MAHARASTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION
B. Sc. (Hons.) Horticulture
Model Answer paper

Semester : II (New)
Course No. : II/EVS-121
Credits : 3 (2+1)
Day & Date:
Academic Year: 2018-19
Title: Environmental Studies and Disaster Management
Time:
Total Marks: 80

Note: 1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary

Q.1) Define Environment and give the scope and importance of Environmental studies.

Ans. Environment is defined as biological factors that directly influence the survival, growth, development and reproduction of organism.

Scope of environmental studies

1. The study creates awareness among the people to know about various renewable and non-renewable resources of the region.
2. It provides the knowledge about ecological systems and cause and effect relationships.
3. It provides necessary information about biodiversity richness and the potential dangers to the species of plants, animals and microorganisms in the environment.
4. The study enables one to understand the causes and consequences due to natural and main induced disasters (flood, earthquake, landslide, cyclones etc.) and pollutions and measures to minimize the effects.
5. It enables one to evaluate alternative responses to environmental issues before deciding an alternative course of action.
6. The study exposes the problems of over population, health, hygiene, etc. and the role of arts, science and technology in eliminating/ minimizing the evils from the society. 8.
7. 8) The study tries to identify and develop appropriate and indigenous eco-friendly skills and technologies to various environmental issues.
8. It teaches the citizens the need for sustainable utilization of resources as these resources are inherited from our ancestors to the younger generating without deteriorating their quality.
9. The study enables theoretical knowledge into practice and the multiple uses of environment.

Importance of environmental studies

1. World population is increasing at an alarming rate especially in developing countries.
2. The natural resources endowment in the earth is limited and the methods and techniques of exploiting natural resources are advanced.
3. The resources are over-exploited and there is no foresight of leaving the resources to the future generations. The unplanned exploitation of natural resources lead to pollution of all types and at all levels.

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4. The people should take a combined responsibility for the deteriorating environment and begin to take appropriate actions to space the earth.
5. The study enables the people to understand the complexities of the environment and need for the people to adapt appropriate activities and pursue sustainable development, which are harmonious with the environment.
6. Environmental studies take a multidisciplinary approach to the study of human interactions with the natural environment. It integrates different approaches of the humanities, social sciences, biological sciences and physical sciences and applies these approaches to investigate environmental concerns.
7. Environmental study is a key instrument for bringing about the changes in the knowledge, values, behaviours and lifestyles required to achieve sustainability and stability within and among countries.

Q.2 What do you mean by natural resources? Give the classification of natural resources and explain wildlife management and conservation.

Ans. 2 Any material which can be transformed in a way that it becomes more valuable and useful can be termed as a natural resource.

Natural resources are classified are as follows.

On the basis of quantity, mutability and reusability

Inexhaustible
Unlimited or unending

Renewable
Perpetual harvest
• Ex. Human power, fertility of soil

Exhaustible
Limited
Quality may be degraded
Non-renewable
•No-replacement
• Ex. Species of wild life

Based on Continual Utility
• Renewable
• Non renewable
• Cyclic resource

Based on origin
• Biotic and Abiotic

Based on Utility
• some as raw materials
• some as energy resources

Wildlife Management:
• Protection of natural habitats through controlled, limited exploitation of species.
• Maintenance of the viable number of species in protected areas (National Park, Sanctuary, Biosphere reserve etc.)
• Establishment of Biosphere Reserves for plants and animal species
• Protection through legislation.
• Improving the existing protected areas.
• Imposing restrictions on export of rare plant and animal species and their products.
• Educating public for environmental protection at all levels of education.

The conservation is the practice of preservation, maintenance, sustainable utilization, restoration and enhancement of the natural environment. Following are the different organizations for Conservation

Governmental Organizations;
1. Indian Board of Wildlife (IBWC), 1952

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2. Madras Wild Elephant Preservation Act, 1873
3. All-India Elephant Preservation Act, 1879
4. The Wild Birds and Animals Protection Act, 1912
5. Bengal Rhinoceros Preservation Act, 1932
6. Assam Rhinoceros Preservation Act, 1954
7. Wildlife (Protection) Act, 1972

1952 I
1873 M
1879 A
1912 T
1932 B
1954 A
1972 W

Q.3 What do you mean by global warming? Enlist global environmental issues and describe different effects of global warming.

Ans. 3. Greenhouse gases trap heat from sun and increase temperature of earth this is called global warming.

Global environmental issues are

1. Industrial / Vehicular pollution
2. Climate Change
3. Water pollution
4. Pesticides
5. Hazardous Waste

Effect of global warming

- Sea level rise at the rate of 1 to 2 mm per year due to melting of glaciers small ice caps.
- Decrease in light compensation point due to increase in CO_2
- Rise in mean global temperature by 1 to 3.5 °C.
- Change in intensity, frequency, distribution of precipitation.
- Increase in CO_2 content in atmosphere.
- Effect on soil fertility, soil erosion, more soil salinity, change in soil organic matter.
- Shift in Agricultural zones.

Q.4 Define hazardous waste? Give the characteristics of hazardous wastes.

Ans 4. Hazardous substances can be defined as any substance or preparation which by reason of its physiochemical biochemical properties or handling is liable to cause harm to human being, other living creatures, plants, and microorganisms, property and environments.

Characteristics of hazardous wastes

1. Toxic wastes are those substances that are poisonous even in very small or trace amount.
2. Reactive wastes are those that have a tendency to react vigorously with air or water, are unstable to shock or heat generate toxic gases or explore during routine management e.g. gunpowder.
3. Ignitable waste are those that burn at relative by low temperature and are capable of spontaneous combustion during storage, transport or disposal e.g. gasoline.
4. Corrosive waste are those that destroy materials and living tissue by chemical reaction. E.g. acids
5. Infectious waste include human tissue from surgery, used bandages and hypodermic needles, microbiological materials etc.

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6. Radioactive waste is basically the output from the nuclear power plants and can persist in the environment for thousands of years before it decays appreciably.
7. Computer hardware waste is increasing in multiples along with use of computers. Disposing off this e-waste has already become a serious problem.

Q.5 What do you mean by pollution? Give the classification of pollutant. Explain the sources of air pollution

Ans.5. Pollution is an undesirable change in the physical, chemical or biological characteristics of air, water and soil that may or will harmfully affect human life industrial progress, living condition, cultural assets and climate.

Pollutants are classified into two categories.

1. Primary pollutants: These are released in the environment directly as a result of human activities.
2. Secondary Pollutants: When primary pollutants undergo chemical changes by reacting with water, sunlight or even other primary pollutants, the resultants pollutant are called secondary pollutant.

Sources of air pollution

Air pollution results from gaseous emission from mainly industry, thermal power stations, automobiles, domestic combustion etc.

1. Industrial chimney wastes: There are a number of industries which are source of air pollution. Petroleum refineries are the major source of gaseous pollutants. The chief gases are SO2 and NO2. Cement factories emit plenty of dust, which is potential health hazard. Stone crushers and hot mix plants also create a menace. Food and fertilizers industries which emit gaseous pollutants. Chemical manufacturing industries which emit acid vapours in air.

2. Thermal power stations: There are a number of thermal power stations and super thermal power stations in the country. The National thermal power corporation (NTPC) is setting up four mammoth coal-powered power stations to augment the energy generation.

3. Automobiles: The toxic vehicular exhausts are a source of considerable air pollution, next only to thermal power plants. The ever increasing vehicular traffic density posed continued threat to the ambient air quality. Chief sources of emission in automobiles are (i) exhaust system, (ii) fuel tank and carburettor and (iii) crankcase.

Q.6 Give the types biodiversity and explain conservation of biodiversity.

Ans.6. There are three types of biodiversity

1. Genetic biodiversity- It refers to the variation of genes within the species. This constitutes distinct population of the same species or genetic variation within population or varieties within a species
2. Species biodiversity- It refers to the variety of species within a region. Such diversity could be measured on the basis of number of species in a region.
3. Environmental biodiversity- Ecological diversity is the intricate network of different species present in local ecosystem and the dynamic interplay between them.

Conservation of biodiversity

Ex situ conservation

1. Conserving biodiversity outside the areas where they naturally occur is known as ex situ conservation. Here animal and plants reared or cultivated in areas like zoological or botanical parks.

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2. Reintroduction of an animal or plant into the habitat from where it has become extinct is another form of ex situ conservation.
3. Seed banks, botanical, horticultural and recreational gardens are important centres for ex situ conservation.

In situ conservation

Conserving the animals and plants in their natural habitat is known as in situ conservation. This includes the establishment of

1. National parks and sanctuaries
2. Biosphere reserve
3. Nature reserve
4. Reserved and protected forest
5. Reserved forest.

Q.7 Write short note on (Any two)

Ans.7.

a. **Eutrophication:**

Excessive nutrients such as nitrates and phosphates originate from waste material and animal feeds, industrial waste. They cause excessive growth of algae. The bacteria decompose it and reduce O_2concentration, fish and other aquatic organism are killed due to lack of oxygen. These series of events are called as eutrophication. Shallow lakes are more affected than deep lakes.

b. **Carbon sequestration:**

A natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form. Carbon sequestration is the process involved in carbon capture and the long-term storage of atmospheric carbon dioxide or other forms of carbon to mitigate or defer global warming. Carbon sequestration is the process through which agricultural and forestry practices remove carbon dioxide (CO_2) from the atmosphere. The term "sinks" is also used to describe agricultural and forestry lands that absorb CO_2, the most important global warming gas emitted by human activities. Carbon dioxide capture and sequestration could play an important role in reducing greenhouse gas emissions into the atmosphere. Carbon sequestration technologies can dramatically reduce CO_2 emissions by 80-90% from power plants that burn fossil fuels.

c. **Acid rain:**

The presence of excessive acid in rain water is called Acid rain. It is a mixture of nitric acid, sulphuric acid and carbonic acid. Acid rain have damaged or destroyed fish and plant life in thousands of lakes throughout Central and Northern Europe (especially in Scandinavia), the North East United States, South East Canada, and parts of China. Acid rain is caused by the emission of sulphur and nitrogen oxides into the atmosphere, mostly from the burning of fossil fuels for electric power. Other sources from human activities include certain industrial processes and the gasoline powered automobile. Sulphur dioxide reacts with water vapour in the air to form Sulphuric acid; nitrogen dioxide reacts with water vapour to form nitric acid. It has been found that the contribution of these gases from natural sources, such as from swamps and volcanoes are small in comparison to human sources.

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Q.8. What do you mean by disaster? Enlist the different types of natural disasters and explain any one.

Ans. 8. A disaster is a sudden accident or a natural catastrophe that causes great damage or loss of life. Natural disasters are as follows,

1. Land movement disaster-Avalanches, Earthquake, Lahars, volcanic eruption
2. Water disasters-Floods, Limnic eruption, Tsunami
3. Weather disasters- Blizzards, Cyclonic storms, Droughts, Hailstorms, heat waves, tornadoes.
4. Fire
5. Health and diseases- Epidemic, famine
6. Space- Gamma ray bursts, impact events, solar flares, supernovae and hypernovae

Explain any one.

Q.9 What do you mean by deforestation? What are the causes of deforestation and explain consequences of deforestation.

Ans. 09.Deforestation

Deforestation refers to the loss of forest cover, land that is permanently converted from forest to agricultural land, golf courses, cattle pasture, home, lakes or desert. The FAO defines tropical deforestation as "change of forest with depletion of tree crown cover more than 90 % is considered forest degradation.

Causes for deforestation:

1. Agriculture: Conversion of forests to agricultural land to feed growing number of peoples.
2. Commercial logging: (which supplies the world market with woods such as meranti, teak, mahogany and ebony) destroys trees as well as opening up forest for Agriculture. Cutting the trees for fire wood and building material, the heavy lopping of foliage, for fodder and heavy grazing of saplings by domestic animals like goats.
3. The cash crop economy: Raising cash crops for increased economy.
4. Mining
5. Increase in population: The needs also increase and utilize forest resources.
6. Urbanization and industrialization
7. Mineral exploration
8. Construction of dam reservoirs
9. Infrastructure development
10. Forest fires
11. Human encroachment and exploitation
12. Pollution due to acid rain.

Consequences of deforestation

1. Global warming
2. Loss of Biodiversity
3. Loss of natural resources
4. Food insecurity.

Q.10 What do you mean by carbon credit? Explain carbon exchange in details:

Ans. 10. A carbon credit is a generic term for any tradable certificate or permit representing the right to emit one tonne of carbon dioxide or the mass of another greenhouse gas with a carbon dioxide equivalent to one tonne of carbon dioxide.

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Carbon trading, sometimes called emissions trading, is a market-based tool to limit GHG. The carbon market trades emissions under cap-and-trade schemes or with credits that pay for or offset GHG reductions.

1. Industrial companies with high carbon emissions buy carbon credits from companies with low-emissions to offset the environmental impact of their business.
2. A company is allowed a certain amount of pollution emission before it is fined.
3. Check that your company is eligible to sell and exchange carbon credits on the climate exchange market.
4. Register with the Chicago Climate Exchange in order to sell and exchange carbon credits in the exchange market.
5. Wait for the CCE to contact you with your login and password for the carbon credit exchange after your registration is approved. You will use your account to list your available carbon credits and to sell the credits to other companies.
6. Sell your carbon credits to companies in need of carbon emission relief.
7. Credits can be exchanged between businesses or bought and sold in international markets at the prevailing market price. Credits can be used to finance carbon reduction schemes between trading partners and around the world.
8. For each tonne of carbon dioxide (the major GHG) emission avoided, the entity can get a carbon emission certificate which they can sell either immediately or through a futures market, just like any other commodity.

SECTION 'B'

Q.11 Fill in the blanks.

1. PAN is **secondary** pollutant.
2. Unit of measuring noise is **decibel.**
3. IPCC is concerned with **Ozone depletion**
4. Most commonly used test for HIV is **ELISA** and **western blot.**
5. UNICED is expanded as **United Nations conference for environmental development.**
6. Soil fertility is an example for **renewable** resource.
7. The process of repeated eating and being eaten is called **Food Chain**
8. Variation of genes within the species is **Genetic diversity.**

Q.12 Answer the following in one sentence.

1. The gaseous mantle contains **20.94 per cent** of oxygen.
2. Full form of BOD is **biochemical oxygen demand.**
3. **Carbon dioxide, methane, nitrous oxide, chlorofluorocarbons and water vapour** are responsible for global warming.
4. The term ecology was coined by **Earnest Haeckel (1869).**

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5. Centre for Environmental Education is located at **New Delhi.**
6. Drought is caused due to **Variability of Rainfall.**
7. Project tiger was launched in **1973.**
8. The largest mangrove forest in India is **Sundarbans.**

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