air is clean. These lichens are very sensitive to air pollution.

3. Collect the information about rainfall during the year Jan. 2009 to Dec. 2009 across the country from the newspapers, internet, magazines, weather reports, etc. Now answer the following questions –

(a) In which month your city get the maximum rainfall?

(b) In which month your city get the minimum rainfall?

(c) In which month your state get the maximum rainfall?

(d) In which month your state get no rainfall at all.

C. Seminar

1. How to respond to the threats of climate change.

Or

What steps are necessary to reduce global warming.

[Hint : Discuss the following points]

(i) The ozone problem or the ozone destroying process by CFC's and other ozone-depleting substances.

(ii) The greenhouse effect which causes global warming.

(iii) What steps need to be taken :

(a) Reduce the use of fossil fuels.

(b) Upgrade infrastructure to help cut the greenhouse gas emissions by vehicles.

(c) Build energy efficient buildings and improve cement making process.

Note : During the manufacture of cement, a lot of green house gases are emitted.

(d) Use alternative renewable sources of energy which do not cause pollution and/ or nuclear power with caution.

(e) Reduce mining, copper and other elements needed for electrical wiring and transmission which also causes global warming/pollution.

(f) Make changes in personal lifestyle.

2. Biodiversity of life forms are being destroyed by the industrialisation. What steps can be taken to conserve biodiversity.

[Hint : Elaborate the following points]

(i) The activities which cause massive change of biodiversity – mining, logging, trawling, suburban sprawl, urbanisation and clearing habitats for agriculture.

(ii) Why should biodiversity be protected? For ecological reasons, to stabilise climate, improve rainfall, enrich soil and water table and for sustaining livelihood.

(iii)The various methods that can be adopted for the conservation of biodiversity.

D. Debate

1. Is algae biofuel good for combating global warming?

2. Should plans to fight global warming prioritise solar energy?

3. Use of alternative forms of fuels – a step ahead or backwards for mankind.

4. Solar energy cannot alone be a solution to the vast requirement of energy for us.

E. Group Discussion

1. Uncontrolled motion of air and water, if trapped can be of great service to mankind.

2. Consequences of global warming in the long run may destroy many existing species on the earth.

3. Water harvesting should be made mandatory in every building constructed by a builder.

F. Survey

1. The groups of students (5-6) can go to different petrol pumps where pollution-control tests are being taken.

(a) Find out the number of vehicles taking pollution test, everyday.

(b) How many vehicles do not pass the test.

(c) How many vehicles are within the safe limits?

(d) On an average how many vehicles take the test every month?

2. A survey can be done on the waste disposed by an average metro household. Find out :

(a) What amount of waste is disposed by each household?

(b) The average waste disposed by each person.

(c) Make a list of the biodegradable and non-biodegradable wastes disposed.

(d) Which are the most common biodegradable and non-biodegradable wastes disposed?

(e) Is there any particular waste which is disposed by each household?

Class IX Chapter 14 – Natural Resources Science

Question 1:

How is our atmosphere different from the atmospheres on Venus and Mars?

Answer:

Earth's atmosphere is different from those of Venus and Mars. This difference lies essentially in their compositions. Earth's atmosphere is a mixture of nitrogen (79%), oxygen (20%), and a small fraction of carbon dioxide, water vapours and other gases. This makes the existence of life possible on Earth. However, the atmospheres on Venus and Mars mainly consist of carbon dioxide. The amount of carbon dioxide on these planets can range from 95% to 97%.

Question 2:

How does the atmosphere act as a blanket?

Answer:

The atmosphere acts as a blanket by performing the following functions:

(a) It keeps the average temperature of the Earth fairly constant during day time and even during the course of whole year.

(b) It prevents a sudden increase in the temperature during day time.

(c) It slows down the escape of heat from the surface of the Earth into outer space during night time.

Question 3:

What causes winds?
Answer:

An uneven heating of the Earth's surface causes winds. On being heated, air becomes lighter and rises up. As a result, a region of low pressure is created. Then, air from a high pressure region moves to a low pressure region, causing wind.

Question 4:

How are clouds formed?

Answer:

During day time, on being heated, a large amount of water evaporates from various water bodies and goes into the air. A part of this water vapour also reaches the atmosphere through biological activities such as transpiration and respiration. This causes the air in the atmosphere to heat up. When this heated air rises, it expands and cools, which results in the condensation of water vapour forming water droplets. The presence of dust and other suspended particles in air also facilitates the process of condensation. The formation of water droplets leads to the formation of clouds.

Question 5:

List any three human activities that you think would lead to air pollution.

Answer:

The following three human activities would lead to air pollution:

(i) Burning of fossil fuels such as coal and petroleum

(ii) Industrialization

(iii) Deforestation

Question 1:

Why do organisms need water?

Answer:

Organisms need water for the following reasons:

(i) All cellular processes need water as a medium. Usually, the reactions that take place in our body or within the cells occur between substances that are dissolved in water.

(ii) Since most of the substances are transported in a dissolved form, water is necessary.

Question 2:

What is the major source of fresh water in the city/town/village where you live?

Answer:

River is a major source of fresh water.

Question 3:

Do you know of any activity which may be polluting this water source?

Answer:

The discharge of waste water from homes, industries, hospitals, etc. into the river pollutes this fresh water source.

How is soil formed?

Answer:

Soil is formed by breaking down of rocks at or near the surface of the Earth through various physical, chemical, and biological processes by various factors such as the sun, water, wind, and living organisms.

(i) Sun:

During day time, the rocks are heated. This causes the rocks to expand. During night time, these rocks cool down and contract. Since all parts of the rock do not undergo expansion and contraction at the same rate, this causes the formation of cracks in these rocks. These cracks lead to the breaking up of huge rocks into smaller pieces.

(ii) Water:

Water catalyses the process of formation of soil in two ways.

(a) Water goes into the cracks and crevices formed in the rocks. When this water freezes, its volume increases. As a result, the size of the cracks also increases. This helps in the weathering of rocks.

(b) Running water wears away hard rocks over long periods of time. Water moving in fast speed carries big and small particles of rock downstream. These rocks rub against each other, resulting in breaking down of rocks. These smaller particles are carried away by running water and deposited down its path.

(iii) Wind:

Strong winds carry away rocks, which causes rubbing of rocks. This results in the breaking down of rocks into smaller and smaller particles.

(iv) Living organisms:

Some living organisms like lichens help in the formation of soil. Lichens also grow on rocks. During their growth, lichens release certain substances, which cause the rock surface to powder down forming a thin layer of soil. On this thin layer of soil, some small plants like moss also grow. They further cause the breaking down of the rock

particles.

Question 2:

What is soil erosion?

Answer:

The blowing away or washing away of land surface by wind or water is known as soil erosion.

Question 3:

What are the methods of preventing or reducing soil erosion?

Answer:

The methods of preventing or reducing soil erosion are:

(i) Prevention of deforestation

(ii) Plantation of trees

What are the different states in which water is found during the water cycle?

Answer:

During the water cycle, water is found in solid state (snow, ice, etc.), liquid state (ground water, river water, etc.), and gaseous state (water vapours).

Question 2:

Name two biologically important compounds that contain both oxygen and nitrogen.

Answer:

Two biologically important compounds that contain both oxygen and nitrogen are:

(i) Amino acids

(ii) Deoxyribonucleic acid (DNA) and Ribonucleic acid (RNA) Question 3:

List any three human activities which would lead to an increase in the carbon dioxide content of air.

Answer:

(i) Burning of fuels in various processes like heating, cooking, transportation, and industry.

(ii) Human induced forest fires

(iii) The process of deforestation includes the cutting down of trees. This decreases the uptake of carbon dioxide for photosynthesis. Eventually, the content of carbon dioxide increases.

Question 4:

What is the greenhouse effect?
Answer:

Some gases like carbon dioxide, methane, nitrous oxide prevent the escape of heat from the Earth's surface by trapping it. This increases the average temperature of the Earth. This is called the green house effect. An increase in the content of such gases would lead to a situation of global warming.

Question 5:

What are the two forms of oxygen found in the atmosphere? Answer:

The two forms of oxygen found in the atmosphere are:

(i) Diatomic molecular form with chemical formula O_2.

(ii) Triatomic molecular form with chemical formula O_3 known as ozone.

Why is the atmosphere essential for life?

Answer:

The atmosphere is essential for life because it maintains an appropriate climate for the sustenance of life by carrying out the following activities:

(i) Atmosphere keeps the average temperature of the Earth fairly constant during day time.

(ii) It prevents a sudden increase in temperature during day time.

(iii) It also slows down the escape of heat from the surface of the Earth into outer space during night time.

Question 2:

Why is water essential for life?

Answer:

Water is essential for life because of the following reasons:

(i) Most biological reactions occur when substances are dissolved in water. Thus, all cellular processes need water as a medium to take place.

(ii) Transportation of biological substances needs water as a medium.

Question 3:

How are living organisms dependent on the soil? Are organisms that live in water totally independent of soil as a resource?

Answer:

Almost all living organisms are dependent on soil. Some depend directly, while some depend indirectly.

Plants need soil for getting support as well as nutrients to prepare their food.

On the other hand, organisms depend on plants for food and other substances that are essential for life. Herbivores depend directly upon plants, and carnivores depend upon animals, which in turn depend upon plants for food. This makes them depend on soil

indirectly.

Organisms that live in water are not totally independent of soil as a resource. These organisms depend on aquatic plants for food and other substances. These aquatic

plants in turn require minerals for their sustenance. These minerals are carried to water bodies from soil by rivers, rain water, etc. Without the supply of minerals from the soil to the water bodies, it is impossible to imagine aquatic life.

Question 4:

You have seen weather reports on television and in newspapers. How do you think we are able to predict the weather?

Answer:

The meteorological department of the government collects data on the elements of

weather such as maximum and minimum temperatures, maximum and minimum

humidity, rainfall, wind speed, etc. They are able to study these elements using various

instruments. The maximum and minimum temperature of a day is measured by a thermometer known as the maximum−minimum thermometer. Rain fall is measured by an instrument known as the rain gauge. Wind speed is measured by anemometers.

There are various instruments used to measure humidity.

Question 5:

We know that many human activities lead to increasing levels of pollution of the air, water-bodies and soil. Do you think that isolating these activities to specific and limited areas would help in reducing pollution?

Answer:

Yes. Isolating human activities to specific areas would help in reducing levels of pollution. For example, setting up of industries in isolated regions will control pollution to some extent. The pollution caused by these industries will not contaminate water resources, agriculture land, fertile land, etc.

Question 6:

Write a note on how forests influence the quality of our air, soil and water resources.

Answer:

Forests influence the quality of our air, soil, and water resources in various ways.

Some of them are:

(i) Forests balance the percentages of carbon dioxide and oxygen in the atmosphere. The increasing amount of carbon dioxide caused by human activities is balanced by a

larger intake of carbon dioxide by plants during the process of photosynthesis. Simultaneously, a large amount of oxygen is released.

(ii) Forests prevent soil erosion. Roots of plants bind the soil tightly in a way that the surface of the soil cannot be eroded away by wind, water, etc.

(iii) Forests help in the replenishment of water resources. During the process of transpiration, a huge amount of water vapour goes into the air and condenses to form clouds. These clouds cause rainfall that recharge water bodies.