Class 10th Geography

Chapter : 2

Environmental Geography

Textual Questions And Answers:

Q1. What is meant by environment? Why is environment considered to be a system?

Ans: By the term 'environment' we mean the physical condition prevalent around an organism. In object are known as the environmentconditions aphical context, the term 'environment' refers to the region surrounding the earth which includes the lithosphere, the hydrosphere, the atmosphere and the biosphere. It is an arrangement of nature by which living and non-living things co-exist in a balanced manner.

The term 'environment' has wide connotation. It is a system by itself and includes several sub-systems within it. As a system, it has certain unity and Cohesion. It includes sub-systems such as biotic environment, abiotic environment, hydrological cycle, carbon cycle, water cycle, energy cycle, etc. The unique feature of this system is that various sub-systems within the environment co-exist in a balanced manner. There is much interdependence and interaction among the various elements of this system.

Q2. State with examples the relationship amongst lithosphere, atmosphere, hydrosphere and biosphere.

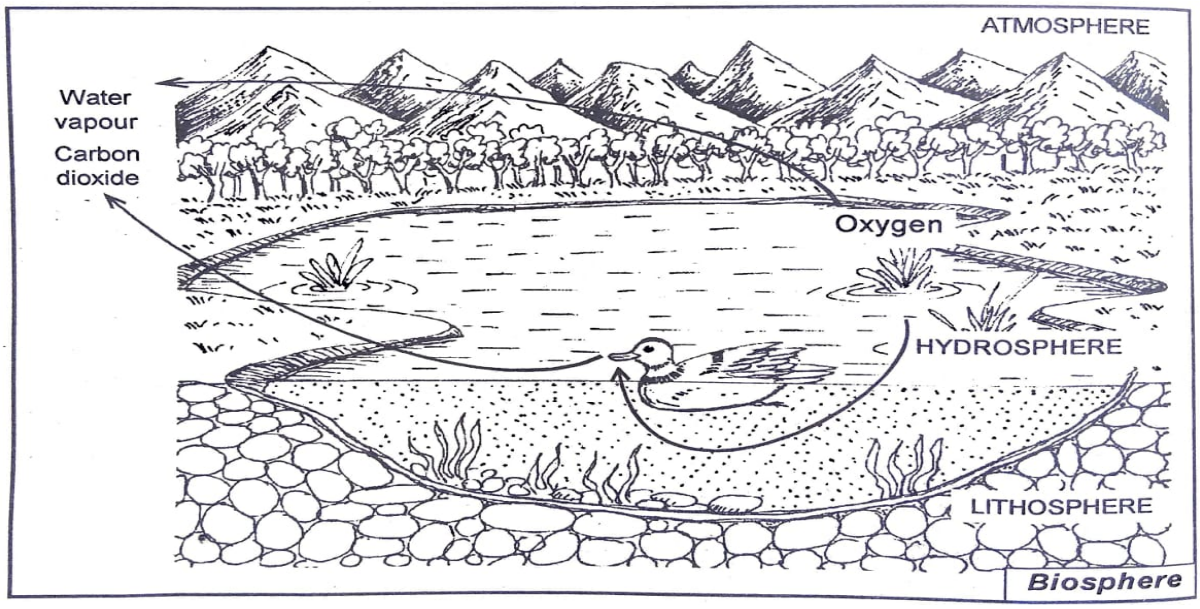
Ans: The environment consists of four components, namely the lithosphere, the atmosphere, the hydrosphere and the biosphere. There is a close interdependence and interaction among these four components of the environment. In fact, they are interdependent for their very existence. Different cycles of nature such as hydrogical cycle, carbon cycle, nitrogen cycle, energy cycle, etc. pass through all the four components. Secondly, the biotic and the abiotic elements are found in all the four components. There is a close complex network of relationship among the various elements of those components.

Any change that occurs in any one of the major components affects the other three components of the environment. When atmosphere is affected by over radiation from the sun, it affects the hydrosphere, the lithosphere and the biosphere. It leads to the melting of snow which in turn causes a rise in the sea level, bringing a lot of changes in the coastal regions of the earth's surface.

As a result many regions of the lithosphere get submerged. Many of the microorganisms, flora and fauna that live on the lithosphere, the hydrosphere and the biosphere perish as a result of this overheating of the atmosphere.
Another example of close interrelationship among the componnts of the environment would be the case of

rain. Rain clouds are formed as a result of evaporation from the sea as well as from the plant world. Rain from the atmosphere is essential for the survival of living organisms on the lithosphere and the biosphere. Drying of water of bodies has a negative impact on atmosphere, lithosphere and biosphere.

Cutting down of trees of the lithosphere leads to over-abundance of greenhouse gases in the atmosphere leading to global warming which affects not only living organisms on the earth but also those of the oceans. Thus, it is evident that all the four components of the environment are closely connected and interdependent on each other.



Q3. Write in brief as to why the environments of all the regions of the world are not same.

Ans: One of the unique features of environment is that almost all the regions of the world have different environments. For example, the environmental conditions of the equatorial region are quite different

from those of the polar regions. The environment of the equatorial region is characterised by high temperature and high rainfall throughout the year while polar regions are marked by low temperature and lack of rain. The difference in environment is the result of certain factors such as location, topography, distance from the water bodies, altitude, climate, nature of the flora and fauna, etc.

As these factors vary from place to place, the environment also varies from place to place. In fact, the basis for the identification of the different natural regions over the earth's surface is the varying environmental conditions that prevail in the world. Thus, the environments of all the regions of the world are not same.

Q4. Define Environmental Geography.

Ans: The branch of geography which studies the nature of global environment, its spatio-temporal changes and tries to find out the probable solutions to the various environmental problems that are brought about by man's actions is known as Environmental Geography. In short, Environmental Geography is a subdivision of geography which studies the environment from the geographical point of view. In other words, it is a branch of science which studies the influence of environment on man and man's influence on the environment.

Q5. Discuss the importance of Environmental Geography as a branch of Geography.

Ans: Today, the study of Environmental has received much attention and consideration. In fact, it has become a popular branch of study among the researchers due to the various environmental problems that make our life difficult on this planet. The environmental problems such as deforestation, global warming, air pollution, water pollution, etc. have reached such an alarming state that they are affecting our very existence on earth. As a result of these problems, the longevity of man, his economic means, his health, etc. are being affected. More and more new diseases and ailments are emerging. The world is becoming too hot to live.

The fresh water resources are drying up. All these changes are making man's life on earth difficult and troublesome. Therefore, Environmental Geography has received a lot of attention from all quarters as these problems need proper remedy and immediate human action. Secondly, the subject matter of Environmental Geography has a lot of affinity and close connection with other branches of study such as Physics, Environmental Science, Chemistry, Biology, Geology, Geography, Climatology, etc. as many of these branches also have similar subject matter for study.

This also has raised the importance of Environmental Geography. It is also felt that the traditional ideas, tools and techniques might not be too helpful in tackling the present environmental problems. So, it was felt that a new branch, Environmental Geography has to be developed primarily to deal with environment and its associated problems.

Q6. Give an account on the objective and scope of Environmental Geography.

Ans: The branch of geography which studies the nature of global environment, its spatio-temporal changes and tries to find out the probable solutions to the environmental problems is known as Environmental Geography. The main objective of Environmental Geography is to understand the nature of the global environment, recent changes that have taken place in the environment and try to find proper solutions to the existing environment problems by systematic analysis.

Therefore, the central theme of Environmental Geography is the study of the influence of environment on man and also the influence of man on environment. The main scope of Environmental Geography includes :

(i) Nature of global environment.

(ii) Changes that have taken place in the environment in the recent past.

(iii) Various environmental problems.

(iv) Eco-friendly use of mineral resources.

(v) Sustainable development.

(vi) Population growth and its impact on environment.

(vii) Natural disaster and its management.

(viii) Use of modern gadgets in the study of environmental issues, etc.

Q7. What do you mean by elements of environment? Write down the meanings of biotic and abiotic elements.

Ans: Elements of environment, mean the various components that constitute the environment. The environment consists of two categories of elements, namely biotic elements and abiotic elements.

(i) Biotic elements : The elements that have life are called biotic elements. For example, man, plants, animals, microorganisms, marine creatures, etc. They exist within the biosphere.

(ii) Abiotic elements : The elements that do not have life are called abiotic elements. For example, soil, land, water, rocks, sand, air, sunlight, humidity, etc. Abiotic elements are found in the lithosphere, hydrosphere, atmosphere and biosphere.
Both the elements of environment are characterised by two significant features. These are :

(i) Both the categories of elements are closely interlinked and are interdependent.

(ii) The characteristics of both biotic and abiotic elements vary from place to place and from region to region.

Q8. Complete the given list by marking a division of biotic and abiotic from the following elements :
sand, mineral, bacteria, phytoplankton, grass, rainfall, humidity, soil, water, forest, insects, virus, coal, mineral, oil, mangrove, solar energy.

Ans :

Biotic elements	Abiotic elements
bacteria, phytoplankton, grass, forest, insects, virus, mangrove.	sand, mineral, rainfall, humidity, soil, water, coal, mineral oil, solar energy.

Q9. What is meant by environmental problem?

Ans: The issues or problems that deeply affect the normal functioning of the various elements and components of the environment are known as environmental problems. In other words, environmental problems are the problems either natural or man-made which disturb the existing ecological balance in nature. Most of the environmental problems are man-made and so they can be rectified or checked if efforts are made in the right direction by man.

Q10. Mention the causes which are responsible for the growing environmental problems in the world.

Ans: Today, the entire world faces certain serious environmental problems which are mostly created by man himself. These include deforestation,

environmental degradation, global warming, air pollution, water pollution, noise pollution, etc.
The major causes for the rise of these problems are :

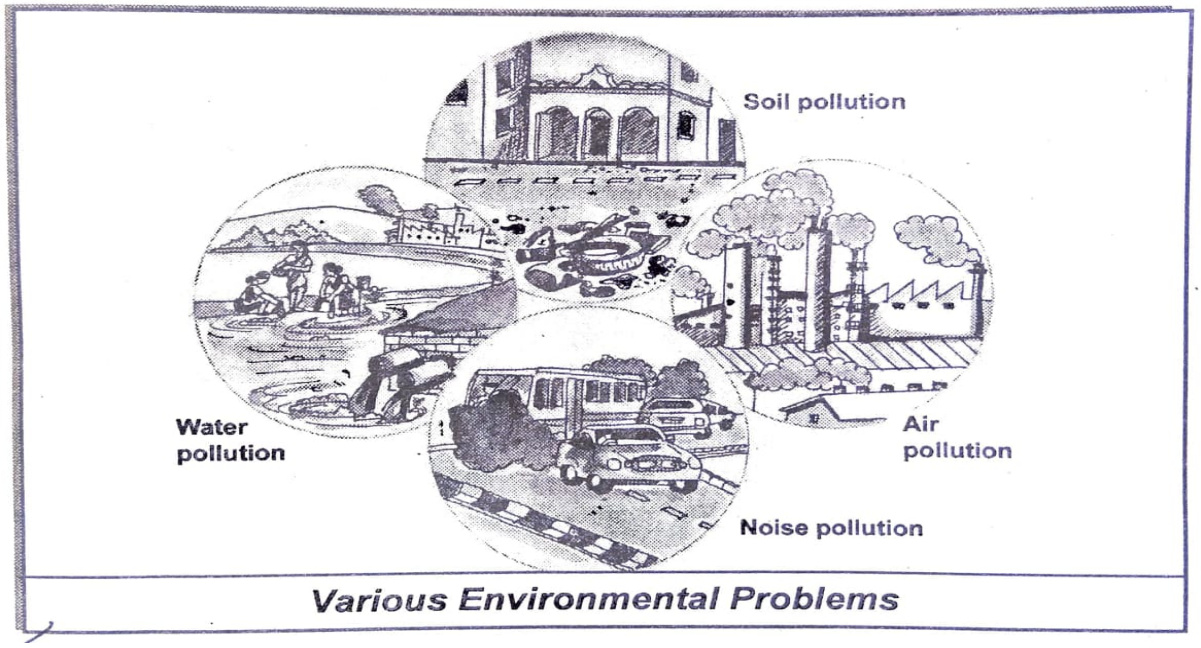
(i) Rapid growth of population : The fast emerging urbanisation, industrialisation and expansion of human settlement have been responsible for the depletion of natural resources such as forests, water, minerals, etc. The world's population has increased from 6 billion in 2000 to over 7 billion now. The percentage of urban population in the total population of the world has also been ever increasing rapidly. In fact, it was just 2% in 1800 A.D. But, now it is about 50%. High population calls for greater use of resources leading to their quick depletion which in turn disturbs the existing ecological balance in nature.

(ii) Overuse of resources : Nature has provided sufficient resources for its population. But, unfortunately man does not utilise the resources properly or in a scientific manner. From extraction to its use, a lot of resources are being wasted extensively leading to their depletion in the world. As man requires more and more resources to maintain himself, he extracts these resources at a faster rate leading to an imbalance in nature's subtle balance, creating thereby many environmental problems.

(iii) Rapid expansion of industrial sector : The unprecedented growth of the industrial sector since the industrial revolution has accelerated the use of different resources and their utilisation has brought in more

pollutants into the world. The industrial production has increased almost 100 times in the last century. Almost all industries release many greenhouse gases such as carbon dioxide, methane, sulphur dioxide, nitrous dioxide, chlorofluorocarbons, etc. leading to global warming.

(iv) Greater use of vehicles : One of the inevitable results of industrial growth, urbanisation and improvement in the standard of living is the overuse of vehicles which produce tremendous amount of smoke and greenhouse gases thereby causing global warming. The expansion of air travel by way of aircraft has increased the presence of certain gases in the atmosphere which causes the has adverse effects on all living organisms on the earth.



Various Environmental Problems

Q11. What do you mean by the balance state of environment?

Ans: The balance state of environment means the ecological equilibrium maintained by the various elements of environment. Nature maintains an ecological balance in the environment. If this balance is disturbed, it brings about a lot of environmental problems.

(i) To have a proper ecological balance of nature in any country, there should be 33% of forest or green cover. It should be even higher, at least 60% in case of the hilly and mountainous regions. If the percentage is lower in such areas, many natural calamities such as land erosion, landslides and death of water would take place.

(ii) There is an ecological balance between the various biotic and abiotic elements of environment. Therefore, the depletion of any item of these elements would greatly affect the entire environment.

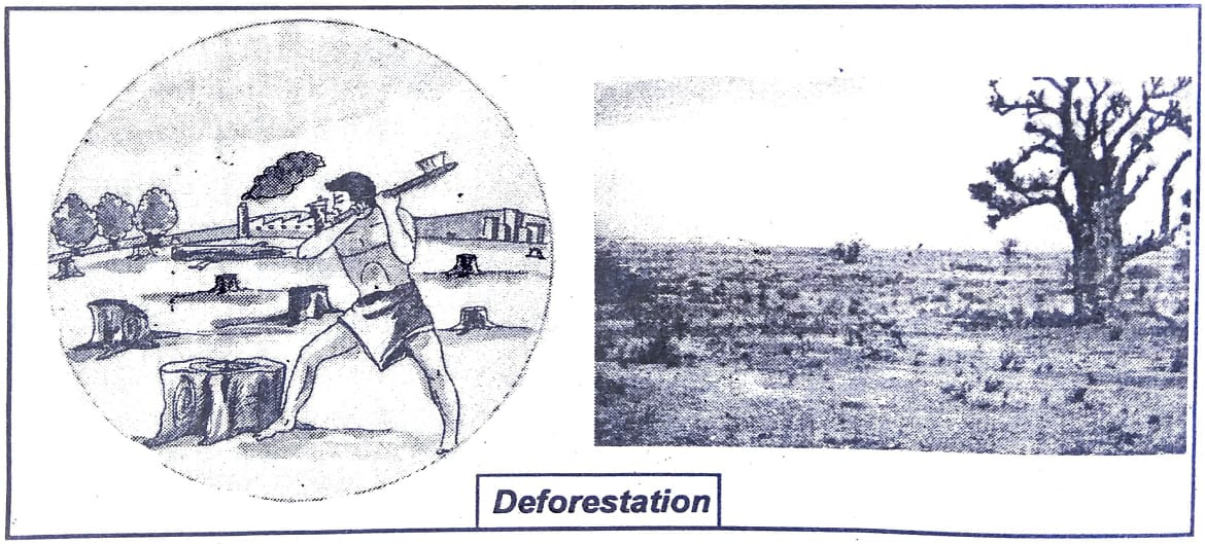
(iii) There is an ecological balance between the various organisms of biotic element themselves as well as between the various items of abiotic element.

(iv) There are several ecological cycles such as hydrogical cycle, carbon cycle, water cycle, nitrogen cycle, etc. which also maintain a balance state in the environment.

Q12. "Deforestation is the cause of many problems and the result of many development processes"--- analyse the statement with arguments.

Ans: Deforestation is one of the major environmental problems, the world is facing today. The green cover over the earth has been dwindling at an alarming rate. The minimum required percentage of green cover for any country is 33%. But, unfortunately many industrially advanced countries and developing countries lack the required extent of forest cover. It leads to several problems which affect our very existence on earth.

At the same time, forest areas have to be cleared for the starting of certain developmental work associated with industries, human settlement, power production, etc. It is in this context, that we say, " Deforestation is the cause of many problems and the result of many developmental processes. " A study of deforestation reveals that it brings about the following problems in the world :



Deforestation

(i) It causes drought conditions and scarcity of rain.

(ii) It leads to decline in agricultural production due to lack of adequate rainfall.

(iii) It causes landslides and soil erosion.

(iv) It brings about increased presence of carbon dioxide which would otherwise have been absorbed by trees.

(v) It causes the increase of heat over the earth.

(vi) It affects the biodiversity.

(vii) It disturbs the ecological balance leading to several environmental problems.Although demulti-dimensional.s a lot of problems, yet it has some benefits. In fact, deforestation has been responsible for the beginning of several developmental schemes and projects in most countries. Some of the major benefits derived from deforestation are :

(i) It provides more space for human habitation.

(ii) It provides more space for industrial expansion.

(iii) The construction industries are greatly benefitted from the timber derived from the forest.

(iv) The industries such as railways, paper industries, chemical industries, etc. expand as a result of the use of various forest resources.

(v) It leads to expansion of urban centres.

(vi) The clearing of forest areas increases the extent of land for cultivation. This brings about higher food production in the country.

Q13. What is global warming? Discuss its main causes.

Ans: Global warming refers to the increase in global temperature brought about by the increased emission of greenhouse gases like carbon dioxide, water vapour, etc. into the atmosphere. Today, it has become one of the major environmental problems faced by us.
The main causes of global warming are :

(i) Use of fossil fuels : One of the primary causes for the increase of greenhouse gases in the atmosphere is the burning of fossil fuels such as petroleum, diesel, kerosene, coal, etc. The use of these fuels in vehicles, factories, homes, etc. results in the release of gases such as carbon dioxide, carbon monoxide, sulphur oxide, etc.

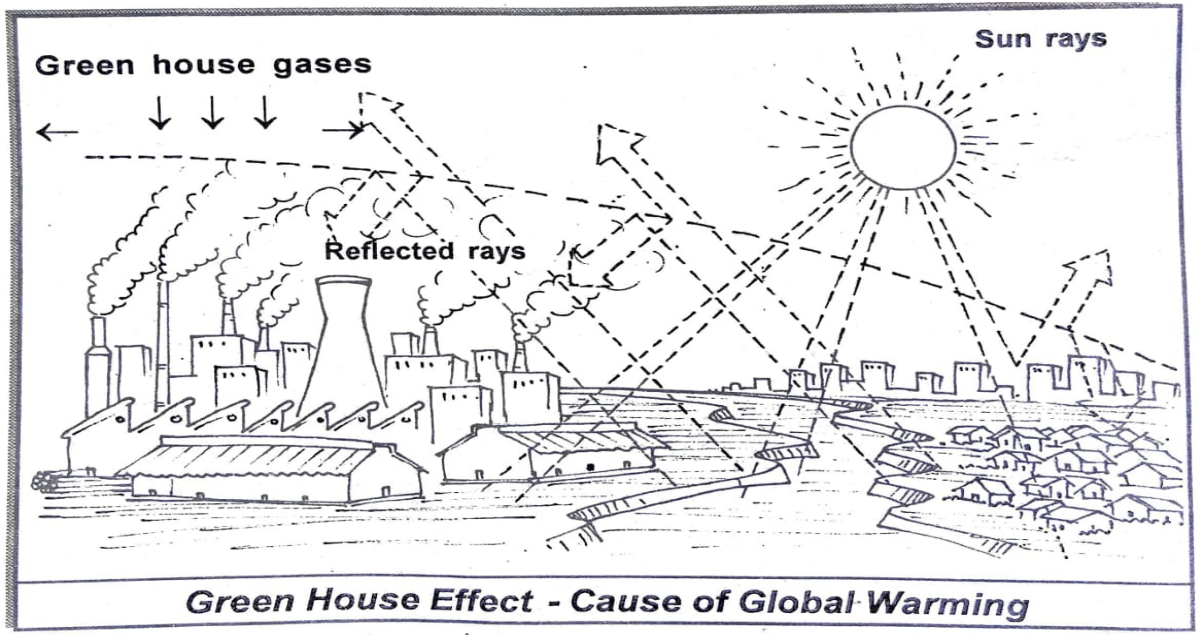
(ii) Deforestation : Rampant deforestation increases the presence of greenhouse gases particularly carbon dioxide. Trees normally absorb the carbon dioxide given out by human beings and convert it into oxygen. But, today the green cover is shrinking at an alarming rate and the population is increasing rapidly leading to great increase in the presence of carbon dioxide in the atmosphere which in turn causes an increase in the temperature of the atmosphere.

(iii) Increased presence of chlorofluorocarbons (CFCs) : As a result of the use of air conditioners, refrigerators, evaporation of industrial solvents, production of plastic foams, aerosols, propellants, etc. the presence of chlorofluorocarbons has increased in the atmosphere. These gases keep the earth warmer and reduce the extent of the ozone layer.

(iv) Increased production of methane : Methane is produced when bacteria breaks down dead matter in moist places that lack oxygen such as swamps, wetlands, etc. Production and use of oil, natural gas and incomplete burning of organic matter are also sources of methane. Decaying of dead animals and dumping of animal and human excreta in the open increase the presence of methane in the atmosphere.

(v) Nitrogen gases : The increased presence of nitrogen dioxide and nitrous oxide has also been responsible for increased global warming. These type of gases are released by aircraft, from burning of biomass and nitrogen rich fuels, from nitrogen fertilizers, etc.

(vi) Volcanic activity : During volcanic eruption many gases are released into the atmosphere. Volcanic activity often leads to an increase in the level of carbon dioxide in the atmosphere. Among the greenhouse gases, carbon dioxide contributes the most to the rise of temperature over the earth.



Green House Effect - Cause of Global Warming

Q14. Give an account of the problems that may occur as a result of global warming.

Ans: The effect of global warming could be multi-dimensional. It may bring drastic changes into the very nature of the climate, which would then affect man, his activities and would have an impact on all the living organisms on earth.

Following are some of the problems that may occur as a result of global warming :
(i) Rise in the sea level : One of the major effects of global warming is that it would cause a rise in the sea level. It is estimated that an increase of global temperature even up to 2°C-3°C would result in the large-scale melting of ice in the polar region causing a rise in the sea level. The rise in the sea level even upto a height of 1 metre would cause the submergence of 5 million sq.km. landmass of the coastal areas and would also greatly affect many oceanic islands, coral islands, delta regions, etc.

(ii) More areas will become arid regions : One of the inevitable results of global warming is that it would lead to more areas becoming arid or having semi-desert conditions. Many organisms of the plant kingdom would not be able to withstand the heat and so would turn into grasslands and the glaciated areas on the mountains would shrink.

(iii) Affect on agriculture : Another important effect of global warming is that it would have adverse affect on agricultural production. Many of the present food crops would not be able to withstand the increased heat and so the agricultural production would come down. This would lead to famine and poverty. Agriculture export would come down. Declining agriculture would result in large-scale migration of people from the rural areas to urban centres, bringing about a number of socio-economic problems.

(iv) Disturbance in ecological balance : There is an ecological balance in nature. When this balance is disturbed by man-made factors such as deforestation, global warming, water pollution, etc. it would lead to several natural calamities. Due to increased heat, certain types of microorganisms would perish. Certain plants would not be able to withstand the increased heat. All these would disturb the existing ecological balance, which in turn would have serious negative repercussions.

(v) Unsteady climate conditions : Another important consequence of global warming is that it would lead to a decline in rain and unsteady climate conditions. Forests and green cover are essential for rain. Increased heat would reduce the extent of green cover which in turn would bring about less rain. The negative impact of less rain is that it would lead to more areas becoming arid low agricultural production, less availability of fresh water, etc.

Q15. Write briefly about the duties of the general people in controlling global warming.

Ans: One of the greatest environmental problems faced by us today is the problem of global warming. Global warming has serious negative repercussions. It would lead to drought conditions, decline in agriculture, ecological imbalance, lack of rain, etc. Therefore, all steps must be taken to reduce the extent of global warming.

Following are some of the duties of the general people in controlling increased global warming.
(i) Avoiding cutting down of trees recklessly.

(ii) Planting more and more trees wherever and whenever possible.

(iii) Using eco-friendly modern gadgets.

(iv) Controlling the high population growth rate.

(v) Reducing the use of gadgets that release chlorofluorocarbons.

(vi) Reducing the use of fossil fuels such as mineral oil, natural gas, etc.

(vii) Increased use of non-conventional sources of energy such as solar, wind and biomass energies.

(viii) Minimising the use of electric bulbs, air conditioners, etc.

(ix) Avoiding burning of plastic and nylon items in the open.

(x) Using public transport system more than personal vehicles.

(xi) Not allowing dead animals and waste materials to decay in the open air as these produce methane.

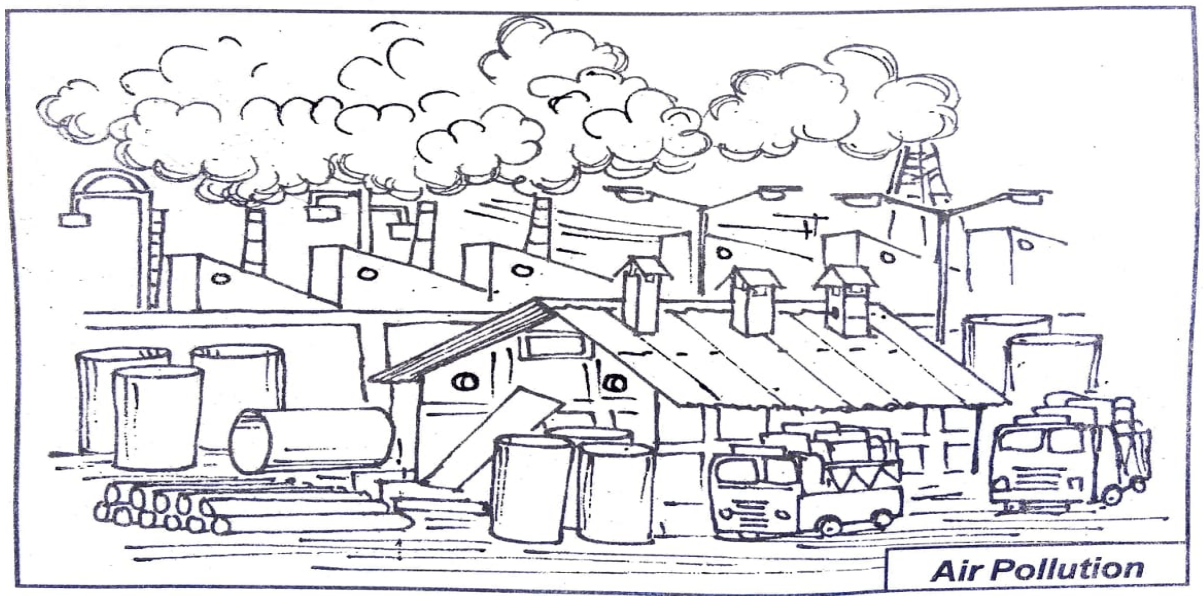
Q16. What do you mean by air pollution? What are the causes of air pollution?

Ans: The mixing of pure air with certain contaminants such as carbon dioxide, carbon monoxide, lead, nitrogen oxides, smoke, sulphur dioxide, etc. which negatively affect the lives of plants, animals and man is termed as air pollution.

The causes of air pollution can be categorised into two groups :

(i) Natural causes of air pollution are volcanic activities, forest fires, biological decay, etc. Radioactive minerals present in the earth's crust also cause certain level of radioactivity in the atmosphere, leading to air pollution.

(ii) Man-made causes : Man-made causes include thermal power plants, industrial units, emissions from vehicles, burning of fossil fuels, etc. Thermal power plants and industrial units consume coal and produce pollutants such as carbon dioxide, sulphur dioxide, etc. Automobiles release gases such as carbon monoxide, nitrogen oxides and hydrocarbons, etc. Rapid expansion of industrial activities, urbanisation, large-scale use of different modes of transport, application of atomic energy, deforestation, etc. are some of the other significant man-made activities which cause air pollution.



Q17. Write the names of some greenhouse gases.

Ans: Some of the main greenhouse gases are :
Carbon dioxide CO_2 methane CH_4 nitrous oxide N_2O, chlorofluorocarbons CFC, water vapour, etc.

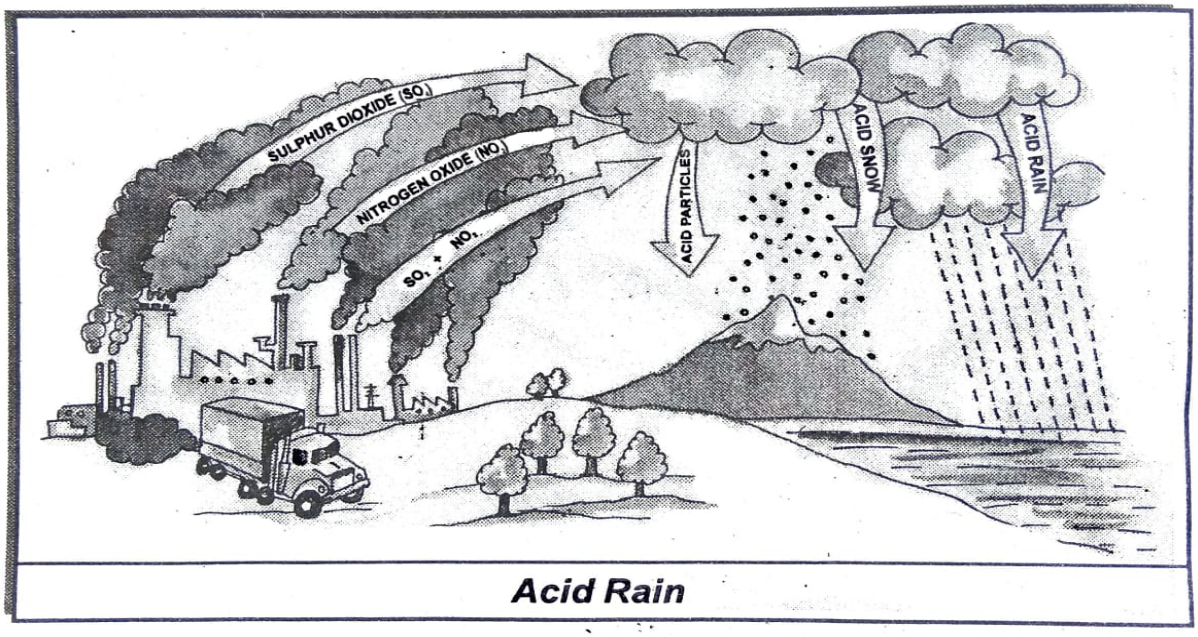
Q18. What kinds of problems may be created by air pollution?

Ans: Air pollution has adverse effects on living organisms and materials. The pollution in air may result in the occurrence of the following problems :
(i) Long exposure to air pollutants (including cigarette smoke) can result in lung cancer, asthma, chronic bronchitis and several other diseases.

(ii) Air pollutants enter plants through stomata, destroy chlorophyll and effect photosynthesis.

(iii) When rain water comes down through the polluted atmosphere, it my become laden with sulphuric acid and

nitric acid. This acid rain may be injurious to plants and animals. It is also harmful for the buildings made of marbles.



Acid Rain

(iv) Air pollutants mixing up with rain can cause high acidity in fresh water water lakes. This adversely effects the aquatic life.

(v) Because of their corrosiveness, particulates can cause damage to exposed surfaces. Presence of sulphur dioxide (SO_2) and moisture can accelerate corrosion of metallic surfaces.

Q19. How is water polluted? How can it harm?

Ans: The deterioration in chemical, physical and biological properties of water is called water pollution. There are various causes which result in the pollution of water. Some of the major reasons of water pollution are:

(i) Pouring of sewage through the drains and sewers into fresh water bodies.

(ii) Letting out industrial wastes containing toxic chemicals, acids, alkalis, metallic salts, phenols, cyanides, ammonia, radioactive substances into water bodies.

(iii) Use of agrochemicals like fertilizers and pesticides which are washed away by rainwater and surface run-off.

(iv) Use of synthetic detergents in washing and cleaning.

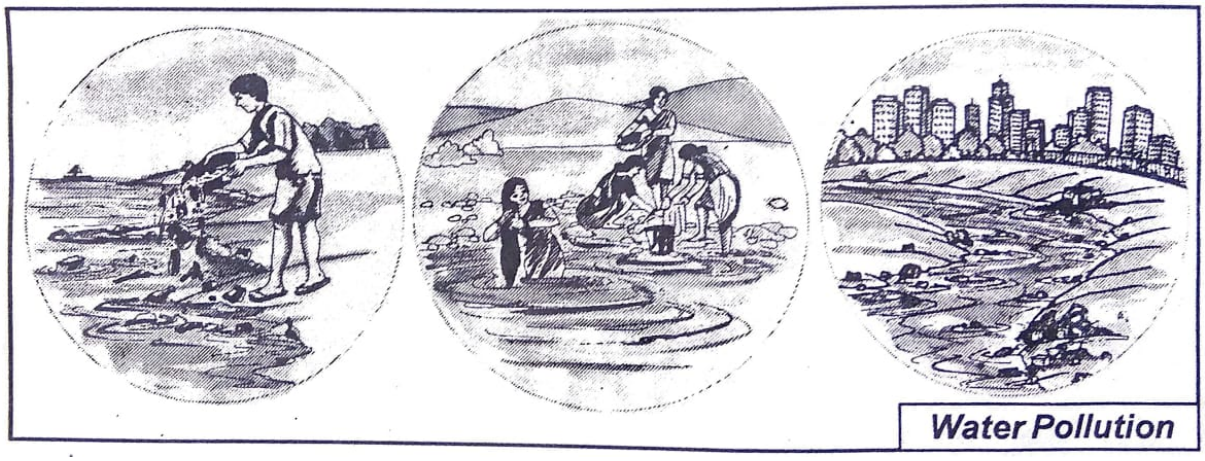
(v) Spillage of oil into seawater during drilling and shipment. The polluted water can harm in several ways. Some of the major effects of water pollution are :

(i) Organic matter which reaches water bodies is decomposed by microorganisms present in water. This results in lowering of the oxygen dissolved in water. Lower dissolved oxygen may be harmful to aquatic animals, especially fish population.
(ii) Water borne diseases like cholera, dysentery, typhoid, jaundice, etc. are spread by water contaminated with sewage.

(iii) Water pollution may reduce the productivity of the soil.

(iv) Pollutants such as heavy metals, pesticides, cyanides and many other organic and inorganic compounds are harmful to aquatic organisms.

(v) Pesticides in drinking water ultimately reach humans and cause various health problems.



Q20. What kinds of steps may be taken by the people for the solution of environmental problems?

Ans: Today, the world is facing a lot of environmental problems such as deforestation, global warming, air pollution, water pollution, soil pollution, noise pollution, environment degradation, etc. The main causes of these problems are high population growth, industrialisation, growth and expansion of towns and cities, increased use of vehicles, use of minerals, burning of fossil fuels, etc. People in general can contribute significantly towards solving many of these environmental problems. Following are some of the major steps that can be taken by the people for the solution of environmental problems:

(i) Control of population growth so that the demand for various resources would remain under control.

(ii) Adopting stringent laws banning cutting of trees.

(iii) Concerted efforts in bringing more areas under green cover or forest cover.

(iv) Less use of chemical fertilizers and pesticides. Encourage the use of organic manure.

(v) More use of non-conventional sources of energy such as solar, wind and bio-mass energies.

(vi) Non-use of non-degradable items like plastic and nylon.

(vii) Recycling of all wastes particularly industrial and urban wastes.

(viii) Not using products that produce chlorofluorocarbons (CFCs) which destroy the ozone layer.

(ix) Reducing dependency on fossil fuel especially coal and oil.
(x) Saving electricity by switching it off when not required.

(xi) Adopting and popularising renewable energy sources.

(xii) Banning industrial units from dumping their wastes into rivers.