

CHAPTER

1

THE MULTIDISCIPLINARY OF ENVIRONMENTAL STUDIES

IMPORTANT TERMS

- ❖ **Gene** : Hereditary element which is obtained from father or mother and determines a specific characteristic in an organism.
- ❖ **Environment** : Every thing, incident or power in our surrounding which affects us.
- ❖ **Sustainable Development** : The development which increases the living standard of present and future human beings by using minimum natural resources without harming our environment.
- ❖ **BNHS** : Bombay Natural History Society.
- ❖ **WWF** : Worldwide Fund for Nature (also called World Wildlife Fund)
- ❖ **CSE** : Centre for Science and Environment, New Delhi.
- ❖ **BVIEER** : Bhartiya Vidyapeeth Institute of Environment Education and Research, Pune.
- ❖ **UKSN** : Uttarkhand Sewa Nidhi, Almora.
- ❖ **NGOs** : Non-government organisations.
- ❖ **WHO** : World Health Organisation, Geneva (Switzerland)
- ❖ **UNDP** : United Nations Development Programme.
- ❖ **UNESCO** : United Nations Educational, Scientific and Cultural Organisation, Nairobi (Kenya)
- ❖ **IUCN** : International Union for Conservation of Nature and Natural Resources, Morges (Switzerland)
- ❖ **UNFPA** : United Nations Fund for Population Activities.

INTRODUCING THE CHAPTER

- ❖ **Introduction** : Main aim of Environmental Studies have been described in this section so that an awareness can be created among students and people.
- ❖ **Definition of Environment** : Some important definitions have been given in this section so as to explain the meaning of environment.
- ❖ **Components of Environment** : In this section, environment has been classified into various components. Their interaction has also been explained.
- ❖ **Multidisciplinary Nature of Environment** : The relationship of environmental studies with various fields of education has been explained. Knowledge of almost all the subjects is required to understand it.
- ❖ **Scope of Environmental Studies** : It has been explained that environmental studies has a wide scope. Students can make it a career. They may get the opportunity to serve in almost every field. Environmental experts are needed in every field.

- ❖ **Importance of Environmental Studies :** This helps us to understand our surroundings which is very important for our life. A scientific thinking is developed in us and we come to know the reasons of environmental degradation. Then we try to overcome these factors to improve our environment.
- ❖ **Objectives of Environmental Studies :** Main objectives of this are to become aware of our surroundings, our social responsibilities, to develop scientific attitude, constructive thinking, love for Nature, improvement in quality of life, improvement in our environment and to become efficient by educating ourselves about the environment.
- ❖ **Methods to Create Awareness :** It has been described in this section how we can create awareness among people toward our environment along with studies in environment so that entire humanity work together to improve the environment which is the basis of our life.
- ❖ **National and International Environmental Organisation :** This section deals with Government and Non-government national and international organisations which have been helping in the improvement of our environment in creating awareness among people, in educating people and in giving necessary support.
- ❖ **People in Environment :** This section deals with achievements of people at national and international level who have worked or have been working in the field of environment.

A. Introduction - Main Aim of Environmental Studies

The world environment is moving fast towards destruction due to over exploitation of natural resources by the developed nations in the name of development. Ever increasing population of developing countries have also contributed towards this destruction. Presently, if the entire world is worried over a single problem that is the destruction of our environment. There is no immediate solution of this problem in near future because common people are not aware of it and the results of environmental degradation are before us— floods, drought, earthquakes, pollution, acid rain, depletion of ozone layer, global warming, melting of polar ice caps and glaciers, extinction of species, deforestation, etc. Now the entire mankind is near destruction.

Keeping in view the seriousness of the problem and to create awareness among the people, the subject environmental studies has been made compulsory. Environmental studies will try to lead the students towards positive action to improve the environment.

The main aims or reasons to study the state of environment are as follows :

1. The study will analyse the factors that are responsible for environmental degradation.
2. The students will become aware of it and will create awareness among the people.
3. After becoming aware of it, they will not take actions that further deteriorate the environment, eg., using minimum natural resources, to produce less children.
4. When they will go into the society after completing their studies they will make a movement by organising the people against environmental degradation that will compel the governments to take necessary positive steps towards it.
5. They will help to prevent and decrease the unnecessary consumerism and use of natural resources so that future generations may take a sigh of relief on this earth and the present generation may feel sorry for their mistakes.

QUESTION FOR YOU ?

Q. What is the aim of environmental studies ?

or

What is the aim of making the subject of environmental studies compulsory in the colleges ?

(5)

Hint : Its answer is the description of section A.

B. Definition of Environment

Environment literally means “surroundings”. It is the sum total of external materials, both living and non-living, events and forces of nature which influence an organism without becoming its intrinsic component.”

The important definitions of environment are as follows :

1. Boring : “A person’s environment consists of the sum total of the stimulation which he receives from his conception until his death.”

2. Anastasi : “The environment is everything that affects the individuals except his genes.”

3. Douglass and Holland : “The term **environment** is used to describe in the aggregate, all the external forces, influences and conditions, which affect the life, nature, behaviour and the growth, development and maturity of living organisms.”

Environment includes various types of forces, eg., physical, intellectual, social, moral, economic, political, cultural and emotional. A suitable environment favours the development of innate abilities of the child.

QUESTION FOR YOU ?

Q. What is the meaning of environment ? Write its definition.

(5)

Hint : Its answer is the description of section B.

C. Components of Environment

The concept of environment is very wide. Even then it can be classified broadly in two main components : (1) Physical or abiotic, and (2) Biological or biotic (living). Various factors affecting the humans can be classified as follows :

1. Physical components : They include : (a) *Climatic factors*, eg., light, temperature, rainfall, humidity of air, atmospheric gases, wind, etc. (b) *Topographic factors*, eg., height from sea level, direction of mountains and valleys, slope of hills and exposure to sunlight, distance from equator, distance from sea, etc. (c) *Edaphic or Soil factors*, e.g., fertility, colour, quality, organic matter, etc.

2. Biological Components : They include vegetation, animals and microorganisms (Bacteria, Fungi, Actinomycetes), which affect the human beings.

3. Social Components : They include population, social system, social changes and social relationships, urbanisation, etc.

4. Cultural components : They include political, economic, moral values of life, religion, industries, etc.

5. Psychological components : They include life realities, self-concepts, level of desires, life space, neighbours, goals of life, environment of the work place, work satisfaction, etc.

Interrelationships Between Environmental Components

At any moment under natural conditions, the life of an organism is affected by the sum total of all environmental factors and not by any individual factor. All the factors are so interrelated that change in one factor may affect the others, eg., increase in temperature decreases humidity. Therefore, all components together affect an organism, not isolatedly. It is difficult to understand the nature of effect of a single component. Even then to understand the mechanism of environmental influence, it is essential to study the effect of each factor separately. The following **Figure 1.1.** shows the interrelationships between five principal components of environment.

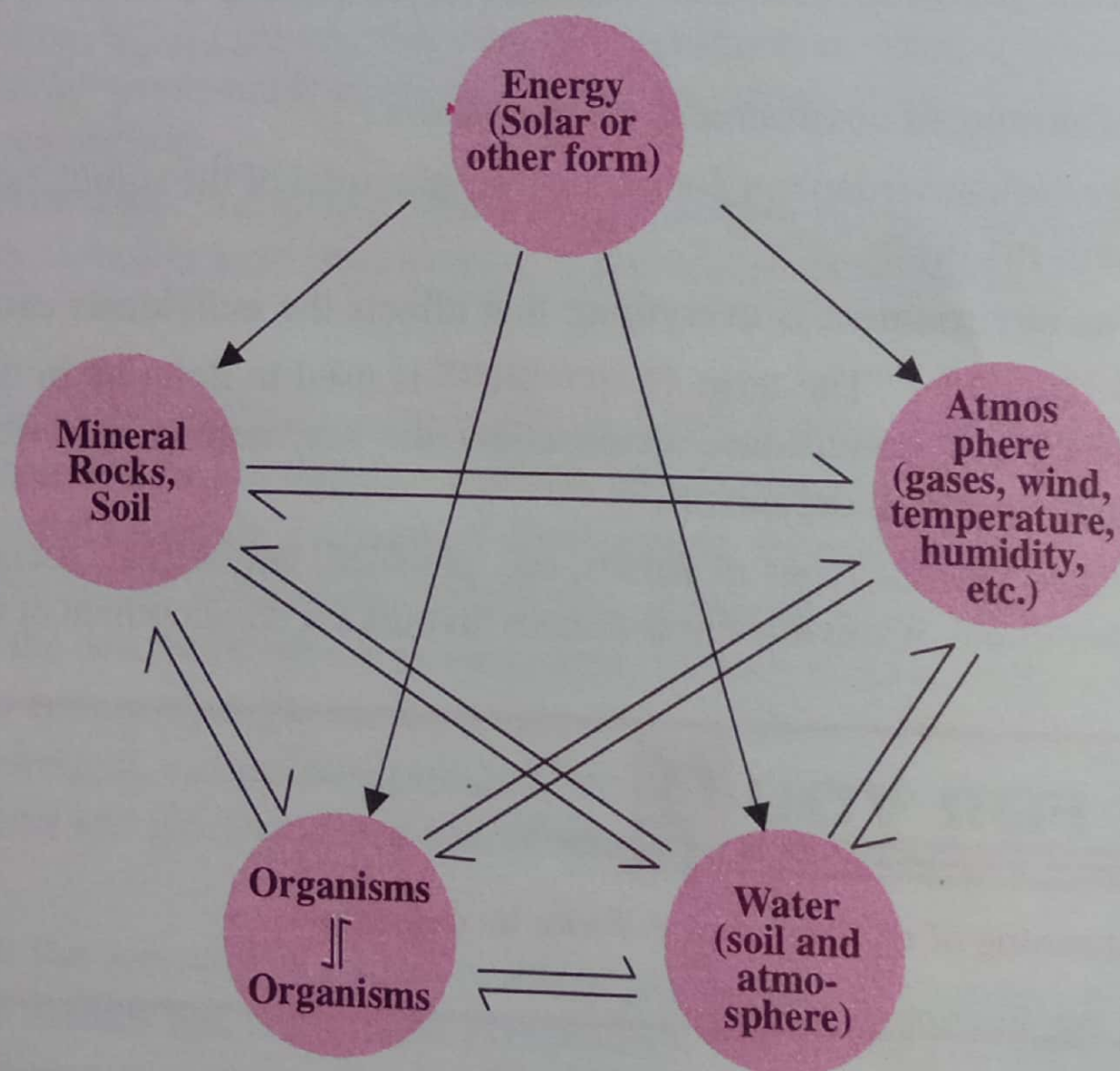


Fig. 1.1. Diagram showing interrelationships between principal components of the environment

QUESTIONS FOR YOU ?

Q.1. Describe the components of environment. Also describe their interrelationships. (5)

Hint : Its answer is the description of section C.

Q.2. What is the meaning and definition of environment ? Describe its various components and their interrelationships. (10)

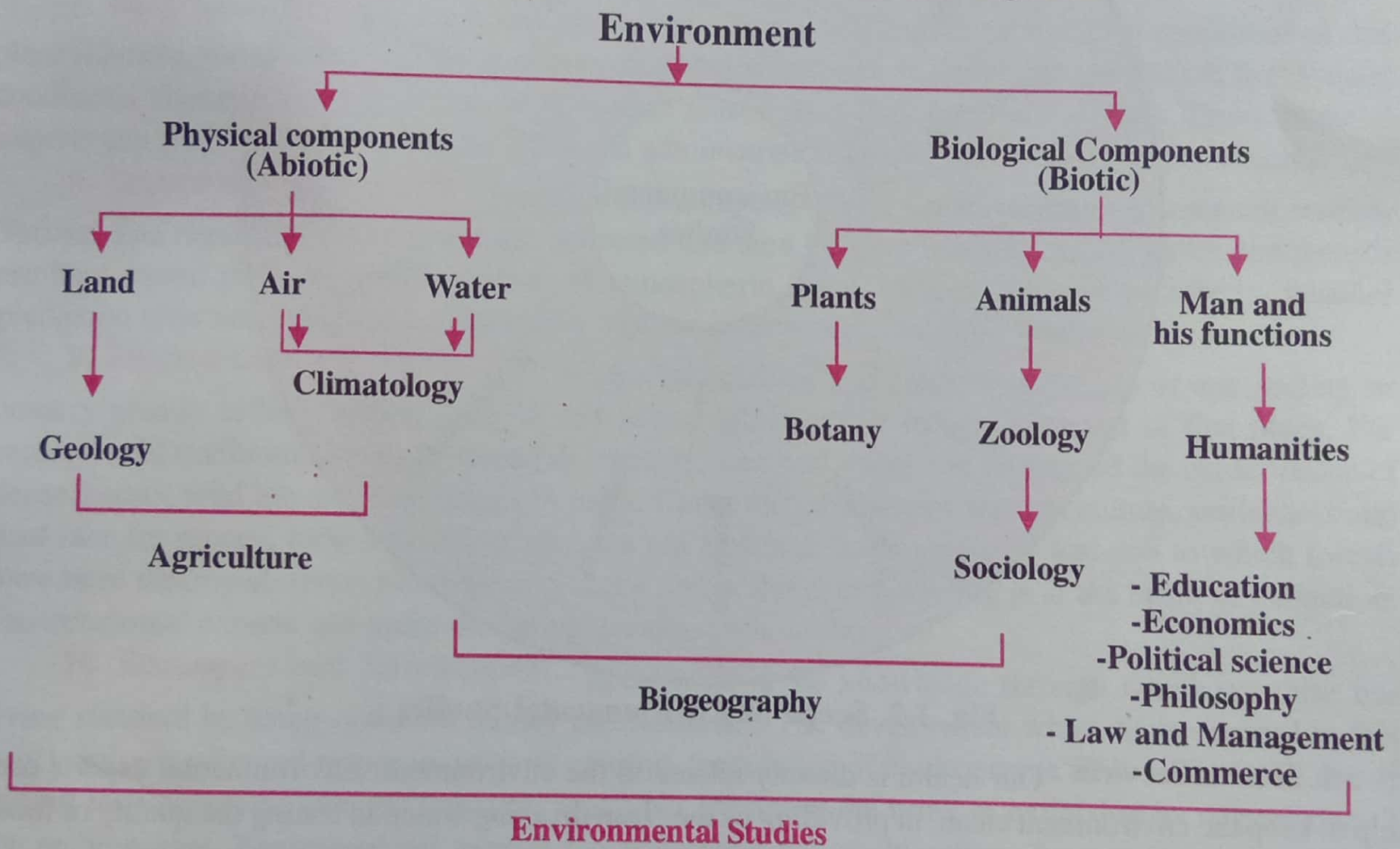
Hint : Its answer is the description of section B and C.

D. Multi-Disciplinary Nature of Environment Studies

The area of environmental studies is very large because an organism is affected by everything (living or non-living), force or a change. It also includes social aspects of environment. Almost all the subjects have contributed towards understanding our environment, eg. physics, chemistry, biology, geography, climatology (meteorology), geology, economics, engineering, statistics, computer science, philosophy, law, management, etc.

Environmental studies is an applied science because it tries to find the solutions of problems which we are facing today. For example, how to sustain the human civilisation on earth by using limited earth resources, how to make the agriculture sustainable, how to manage the water resources, how to prevent and control pollution, how to obtain the sustainable economic growth, etc.

Different components of the environment and to understand them with the help of various fields of education and their interrelationships have been described in the following chart :



Above chart is a proof of the fact that environment is related to physics, chemistry, biology, social studies, agriculture, geography, geology, etc. Therefore, environmental studies is multidisciplinary in nature.

QUESTION FOR YOU ?

Q. Explain the multidisciplinary nature of environmental studies.

(5)

Hint: Its answer is the description of section D.

E. Scope of Environmental Education.

This emerging new science has a very wide scope. The doors of every field are open for the specialists in this subject. As every industry is required to maintain the minimum quality of environment, they need the environmental specialists or experts who can help them in this work. The important scopes of environmental studies have been shown in the **Figure. 1.2** :

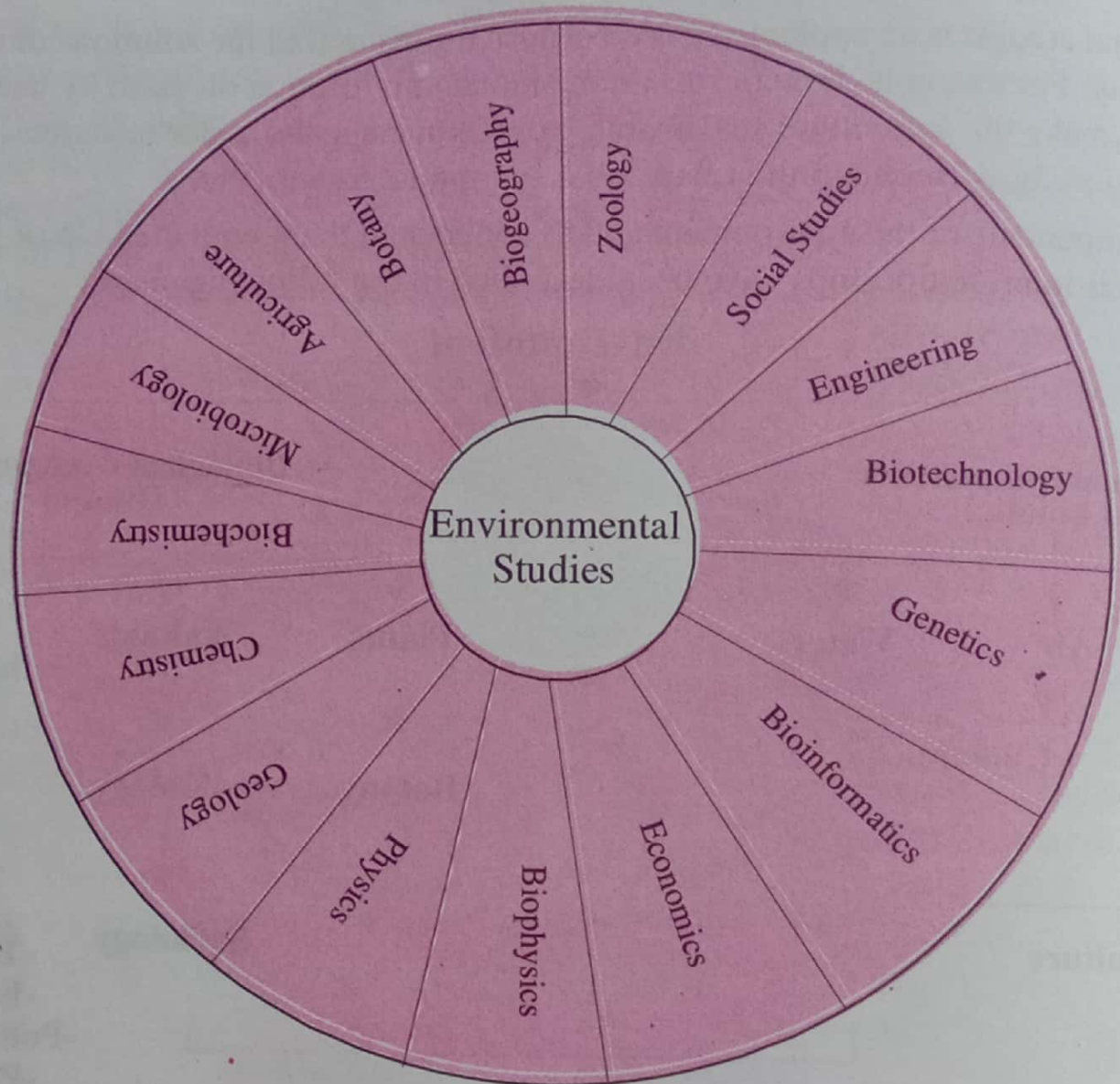


Fig. 1.2. Scope of Environmental Studies

1. Health Services : Our health is directly related to the environment. Environmental experts can help to keep the environment clean, in providing us the clean drinking water, in testing the quality of food to be eaten, etc.

2. Pollution Control : Environmental experts find the factors which pollute our environment, eg., many items used daily in our homes (soaps, phenyl, cosmetics, electronic appliances, kitchen gas, etc.) spread indoor pollution. After knowing about their harmful effects, they can create awareness among people, society and governments regarding this.

3. Agriculture and Forestry : In the field of agriculture, environmental experts can study the harmful effects of chemicals, fertilizers, etc. on our environment and human health and can also suggest the use of alternatives like organic farming, vermiculture, use of biodegradable pesticides, etc.

Environmental experts are also needed in forestry. Forests are directly related to our global environment. A healthy environment and healthy economy need a minimum of 33% forest cover which has been decreased to about 11% in India and only about 2% in Punjab.

4. Optimum Land use and Fertility : Environmental experts can help in conservation of land. They find the factors that are responsible for soil erosion and decrease of its fertility, eg., shortage of

organic matter, imbalanced and overuse of chemical fertilizers, improper use of irrigation water, etc. Soil conservation in watershed areas of rivers by afforestation and reforestation will decrease the soil erosion, increase the soil capacity to absorb water, decrease floods and droughts, and increase in underground water.

5. Quality control of products and their commercialisation : With awareness among people towards environment, now the quality of various products is tested so that their use may not deteriorate environment and health. Various trademarks of their quality are used for commercialisation, eg., ISO and ISI. Environmental experts are needed to test their quality.

6. Meteorology : Meteorologists are environmental specialists who make predictions after studying the atmosphere and oceans. They identify what type of effect is caused on environment by various types of pollutants, eg., thinning of ozone layer, increase in concentration of pollutant gases that cause global warming, acid rain, etc.

7. Biogeography : Vegetation and animal life of any place depend on the local conditions of that place (climate, soil quality, rainfall, temperature, distance from sea and from equator, etc). If the climatic conditions change due to pollution or any other reason then they must affect them. Environmental experts can find the causes of it and guide the administration to take necessary control measures.

8. Computer and Statistics : Statistics and computer play a great role in environmental studies. Various data regarding environment are collected and then they are analysed by computer and records are kept stored in it, eg., concentration of atmospheric gases, concentration of pollutants, weather prediction after analysing data collected by various instruments, monsoon predictions, etc.

9. Environment and Social studies : Social customs and cultures of people of any society or country greatly influence their thought and action which affect the environment of that place. For example, old traditions like worshipping of trees, animals and rivers had influenced the conservation of dense forests, wild life and clean rivers in India. Under the influence of western culture, selfishness and mad race for money, industrialisation, etc., the old traditions have gradually lost due to which forests have been destroyed, rivers have become dried and polluted and wildlife is at the brink of extinction. Environmental experts can make the people aware of this reality.

10. Economics and Development : Economics is the knowledge through which we raise our living standard by using optimum money and resources. The development which have occurred in this way is by using limited resources of earth causing degradation of environment. This mad race of use of natural resources have brought humanity and other species at the brink of extinction by degradation of the environment. Environmental experts has compelled the world nations by awaring them of these facts to think about the *sustainable development*. Sustainable development is the development which makes sustainable use of earth resources without degradation of environment. *Environmental economics* is a new subject which plays a great role in planning and implementation of developmental projects.

11. Emerging New Fields of Environmental Studies : The importance of environmental studies has increased so much that many new specialised fields of study are emerging that provide a great scope to the students of this field, eg., *environmental protection, environmental management, environmental laws, environmental engineering*, etc.

At the political and the administrative level also, whichever new policies or developmental projects are planned, environmental experts are must included in those committees.

QUESTION FOR YOU ?

Q. Describe the scope of environmental studies in detail.

(10)

Hint : Its answer is the description of section E.

F. Importance of Environmental Education

Environmental belongs to us all. Every one is affected by the environment and we also influence the environment irrespective of our age and occupation. For example, a person may make the atmosphere of a gathering more happy whereas another person may upset the atmosphere of a gathering by his abnormal behaviour. The importance of environmental studies can be described as follows :

1. Environmental studies is important for development and welfare of human society.
2. With the environmental studies we can save the plant and animal species from extinction by identifying the reasons for their extinction.
3. We can find the solution of various problems facing us today with the help of these studies, eg., pollution monster, exploitation of natural resources and unsustainable development.
4. Overuse of agrochemicals has deteriorated the environment and has disturbed the ecological balance. With the help of environmental studies we can find out the method to restore this balance.
5. In this age of science and technology, it is the need of hour to discover eco-friendly technology or eco-technology which promotes blending of traditional knowledge and modern technology. It can be achieved only through deep environmental studies.
6. Environmental education gives us knowledge how man can derive benefits from the environment without destroying it.
7. Environmental education trains us to conserve our fast depleting resources.
8. It helps us to understand various types of food chains in the ecosystem and ecological balance in nature.
9. It draws our attention towards population explosion, degradation of natural resources and environmental pollution and the methods of solving such problems.
10. It helps us to understand and to solve the problems of soil erosion, water crisis, natural disasters, etc.
11. Environmental education helps us to estimate its value, measures conducive to environmental protection and in understanding the interdependence of nature and man.
12. It creates an increased civil sense and makes us aware of the economic, political and ecological interdependence of the modern world.
13. Environment has been a source of happiness for man and time has come to preserve this happiness for man by imparting environmental education.

QUESTION FOR YOU ?

Q. What is the importance of environmental education ?

Ans. Its answer is the description of section F.

10

G. Objectives of Environmental Education

The main objective of environmental education is to create awareness among the students by educating them about the environment and who in turn will make our society, governments and the entire world aware of it. Because environment belongs to us all and we all are responsible to improve it. Main objectives of environmental education are as follows :

1. Awareness : We get information about our surrounding environment through environmental education. After getting aware of it, we can save it from degradation and can create awareness about it among others.

2. Realisation of Social Responsibilities : Its education makes us to realise that we ourselves are responsible for its degradation or its improvement. Whatever we shall do, we must think that our action may not have any undesirable effect on environment or society.

3. Scientific Attitude : Environmental education is a science that is related to almost all the subjects we study. Its education develops scientific attitude in us and we learn about the other subjects. Then we think from the scientific angle to solve any problem and try to find out its answer.

4. Constructive Thinking : When we think about the improvement of our environment we develop a constructive thinking which helps us to make a good citizen. Then we will try to improve all the social illnesses as they are also the part of our environment which influence the whole society.

5. Love for Mother Nature : We learn about nature and its ways of working from environmental studies. We will develop love for various natural gifts which will provide happiness and satisfaction to our minds, eg., graceful forests and wildlife, lush green mountains, clear water fountains, lakes, rivers, colourful birds, butterflies, greenery, colourful flowers, etc. Then we will not do any such action which may destroy or pollute them.

6. Improvement in Quality of Life : Clean air, clean water, pure food and healthy body improve the quality of life. The quality of the above natural gifts has been decreased in the last few decades. The main reason of it is population explosion, exploitation of natural resources (especially by rich countries and by rich segments of our society), unsustainable development, unnecessary consumerism, unnatural living conditions and use of unnatural articles. We can come closer to nature by solving all these problems and can improve the quality of our life.

7. Prevention of Pollution : We all are affected by pollution of air, water and soil. Therefore our main objective is to prevent the pollution after environmental education.

8. Protection from Natural Disasters : Most of natural disasters like floods, droughts, landslides, etc., has been increased due to human activities. We can protect ourselves by removing the causes of them.

9. Sense of Conservation of Natural Resources : Most of the natural resources are unlimited provided if we use them judiciously. Their judicious use will not cause pollution. We need to develop a sense of judicious use of such things in ourselves which are obtained from natural resources, eg., fresh water, articles obtained from forests and wildlife.

10. Educating Ourselves and Obtaining Efficiency : We need to study our environment deeply and make ourselves efficient and then serve our society and country. We will get happiness as well as satisfaction by so doing. Our main objective should be welfare of all.

QUESTIONS FOR YOU ?

Q.1. Write any 5 objectives of environmental education. (5)

Hint. Its answer is description of section G (1 to 5)

Q.2. Describe main objectives of environmental education. (10)

Hint : Its answer is description of section G (1 to 10)

H. Need for Public Awareness Regarding Environment

I. Need for Public Awareness

Environmental calamities during the fifties and sixties in developed countries generated widespread awareness about the dangers of environmental pollution. Environmental degradation has continued unchecked to the extent that only one-third of the earth is now safe for life. The air we breathe is polluted with toxic gases.

The water is either scarce or is contaminated causing killer diseases among the poor who constitute 80% of the world population. The earth is constantly burdened with increasing population load – it has crossed 6 billion mark in 1999. The earth's resources are eaten away by just 20% of the world's population, even though there is **only one earth**.

“India's greatest ‘pollutant’ is its ever expanding population. It has eaten out forests, degraded our land and polluted our water systems. Thus, the first task of public awareness is that every couple must voluntarily offer for sterilisation at the time of birth of second child. A complete ban on felling of trees for next 10-20 years should be helpful to maintain our dwindling forests. Tree plantation should be an integral part of school and college education. There should be alternatives on disposal of dead by burning and dumping into rivers”. The above measures were suggested by **Khushwant Singh** in **The Hindustan Times** in his Saturday column. It is the prevention of environmental degradation that must become a part of all our lives as prevention is better than cure. Individually we can reduce wastage of natural resources. We should keep a close watch in our neighbourhood and inform the Government authorities about the source of pollution and degradation of environment.

Mass media such as newspapers, radio and television strongly influence public opinion. We can join NGOs that support natural conservation and along with press and media can influence politicians to make green policies to save the ‘Mother Nature’

II. Methods to Create Awareness

1. T.V., radio, etc. can help to create awareness among people.
2. Through newspapers, magazines, various articles and posters.
3. Through lectures, seminars, paintings and slogans at the level of schools and colleges.
4. Rallies and processions by displaying posters can be held.
5. Awareness among people can be created by holding exhibitions, street plays, debates, poster competitions, folk dances, public meetings, etc.
6. Various environmental days should be celebrated enthusiastically in schools, colleges, mohallas, etc.
7. After studying about environment, students can motivate people of their home, their associates, of mohallas, their relatives, etc.
8. Students can join eco-clubs or make their own clubs with the help of like-minded friends to

create awareness among people.

9. You should participate enthusiastically in local activities like planting of trees, motivating people to use cloth bags instead of plastic bags, proper management of solid wastes, etc.
10. Government should strictly ban the use of speakers, pressure horns, noisy music programmes, fire crackers, etc. It is also the duty of people to inform administrative authorities about these activities or should themselves urge them not to do so.
11. Administration should honour the persons or give awards to them in public meetings who are working in the environmental field.
12. Students should be encouraged to study further and make their careers in the field of environment.
13. Children should be told about our ancient traditions and religious ceremonies like worshipping of trees, animals and rivers, etc. so as to motivate them for their conservation.
14. To keep our environment neat and clean, we should leave our bad habits like smoking, urination or defecation at public places, spitting, tobacco chewing, throwing solid wastes on streets or roads, etc. and the others should also be persuaded to do so.

QUESTIONS FOR YOU ?

Q.1. What is the need of public awareness regarding environment ? (5)

Hint : Its answer is the description of section H-I.

Q.2. How can the awareness be created among people towards our environment ? (5)

Hint : Its answer is the description of section H-II.

Q.3. What is the need of public awareness regarding environment ? What are the methods to create awareness ? (10)

Hint : Its answer is the description of section H-I and H-II.

I. National Environmental Institutions.

I. Institutions in Environment

There are a number of governmental as well as non-governmental organisations (NGOs), agencies and programmes engaged in environmental studies and environmental protection in our country. A number of non-governmental, voluntary organisations have been doing good job in this area.

A brief classification of some important organisations associated with or assisted by Ministry of Environmental and Forests is as follows.

1. The Bombay Natural History Society (BNHS), Mumbai : BNHS, an NGO, established as a small society of six members in 1883 (group of *shikaris* and people from all walks of life) has developed into an important research organisation and influences conservation policy in the country. It is India's oldest conservation research based NGO concerned with preservation of species and ecosystems. It publishes a popular magazine *Hornbill* and internationally well known *Journal on Natural History*. Book publications of BNHS include Dr. Salim Ali's *Handbook on Birds*, SH Prater's *Book of Indian Mammals*, JC Daniel's *Book of Indian Reptiles* and PV Bole's *Book of Indian Trees*. The BNHS has helped the Government to frame wildlife-related laws and has launched 'Save the

Silent Valley' campaign.

2. **World -Wide Fund for Nature-India (WWF-I), New Delhi:** It was established in 1969 in Mumbai and then shifted to N.Delhi. It has several branch offices all over India. Apart from wildlife education and awareness, it runs several programmes, eg, runs Nature Clubs of India, programme for school children. It is a think-tank and lobby force behind environmental and developmental issues.

3. **Centre for Science and Environment (CSE), New Delhi:** The main activities of CSE include organising campaigns, holding workshops, conferences and seminars, and publication of environment-related books, posters, video films etc. It has published a major document on the *State of India's Environment* as a citizen's Report on the Environment, the first of its kind. It also publishes a popular science and environment fortnightly magazine '*Down to Earth*'.

4. **CPR Environmental Education Centre, Madras:** CPR-CEE, setup in 1988, focuses attention on NGOs, teachers, youth, women and children to promote conservation of nature and natural resources. Its programmes aim at to spread environmental awareness including components on wildlife and biodiversity issues. It also produces many publications.

5. **Centre for Environment Education (CEE), Ahmedabad:** The CEE, established in 1989, has several programmes on the environment and produces various types of educational material. Training in Environment Education (TEE) programme of CEE has trained many environmental educators.

6. **Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER), Pune:** BVIEER is a part of Bharati Vidyapeeth Deemed University. It Conducts programmes in Environmental sciences at Bachelor, Master and PhD level and an innovative Diploma in Environmental Education for in-service teachers. A large outreach programme covering over 435 schools has been implemented in which it trains teachers and conducts fortnightly Environment Education Programmes. A major focus of its research initiatives is Biodiversity conservation. It develops a large amount of innovative environment educational (EE) material for a variety of target groups and also develops highly locale-specific low-cost Interpretation Centres for natural and architectural sites. BVIEER has developed several EE aids, a teacher's handbook for school curriculum, a textbook on environment for U.G.C for the compulsory undergraduate course, and CD-ROM on India's biodiversity by its director. Its special feature is that it conducts environmental education from the primary school level to the post-graduate level.

7. **Uttarkhand Seva Nidhi (UKSN), Almora:** UKSN is a Nodal Agency that gives financial support to needful NGOs for their environment-related activities. Its environment education programme covers about 500 schools and it organises and trains school teachers to use its locale-specific Environment Education Workbook Programme. Its main target is sustainable use of resources at the village level.

8. **Kalpavriksh, Pune:** This NGO (initially Delhi-based) is active in several parts of India. Main fields of work of Kalpavriksh are : (i) education and awareness, (ii) investigation and research, (iii) direct action and lobbying, and (iv) litigation with regard to environment and development issues. Its main activities are—talks and audio-visuals in schools and colleges, nature walks and outstation camps, organising student-led street demonstrations, pushing for consumer awareness regarding organic food, handling green alerts, press statements, and meeting with city administrators. It prepares site-specific environmental manuals for school teachers. It has contributed towards developing India's National Biodiversity Strategy and Action Plan in 2003.

J. International Environmental Institutions

1. World Wildlife Fund (WWF) : The aim of this international institute established in 1961 is the protection of wildlife and its development. Keeping in view the importance of forests, they have also been included in its jurisdiction. Tiger project in India (1972) has been successfully launched by it.

2. World Health Organisation (WHO) : The main aim of this institute established on July 22, 1946 is to take care of the health of people all over the world. The head office of it is in Geneva (Switzerland). Its main functions include eradication of fatal diseases of the world and provision of food grains and essential nutrients to the people of world.

3. Food and Agriculture Organisation (FAO) : The head office of the institute established on October 16, 1945 is situated in Rome (Italy). Main functions of this institute is to solve the food grain problem at international level and to provide food grains to needy countries.

4. United Nations Development Programme (UNDP) : It helps the needful countries economically in launching the projects of national importance or helps in getting money according to their needs. This largest institute of UNO at the international level provides help to about 150 countries of the world.

5. United Nations Educational, Scientific and Cultural Organisation (UNESCO) : Established by UNO in 1972 (Head office, Nairobi, Kenya), it helps in launching environmental projects by various countries at the international level or guides them in this direction.

6. International Union for Conservation of Nature and Natural Resources (IUCN) : This independent world level institute was established in 1958. The main aim of it is the conservation of natural balance and of natural resources of the world.

7. United Nations Fund for Population Activities (UNFPA) : This institute finances countries of the world to solve the problem of family welfare. This institute helps the needy countries for educational programmes along with the prevention of population increase.

QUESTION FOR YOU ?

Q. Write about 5 national institutes / organisations and 5 international organisations involved in the field of environment. (10)

Hint : Its answer is the description of section I-(1 to 5) and section J-(1 to 5).

K. World People in Environment

Internationally Known Contributors: Several internationally known environmental thinkers have made landmark contributions, eg, Charles Darwin, Ralph Emerson, Henry Thoreau, John Muir, Aldo Leopold, Rachel Carson and E.O. Wilson. Each of these thinkers looked at the environment from a completely different angle. Their contribution can be listed as follows:-

- (1) Charles Darwin (1809-1882A.D.):** Charles Darwin, an English naturalist, made on extensive study of nature for over 20 years, especially in 1831-1836 when he went on a voyage on the famous ship "H.M.S. Beagle" exploring south America, the Galapagos islands and other islands. His book '*Origin of Species*' (1859) brought to light the close relationship between habitat and species, and the relationship between living and extinct animals. It brought about a new way of thinking about man's relationship with other species that was based on evolution. He gave the idea of struggle for existence within all the populations

due to continued reproductive pressure and limited resources and that all organisms, including humans, are modified descendents of previously existing forms of life. Alfred Wallace also came to the same conclusions during his work.

- (2) **Ralph Emerson:** He warned against the dangers of commerce to our environment way back in 1840s.
- (3) **Henry Thoreau:** He lived in the wilderness for a year. In 1860s, he wrote that the wilderness should be preserved. He felt that most people did not care for nature and would sell it off for merely a small sum of money.
- (4) **John Muir:** He is known for saving the great ancient sequoia (redwood) trees in California's forests. He founded the Sierra Club, which is a major conservation NGO in the U.S.A.
- (5) **Aldo Leopold:** He was a forest official in the US in the 1920s. He designed the early policies on wilderness conservation and wildlife management. Aldo Leopold (1949) stated, "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."
- (6) **Rachel Carson:** In the 1960s, she published several articles that caused immediate worldwide concern on the effects of pesticides on nature and mankind. She wrote a famous book called *Silent Spring* that led to a change in Government policy and public awareness.
- (7) **Edward Goldsmith:** He ranks among those pioneer pragmatic thinkers of the world who had anticipated mankind's physical and spiritual devastation, with the start of economic development in the mid of 20th century. He had begun expressing his views in the periodical 'Ecologist' in 1969. He was accorded general recognition through his book, 'Blueprints for Survival' in 1972. It was translated into seventeen languages and it caused the formation of the first Green party in England. On the persuasion of Jayaprakash Narayan, he stayed in India during 1974-75 and studied Gandhian philosophy. Then he wrote the famous treatise "The Social and Ecological Effects of Large Dams" with the co-operation of his colleagues working in the publication of 'Ecologist'. As a result mighty movements have been launched in several parts of the world against constructing giant dams.
- (8) **E.O. Wilson :** He coined the term 'biodiversity' in 1985 as a contraction of 'biological diversity' and is known as 'Father of biodiversity'. He is an entomologist who envisioned that biodiversity was a key to human survival on Earth. He wrote 'Diversity of Life' in 1993, which was awarded a prize for the best book published on environmental issues. His writings brought to light the risks to mankind due to man-made disturbances in natural ecosystems that are leading to the rapid extinction of species at the global level.

L. Indian Contributors Towards Environment

The environmental history in our country has been shaped by several instrumental individuals including environmentalists, scientists, administrators, educationists, legal experts and journalists. Some of the well-known names in the last century are as follows :

- (1) **Dr. Salim Ali :** He was a great Indian ornithologist and was associated with the Bombay Natural History Society (BNHS). He also wrote several great books including the famous 'Books of Indian Birds' He also wrote his autobiography 'Fall of a Sparrow'. Every nature enthusiast must read this book. He was our country's leading conservation scientist

who has influenced environmental policies in our country for 50 years.

- (2) **Indira Gandhi** : She as PM played very significant role in the preservation of India's Wildlife. During her tenure as PM, the network of Protected Areas (PAs) grew from 65 to 298 in number. The Wildlife Protection Act was formulated and the Indian Board for Wildlife was extremely active as she personally chaired all its meetings. India became major player in CITES and other International Environmental Treaties and Accords during her tenure. Conservation actions of BNHS were frequently initiated by the Government due to her goodwill.
- (3) **S.P. Godrej**: He was one of India's greatest supporters of wildlife conservation and nature awareness programmes. He received 10 awards for his conservation activities between 1975 and 1999. He was awarded the Padma Bhushan in 1999. His friendship with people in power and commitment for conservation have helped him to play a major advocacy role for wildlife in India.
- (4) **M.S. Swaminathan**: He is one of India's foremost agricultural scientists who has played a major role in the Green Revolution in India. He has also been concerned with various aspects of biodiversity conservation both of cultivars and wild biodiversity. He has founded the MS Swaminathan Research Foundation in Chennai which is concerned with the conservation of biodiversity.
- (5) **Madhav Gadgil**: He is a well-known ecologist in India. He is concerned with broad ecological issues, eg, developing Community Biodiversity Registers, conserving sacred groves and studies on the behaviour of mammals, birds and insects. He has written several articles, published papers in Journals, is the author of 6 books, and the editor of the series *Lifescapes of Peninsular India*.
- (6) **M.C. Mehta**: He is undoubtedly India's most famous environmental lawyer. He has filed several Public Interest Litigations for supporting the cause of environmental conservation since 1984. His most famous and long-drawn battles supported by the Supreme Court include protecting the Taj Mahal (closure of 200 small factories around Taj), cleaning up the River Ganga, banning intensive shrimp farming on the coast, cases against industries that generate hazardous waste, initiating Government to implement environmental education in schools and colleges and a variety of other conservation issues. Mehta was awarded the Goldman Environmental Prize and the Raman Magsaysay Award.
- (7) **Anil Agarwal**: He was a journalist who wrote the first report on the *State of India's Environment* in 1982. He founded the CES, an active NGO that supports various environmental issues.
- (8) **Medha Patekar**: She is known as one of rural India's Champion. She has supported the cause of the downtrodden tribal people whose environment is being affected by the dams on the Narmada River.
- (9) **Sunderlal Bahuguna**: Sunder Lal Bahuguna is an environmentalist and journalist. His '**Chipko Movement**' has become an internationally well known example of a highly successful peaceful conservation action programme. With the active participation of local people, he successfully prevented the cutting of forests in Tehri-Garhwal region. His fight to prevent the construction of Tehri Dam in a fragile earthquake-prone setting is a battle he continues to fight. His dedication will always be remembered by Tehri-Garhwal Hills for the protection of which he has walked over 20,000 kilometers. Mr. S.L. Bahuguna presented the plan of conservation of soil and water through ban on tree felling at the UNEP meeting held in June 1982 in London.

QUESTIONS FOR YOU ?

Q. Write about 5 Indian personalities in the field of environment.

Hint. Its answer is the description of section L (1 to 5)

Q. Describe contributions of 5 international environmental experts and 5 Indian environmental personalities.

Hint : Its answer is the description of section K - (1 to 5) and section L (1 to 5)

REVIEW QUESTIONS

Q. Describe the importance of environmental education in detail and write about the need of public awareness in India.

Hint. Its answer is the complete description of section F and of section H-I.

MULTIPLE CHOICE QUESTIONS

1. "Surroundings" means :

- (a) Ecology (b) Ecosystem (c) Environment (d) Biosphere

2. Environmental factors related to soil are called :

- (a) Biotic factors (b) Edaphic factors
(c) Climatic factors (d) Topographic factors

3. The part of earth inhabited by living organisms is called :

- (a) Lithosphere (b) Hydrosphere (c) Noosphere (d) Biosphere

4. Thickness of biosphere over and above earth is about :

- (a) 10.5 km (b) 12.5 km (c) 20.5 km (d) 22.5 km

5. The upper weathered humus containing part of earth's surface that sustains life is called :

- (a) Lithosphere (b) Hydrosphere (c) Ecosphere (d) Biosphere

6. Which part of the earth protects it from harmful radiations of outer space ?

- (a) Biosphere (b) Lithosphere (c) Atmosphere (d) Troposphere

7. Abiotic component of environment is constituted by :

- (a) Hydrosphere (b) Atmosphere (c) Lithosphere (d) All of above

8. Human dominated environment on earth is called :

- (a) Atmosphere (b) Biosphere (c) Noosphere (d) Hydrosphere

9. Which is the main objective of environmental conservation ?

- (a) To save mankind and for sustainable development.
(b) To satisfied human needs.
(c) Economic growth and protection of environment.
(d) All of the above.

10. Which of the following is not the aim of environmental studies?

- (a) To know about the causes of environmental degradation

- (b) To create awareness among the people about environment
- (c) To exploit natural resources for various development purposes

11. Which of the following environmental components influences all others but is not influenced by them?

- (a) Atmospheric components
- (b) Solar energy
- (c) Living organisms
- (d) Water and minerals

12. Which of the following do you think is the emerging specialized field of environmental studies?

- (a) Environmental protection
- (b) Environmental management
- (c) Environmental engineering
- (d) All of the above

13. In which of the following fields do you think there is scope for environmental specialist?

- (a) Computer and statistics
- (b) Economics and development
- (c) Meteorology and biogeography
- (d) All of the above

14. Environmental education is important because it helps us to understand :

- (a) The importance of sustainable use of natural resources for sustainable economic development.
- (b) The importance of keeping ecological balance in nature
- (c) The causes and to solve the problems of soil erosion, water crisis, natural disasters, etc.
- (d) All of the above

15. Which of the following is not the objective of environment education?

- (a) To create awareness about our surrounding environment
- (b) Realization of our social responsibilities
- (c) To spread human civilization at the cost of forests and wildlife
- (d) To develop scientific attitude and constructive thinking

16. The main objective of environmental education is :

- (a) To develop love for Mother Nature
- (b) To improve quality of life
- (c) To prevent pollution and to use natural resources judiciously
- (d) All of the above

17. According to journalist Khushwant Singh, the main cause of pollution in India is:

- (a) Degradation of soil and deforestation
- (b) Ever expanding population
- (c) Pollution of our water systems
- (d) Over exploitation of natural resources

18. Which of the following is a mismatch?

- (a) World Wetland Day- February 22
- (b) World Forestry Day- March 21
- (c) World Water Day- March 22
- (d) World Health Day - April 7

19. One of the following is a mismatch

- (a) World Heritage Day- April 18
- (b) Earth Day- April 22
- (c) International Biodiversity Day- May 2
- (d) World Environment Day- June 5

20. Which of the following is a mismatch?

- (a) World Population Day- June 21
- (b) World Ozone Day- September 16

- (c) Green Consumer Day- September 28
- (d) World Nature Day- October 03

21. Choose the mismatch in the following :

- (a) Wildlife Week - October 17
- (b) World Habitat Day- October 30
- (c) National Pollution Prevention Day- December 22
- (d) National Conservation Day- December 03

22. Methods to create awareness among people regarding environment are :

- (a) Through mass media (TV, radio, newspapers, magazines, etc.)
- (b) Through lectures, seminars, paintings, slogans, etc. in educational institutions
- (c) Through street plays, holding exhibitions, debates, poster competitions, public meetings, etc.
- (d) All of the above

23. Which of the following is not a bad habit?

- (a) Tobacco chewing and spitting at public places
- (b) Worshipping of trees, animals, rivers, etc.
- (c) Throwing solid wastes on streets and roads
- (d) Urination or defecation at public places

24. Which of the following institutes publishes a popular magazines *Hornbill*, *Journal on Natural History* and has launched 'Save the Silent Valley' campaign?

- (a) The Bombay Natural History Society (BNHS), Mumbai
- (b) Centre for Science and Environment (CSE), New Delhi
- (c) CPR Environmental Education Centre, Madras
- (d) Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER) Pune

25. Which of the following institutes has published a major document on the *State of India's Environment* as a citizen report on the Environment and also publishes a popular science and environment fortnightly magazine 'Down to Earth'?

- (a) BNHS, Mumbai
- (b) CSE, New Delhi
- (c) BVIEER, Pune
- (d) Centre for Environment Education (CEE), Ahmedabad

26. Which of the following international institutes helps in launching environmental projects by various countries at the international level or guides them in this direction?

- (a) UNDP
- (b) UNESCO, (Nairobi (Kenya))
- (c) IUCN
- (d) UNFPA

27. Which of the following is a mismatch?

- (a) Charles Darwin- Brought to light the close relationship between habitat and species and the relationship between living and extinct animals in his book 'Origin of Species' (1859)
- (b) Ralph Emerson- Warned against the dangers of commerce to our environment in 1840s.
- (c) Aldo Leopold- Founded the Sierra Club, a major conservation NGO in U.S.A.
- (d) Rachel Carson- Wrote the book 'Silent Spring' that caused immediate worldwide concern on the effects of pesticides on nature and mankind in 1960s.

28. Who started publishing the periodical 'Ecologist' and wrote books 'Blue prints for Survival' and 'The Social and Ecological Effects of Large Dams'?

- (a) John Muir
- (b) Aldo Leopold
- (c) Edward Goldsmith
- (d) E.O. Wilson