

UNIT-1 ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

1. Define Ecology

Ecology is study of interactions among organisms or group of organisms with their environment.

2. Define ecosystem

A group of organisms interacting among themselves and with environment.

Example: Forest ecosystem, grassland ecosystem, desert ecosystem and lake ecosystem

3. What are food chains & food web?

The sequence of eating and being eaten in an ecosystem is known as food chains.

The interlocking pattern of various food chains in an ecosystem is known as food web.

4. Suggest four important feature of desert ecosystem

- 1) The desert air is dry and the climate is hot
- 2) Annual rain fall is less than 25cm.
- 3) Vegetation is poor.

5. What is bio diversity?

The variety and variability among all groups of living organisms and the ecosystem in which they occur.

6. What are hotspot biodiversity?

The hotspots are geographic areas which posses the high endemic species

7. List hotspot biodiversity in India?

1. Eastern Himalayas
2. Western Ghats

8. What is genetic and species biodiversity?

Species diversity – discrete group of organisms of the same kind, diversity between differed species. Genetic diversity – species with different genetic characteristics.

9. What are endangered and endemic species?

The species, which are found only in a particular region are known as endemism. A species is said to be endangered, when its number has been reduced to a critical level.

10. List out endangered species of India

1. Reptiles : Tortoise, python
2. Mammals : Indian wolf, Red fox, Tiger
3. Primates : Hoolock gibbon, Golden monkey
4. Plants : Rauvol serpentina, Santalum

11. Why India is called as Mega-diversity

India is one among the 12 mega diversity countries in the world. It has 89,450 animal species accounting for 7.31% of the faunal species and 47,000 plant species which accounts for 10.8% of the world floral species.

12. What are the factors influencing habitat loss?

Factors influencing habitat loss- Deforestation, Destruction of wetlands, Habitat fragmentation, Usage of hybrid seeds, Usage of wild plants for medicinal productions without replenishing their growth, Illegal trade and developmental activities

UNIT-2 ENVIRONMENTAL POLLUTION

1. What is particulate matter? How it is controlled by using equipment

It includes variety of particles and droplets (aerosols). They can be suspended in atmosphere for short periods to long periods.

Mechanical devices such as Wet scrubbers, cyclone separator, bag houses filter and electro-static precipitators, reducing particulate pollutants

2. What are the effects of oil pollution in Marine?

The continuous oil films inhibit photosynthesis and the formation of oxygen. This inhibits the growth of plankton, which is the main source of the hydrobionts inhabiting the water body.

All aquatic animals are affected, which depend either directly or indirectly on plankton, which is the basis of the trophic chain.

3. Write briefly about the control measures of air pollution

The air pollution can be controlled as followed:

- 1) Use only unleaded petrol.
- 2) Use petroleum products and other fuels that have low sulphur and ash content
- 3) Reduce the number of private vehicles on the road by developing an efficient public-transport system and encouraging people to walk or use cycles

4. Define thermal pollution

Thermal pollution is the addition of excess of undesirable heat to water that makes it harmful to man, animal or aquatic life or otherwise causes significant departures from the normal activities of aquatic communities in water.

5. Define BOD and COD

Biological (or) Biochemical Oxygen Demand (BOD):

BOD is the amount of dissolved oxygen required for biological decomposition of organic matter present in the water.

Chemical Oxygen Demand(COD):

COD is the amount of oxygen required for chemical oxidation of organic matter using some oxidising agents like $K_2Cr_2O_7$ and $KMnO_4$.

6. Write briefly about Chernobyl disaster

In April 26, 1986, the Chernobyl nuclear reactor, in Russia, has leaked out the radioactive rays and radioactive materials.

- Nearly 2000 persons have been killed by the accident.
- People suffered by degeneration of the cells, severe bleeding, anemia, skin cancer.

7. List some ways to protect soil.

- Control of Soil erosion
- Proper dumping of unwanted materials
- Production and use of natural fertilizers
- Proper Hygienic condition should be followed
- Public Awareness through media, TV, newspapers
- Recycling and Reuse of wastes
- Ban on Toxic Chemicals

8. What is meant by point and non-point sources?

Point sources are discharged pollutants at specific location through pipes, ditches or Sewers into bodies of surface water. Non point sources cannot be traced to any single site of discharge. They are usually large land areas or air sheds that pollute water by runoff, subsurface flow or deposition from the atmosphere.

9. What is meant by photochemical smog?

The brownish smoke like appearance that is frequently formed on clear, sunny days over large cities with significant amount of automobile traffic. It is mainly due to chemical reactions among nitrogen oxides and hydrocarbon by sunlight. These oxidised hydrocarbons with ozone in the presence of humidity causes photochemical smog.

- It causes irritation to eyes, lungs, nose, and throat, etc.,

- It also causes bronchial irritation.

10. Explain landslides and effects of landslides

The movement of earthy materials like coherent rock, mud, soil and debris from higher region to lower region due to gravitational pull is called landslides

- (i) Landslides block the roads
- (ii) Sudden landslides damage the houses, crop yield, livestock etc

11. What are primary and secondary air pollutants? Give examples.

Primary pollutants are those emitted directly in the atmosphere in harmful form.

Primary pollutants: (CO, NO, SO₂)

Some of the primary pollutants may react with one another or with the basic components of air to form new pollutants. They are called as secondary pollutants.
Secondary pollutants: (HNO₃, H₂SO₄)

12. Write shortly about Bhopal disaster

The world's worst industrial accident occurred in Bhopal city, M.P. on the night of 3rd December 1984. It happened at Union Carbide India Ltd, who manufactures some carbonate pesticides, using methyl isocyanate (MIC). The reactor got exploded, due to failure of its cooling system and 40 tons of MIC leaked into the atmosphere.

- The gas (MIC) spread over 40 sq. km area and about 5000 persons were killed.

13. What is the significance of dissolved oxygen in River?

Dissolved oxygen (DO) is the amount of oxygen dissolved in a given quantity of water at a particular pressure and temperature.

Significance:

- DO is vital for the support of fish and other aquatic life in river water.
- DO determinations serve as the means of control of river pollution.
- A minimum level of DO (4 mg/lit) must be maintained in rivers so as to support the aquatic life

UNIT-3 NATURAL RESOURCES

1. Distinguish Renewable and Non-renewable energy sources.

Renewable energy sources	Non-renewable energy sources
Resources capable of being regenerated within a reasonable time period.	Resources not capable of being regenerated by ecological processes.
In exhaustible	Exhausted
Example: Solar energy, wind energy.	Example: Coal, petroleum.

2. State the reasons of over exploitation of forests.

1. Shifting of Cultivation
2. Fuel requirement
3. Raw materials for industrial use
4. Developmental projects
5. Growing food needs
6. Overgrazing
7. Forest fires

3. Write the ways of drought management.

- Selecting appropriate crop or plantation depending upon the climate, soil type.
- Afforestation
- Clear knowledge in control of drought and desertification can be very useful

4. Mention the major environmental impacts of Mining.

Impacts of Mining are:

- Soil erosion, Contamination of soil, Loss of biodiversity.
- Vibration are developed, which leads to earthquake, landslides may also occur
- It also reduces the shape and size of the forest areas.

5. What is overgrazing and mention the changes caused by overgrazing?

A process of eating away of forests without giving it a chance to regenerate. Over grazing occurs when too many animals graze for too long and exceed the carrying capacity of a grass land area.

It leads to loss of biodiversity, loss of minerals, Soil erosion and desertification.

6. What are the harmful effects of land degradation?

Land degradation is the process of deterioration of soil or loss of fertility of the soil.

Effects of land degradation: Loss of valuable nutrients, increase in water logging, salinity, alkalinity, acidity problems.

7 . What are Mineral Resources? Give its types.

Mineral resources are natural occurring substances having definite chemical composition and physical properties.

Types: Identified resources, undiscovered resources, reserves.

8. What are the consequences of timber extraction?

1. Large scale timber extraction causes deforestation.
2. It leads to soil erosion, loss of fertility, landslides, loss of biodiversity etc.,
3. Timber extraction also leads to loss of tribal culture and extinction of tribal people.
4. Thickness of forest also reduced.

9. How Biogas is generated. Mention its constituents?

Biogas is produced by anaerobic degradation of animal wastes by bacteria in the presence of water. Biogas is a mixture of methane, carbon dioxide, hydrogen and hydrogen sulphide.

10. Write a short note on Bio magnification

Bio-magnification means some pesticides that are non-bio degradable and keep on concentrating in food chain. Organisms at the top of the food chain generally suffer greater harm from a toxin than at lower levels.

12. Define eutrophication

A large proportion of nitrogen and phosphorous fertilizers used in crop fields is washed out by the runoff water and reaches the water bodies causing over nourishment of the lakes. It leads to the algae bloom, less sunlight penetration, deficient dissolved oxygen and affects the aquatic organisms. This is known as eutrophication.

13. What is Desertification discuss its effects.

Progressive destruction or degradation of arid or semiarid lands to desert. Desertification leads to the conversion of range lands or irrigated croplands to desert.

Desertification is characterized by de-vegetation, depletion of ground water, salination and soil erosion

14. Write a short note on Ocean Thermal Energy

Ocean Thermal Energy

There is often large temperature difference between the surface level and deeper level of the tropical oceans. This temperature difference can be utilized to generate electricity.

UNIT-4 SOCIAL ISSUES AND THE ENVIRONMENT

1. Define the term “sustainable development”?

Sustainable development is defined as, meeting the needs of the present without compromising the ability of future generations to meet their own needs.

2. What is meant by 3R principle?

The approach of reduce, reuse and recycle is called as 3R principle. It insists optimum use of natural resources, reusing instead of throwing it on the waste land or water and recycling the material into further products.

3. State any two methods to control acid rain.

The control methods of rain water are

- 1) Emission of SO₂ and NO₂ from industries should be reduced by using pollution control equipment.
- 2) Liming of lakes and soils should be done to correct the adverse effect of acid rain

4. What are the advantages of rain water harvesting?

- Reduction in the use of current for pumping water.
- Mitigating the effects of droughts and achieving drought proofing.
- Increasing the availability of water from well.
- Rise in ground water levels.
- Minimizing the soil erosion and flood hazards.
- Upgrading the social and environmental status.
- Future generation is assured of water

5. Define the term environmental ethics.

“Environmental ethics refers to the issues, principles and guidelines relating to human interactions with their environment”.

6. State a few drawbacks of pollution related acts. [Chen A.U. Dec 2008]

- The penalties in the act are very small when compared to the damage caused by the big industries due to pollution.
- A person cannot directly file a petition in the court.
- Litigation, related to environment is expensive, since it involves technical knowledge.
- For small unit it is very expensive to install Effluent Treatment – Plant
- The position of chairman of the boards is occupied by political appointee. Hence it is
- Difficult to implement the act without political interference

7. Define urbanization. [Chen A.U. Dec 2010]

Urbanization is the movement of human population from rural area to urban area for the want of better education, communication, health and employment.

8. How can global warming be controlled? [Chen A.U. Dec 2010, Apr 2011]

1. By reducing the use of fossil fuels.
2. Utilize renewable resources such as wind, solar and hydropower.
3. Plant more trees.
4. Stabilize population growth.
5. Remove atmospheric CO₂ by utilizing photo synthetic algae.

9. What is meant by nuclear holocaust? Give example [Chen A.U. May 2019]

Nuclear holocaust means destruction of biodiversity by nuclear equipment and nuclear bombs. Usually, these kinds of destruction are happened in a nuclear war.

Ex: The atomic bombs were dropped on Hiroshima and Nagasaki

10. What is meant by greenhouse effect? List the greenhouse gases

The greenhouse effect may be defined as, “the progressive warming up of the earth’s surface due to blanketing effect of manmade CO₂ in the atmosphere”.

Examples of greenhouse gases are CO₂ , CH₄ , nitrous oxide (N₂O) and chlorofluoro carbons (CFCs)

11. Write a short note on consumerism?

Consumerism refers to the consumption of resources by the people. While early human societies used to consume much less resources, with the dawn of industrial era, consumerism has shown an exponential rise.

UNIT-5 HUMAN POPULATION AND THE ENVIRONMENT

1. What is meant by population explosion?

The enormous increase in population, due to low death rate and high birth rate, is termed as population explosion.

2. List out the factors affecting population size.

The factors affecting population size

- 1) Birth rate or natality
- 2) Death rate or mortality
- 3) Immigration
- 4) Emigration.

Write the importance of value education. [Chen A.U. Dec 2008, 2013]

1. To improve the integral growth of human being.
2. To create attitudes and improvement towards sustainable lifestyle
3. To increase awareness about our national history, our cultural heritage, constitutional rights, national integration, community development and environment.
4. To create and develop awareness about the values and their significance and role.

4. List out any two important views of population growth.

The important views of population growth are

- 1) Increased demands for food and natural resources.
- 2) Inadequate housing and health services.

5. What is meant by doubling time?

Doubling time is the required for a population to double its size at a constant annual rate.

It is calculated as follows

T_d (Doubling time) = $70/r$; where r = annual growth rate

6. What is crude birth rate and total fertility rate? [Chen AU Dec2010]

Birth rate

The number of live birth per 1000 people in a population in a given year.

Total fertility rate (TFR)

The average number of children delivered by a woman in her life time. The TFR value varies from 2 in developed countries to 4.7 in developing countries.

7. List out the objectives of family welfare program.

The objectives of family welfare program are

- 1) Achieve hundred percent registrations of births, deaths, marriage and pregnancy.
- 2) Encourage late marriages and later child bearing.

8. What is meant by NIMBY syndrome?

NIMBY means “NOT IN MY BACK YARD”, which describes the opposition of residents to the nearby location of something they consider undesirable, even if it is clearly a benefit for many.

9. What is meant by value education?

Value education is an instrument used to analyse our behaviour and provide proper direction to our youths. It teaches them the distinction between right and wrong.

10. State the role of primary health care against AIDS.

The role of primary health care against AIDS

- 1) Prevention of blood borne HIV transmission.
- 2) AIDS awareness programmes should be encouraged.

11. What is meant by remote sensing?

Remote sensing refers to any method which can be used to gather information about an object without actually coming in contact with it.

12. What are the major precautions to avoid AIDS? [Chen AU May 2008]

Avoid indiscriminate sex and encourage the use of condoms and also avoid the use of sharing razors needles and syringes.

- b. Prevention of blood borne HIV transmission
- c. Aids awareness programmes should be encouraged
- d. Counseling services should be provided

13. Mention some ill effects of HIV / AIDS. [Chen A.U. Dec 2008, 2011, 2014]

- a. Large number of death occurs, which affect environment and natural resources
- b. Due to large number of deaths, there is loss of labour and level of production decreases
- c. More water is required for maintaining hygiene in AIDS affected locality
- d. The people affected by HIV, cannot perform work well, due to lack of energy and frequent fever and sweating.

14. State the role of information technology in Environment (Coim A.U. Dec 2009)[Chen AU Jan 2006]

Information technology plays a vital role in the field of environmental education. Information technology means collection, processing, storage and dissemination of information. A number of software's have been developed to study about the environment.

Part -B

UNIT-1 ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

1. (i) Explain the values of biodiversity. (ii) Discuss various threats to biodiversity.
2. Give detail about In – Situ and Ex – Situ Conservation of biodiversity
3. Describe Food Chain, Food Web and Ecological Pyramids.
4. i) Explain energy flow in an ecosystem.
(ii) Define ecological succession. Explain various stages of ecological succession.
5. Explain the structure and functions of any two aquatic ecosystem
6. Explain the structure and function components of forest ecosystem.

UNIT-2 ENVIRONMENTAL POLLUTION

1. Discuss the sources, effect and control measure of Marine Pollution
2. Explain the sources, effect and control measure of Water Pollution
3. (i) Explain the industrial waste water treatment with a neat schematic diagram
(ii) List out the role of individual in preventing pollution
4. Write notes on causes, effects and control measures of (i) Earthquakes (ii) Tsunami
5. Write notes on sources, effects and disposal of radio-active wastes

6. What you meant by noise pollution. Discuss the sources, effect and control measure of noise Pollution

UNIT-3 NATURAL RESOURCES

1. i) Explain the causes and effects of deforestation on the environment. (6)
ii) Discuss the effects of constructing dams on forest and tribal people (6)
2. i) Discuss the effects of over utilization and exploitation of surface water (6)
ii) Explain any two conflicts over water confining to our nation (6)
3. Explain about mineral resources and the environmental effects of extracting and using mineral resources (12)
4. Explain the impact of modern agriculture on the environment (12)
5. Give an account about any two renewable sources. Principle, harnessing methods and applications. (12)
6. i) Explain the role of individual in environmental protection (6)
ii) Explain soil erosion, its type and causes. What are the conservation practices employed to prevent soil erosion. (6)

UNIT-4 SOCIAL ISSUES AND THE ENVIRONMENT

1. Explain the following (i) Wild life protection Act (ii) Forest Preservation Act
2. Effects and control measures of Global warming and Acid Rain
3. Discuss the water conservation methods (i) Rain water harvesting (ii) Watershed Management.
4. (i) Explain the problems and concerns related to resettlement and rehabilitation of people
(ii) Discuss about Environmental protection Act
5. Discuss the mechanism involved in the formation and depletion of ozone in the atmosphere. Write down the consequences of ozone layer depletion.
6. Explain nuclear accident and their effects. Explain the effects nuclear holocaust one case study.

UNIT-5 HUMAN POPULATION AND THE ENVIRONMENT

- 1 Explain the Role of IT in human health and environment.
- 2 Discuss in detail about AIDS, mode of transmission, problems, diagnostics and control/prevention.

- 3 Write a note on family welfare program. Discuss about objective and various methods of family planning
- 4 Write a note on (i) Women Welfare and (ii) Child Welfare
- 5 a. Discuss the variation of population among the nations
 - a. Define Population explosion. Mention the causes and effects of population Explosion
- 6 Explain the following in detail
 - a. Values Education
 - b. Human Rights.

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