Model answer

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END THEORY EXAMINATION
B. Sc. (Hons.) Agriculture

Semester	:	III (New)	**Term**	:	I	**Academic year** :	2023-24
Course No.	:	ESDM-231	**Course Title**	:	Environmental Studies and Disaster Management		
Credits	:	3(2+1)					
Day & Date	:		**Time**	:	3 hours	**Total marks** :	80

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

SECTION "A"

Q. 1	Define environment. Explain in detail scope and importance of environmental science.	
	Environment can be defined as a sum total of all the living and non-living elements and their effects that influence human life.	1
	Scope of environmental studies:- ➢ The study creates awareness among the people to know about various renewable and Non renewable resources of the region. ➢ The endowment or potential, patterns of utilization and the balance of various resources available for future use in the state of a country are analysed in the study. ➢ It provides the knowledge about ecological systems and cause and effect relationships. ➢ It provides necessary information about biodiversity richness and the potential dangers to the species of plants, animals and microorganisms in the environment. ➢ The study enables one to understand the causes and consequences due to natural and man induced disasters (flood, earthquake, landslide, cyclones etc.,) and pollutions and measures to minimize the effects. ➢ The study enables environmentally literate citizens (by knowing the environmental acts, rights, rules, legislations, etc.) to make appropriate judgments and decisions for the protection and improvement of the earth. ➢ 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. ➢ The study tries to identify and develop appropriate and indigenous eco-friendly skills and technologies to various environmental issues.	7

- 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.

Importance of environmental study

- World population is increasing at an alarming rate especially in developing countries.
- The natural resources endowment in the earth is limited.
- The methods and techniques of exploiting natural resources are advanced.
- 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.
- The pollution and degraded environment seriously affect the health of all living things on earth , including man.
- The people should take a combined responsibility for the deteriorating environment and begin to take appropriate actions to space the earth.
- Education and training are needed to save the biodiversity and species extinction.
- The urban area, coupled with industries, is major sources of pollution.
- The number and area extinct under protected area should be increased so that the wild life is protected at least in these sites.
- 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.
- The study motivates students to get involved in community action, and to participate in various environmental and management projects.
- It is a high time to reorient educational systems and curricula towards these needs.
- 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.

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 is Disaster? Give the classification of disaster. Explain in brief various natural Disasters.	

	Disaster Definition- Disaster is defined as an occurrence or event that causes sudden great loss to wealth or life or both.	1
	Classification of Disaster • **Natural Disaster-** Natural disaster are those which are caused by various natural processes occurring on the earth like earthquake. Volcanoes, cyclones, floods, tsunami etc. Natural Disaster again classified as a. Disaster of geological origin- earthquake, volcanoes, tsunami etc. b. Disaster of meteorological or climatic origin- cyclones, floods, drought etc. c. Disaster of Biological origin- wide spread pest infestation. **Man made disaster** • Those are caused by human activities and includes industrial accidents, fires in residential and commercial place etc.	3
	➢ **Types of Disaster-** **1. Flash Floods-** • Floods are the most frequently occurring natural disaster due to irregularities of the Indian monsoon. • About 75 % of annual rainfall in India is concentrated in three to four months of the monsoon season.. • As a result there is a very discharge from the rivers during this period causing wide spread floods. **2. Tropical cyclones-** • India has a long coastal line of 5700 km which is exposed to tropical cyclones arising in the Bay of Bengal and Arabian sea. • The Indian Ocean is one of the six major cyclone prone region of the world. • In India cyclones occurs usually between April and may and also between October and December. **3. Droughts-** • About 16 % of the countries total area is drought prone. • Drought is a significant environmental problem as it is caused by a lower than average rainfall over long period of time. **4. Earthquake-** • Earthquake are considered to be one of the most destructive natural hazards. • The impact of this phenomenon occurs with so little warning that it is impossible to make preparations against damage and collapse of buildings. **5. Tsunami-** • The term Tsunami come from the Japnese language, it means that tsu- harbor and nami- wave.	4

	• Tsunamies are waves of water that sometimes follows earthquake, volcanic eruptions. • The wave travels across the ocean at speed of 500-1000 km per hour as the waves approaches to land , it compresses sometimes up to height of 30 meters is enough to crush objects in its path. • The tsunami on 26 December 2004 killed 310000 people making it the dead list tsunami in recorded history.	
Q. 3	Define the term 'Biodiversity'. Give its classification & explain in detail about conservation of biodiversity.	
	Definition: Biodiversity refers to the variability among the living organism, plants, animals and microbes from all sources including terrestrial and aquatic ecosystem and ecological complexes of which they are part.	1
	1. **Ecological diversity or species Diversity-** ➢ Species diversity is the variation and variability of species in a particular area or volume at a particular time. Usually, these areas or volumes are the ecosystems or interested places. ➢ Species diversity is not only about the number of different species present in a particular place of interest, but it indicates how abundant those are. ➢ That means the species diversity is a composition of species richness and species evenness. **2. Genetic diversity-** ➢ Genetic diversity could be defined as the variations within and among species in the form of the genetic makeup. ➢ There are two important points to comprehend about the term; one is that it relates with genetic material, and the other is that it could be related with either one species or more than that. Genetic diversity is considered the baseline level of biodiversity.	3
	Conservation of Biodiversity is of two types 1. **In-situ conservation-** In situ conservation measures are related to the biodiversity of the ecosystem of the natural habitats or natural environment. It is the best, easiest, most advantageous and most feasible method to conserve natural biodiversity which aims at ❖ Consolidating of the network of protected areas for wild life to ensure the conservation of ecosystem. ❖ Establishing new protected areas based on utility, distinctiveness and endangerment of species. ❖ Coordinating new and existing protected areas to facilitate gene flow and migration among populations and to ensure proper representation of species	4

	and habitats. ❖ Ensuring conservation of biodiversity and rich ecosystems outside the network of protected areas. ❖ Minimizing or banning the activities like over-exploitation, pollution, poisoning and introduction of exotic species leading to loss of biodiversity including habitat destruction. ❖ Encouraging continuous and traditional agricultural practices. ❖ Encouraging public participation in planning and management of protected areas. ❖ Enhancing the ecological and social value of protected areas and providing incentives for biodiversity conservation on adjacent private lands. ❖ Initiating regional cooperation for conservation of ecosystems and species. ❖ Conducting periodical reviews of protected areas and plan for assessing present and future needs **2. Ex-situ conservation** • Sometimes the populations of species may decline or may become extinct due to genetic or environmental factors such as a inbreeding and environmental variation, habitat loss, deteriorating habitat quality, competition with exotic species, diseases and over-exploitation. • In such cases in-situ conservation may not prove to be effective and a species can be protected from becoming extinct only through maintaining individuals in artificial conditions under human care and protection. • Examples of ex-situ conservation are zoos, sport forms, aquaria, botanical gardens, parks, arboreta, genes, gametes, embryo, seed banks, etc.	
Q. 4	Define pollutant. Give the classification of pollutant. Explain control measures of water pollution.	
	Pollutant- Any substance which causes pollution is called pollutant.	1
	Pollutants are classified in to two categories 1. **Primary pollutant-** These are released in the environment directly as a result of human activities. 2. **Secondary Pollutant-** When primary pollutants undergo chemical changes by reacting with water, sunlight or even other primary pollutant. The resulting pollutants are called secondary pollutant. Ex. So_2 gas released in to atmosphere from variety of sources is primary pollutant where as H_2SO_4 formed as a result of reaction of gas with oxygen and water is secondary pollutant. On the basis of degradability nature the pollutant again classified in to two categories 1. **Biodegradable-** These are those pollutants which can be consumed and	3

broken down to natural substances.

Ex. CO_2 and H_2O by biological organisms0

2. **Non biodegradable-** These pollutants can not be consumed or broken down by biological organisms.

ex. Plastics, aluminum and many chemicals in industry and insecticides, fungicides etc.

Control of water pollution:- 4

1. **Primary Treatment-**

- Sewage passes through series of grates and screens to remove large objects.
- After filtration, it enters settling chamber where sand, dirt, organic sediments and other solid particles settle down.
- About 60 % of the solids material and 30 % of oxygen demanding wastes are removed by primary treatment.

2. **Secondary Treatment-**

- Secondary treatment employes biological methods to remove biodegradable organic wastes followed by disinfection with chlorine to kill potentially pathogenic bacteria, viruses and protozoans.
- There are two main processes during secondary stage.

a. **Trickling filter-**

- The wastes are passed through trickling filter where long pipe rotates slowly over a bed of stones, dripping wastes on to an artificial detritus food chain comprising bacteria, fungi, protozoa, snails and insects.
- The organic compounds are consumed by bacteria and fungi which are feed upon by the protozoa, which in turn are consumed by snails and insects.

b. **Activated sludge process-**

- The sewage is pumped in to a huge tank where it is mixed with air bubbles and bacteria rich sludge for several hours
- The organic matter is consumed by bacteria and the mixture is pumped out to sedimentation tank allowing sludge to settle out for reuse.

3. **Tertiary Treatment-**

- The tertiary treatment removes most of the chemicals that remain in water after secondary treatment.

a. **Coagulation and sedimentation-** The organic chemicals are precipitated by addition of alum, lime or iron salts.

b. **Adsorption-** Activated carbon is used to filter the wastes for removing chlorinated hydrocarbons.

c. **Oxidation-** Organic contaminants are oxidised by several agents like ozone and potassium permagnate.

d. **Reverse osmosis-** water is passed through a membrane impermeable to

	dissolve ions. e. **Biological Method-** Algae and water hycinth grown in ponds can be used to consume nitrates and phosphates.	
Q. 5	Define natural resources. Classify natural resources along with example and explain in brief the ecological importance of forest conservation.	
	Definition: Any material which is required or used to sustain life or livelihood is called as natural resource.	1
	Classification of Natural Resource 1. **Renewable resources-** • The resources that can be replenished through natural cycles are called renewable resources. • These resources can increase their abundance through reproduction and utilization of simple substances. • Example- Oxygen in air (replenished through photosynthesis), fresh water (regenerated through hydrological cycle), and all biological organisms and products viz., forest, wild life etc. (regenerated through natural cycles of growth and reproduction) 2. **Non-renewable Resources** The resources that can not be replenished through natural processes are called non-renewable resources. Non-renewable resources can further be divided in to two categories **a) Recycleable:-** These resources can be collected after they are used and can be recycled. These are mainly the non energy mineral resources which occur in earth crust, viz., areas of aluminium, copper, mercury and other metals. **b) Non- recycleable:-** • These resources can not be recycled in any way. Examples- Fossile fuels i.e. Coal, Oil and natural gas, Uranium used for nuclear power	3
	Ecological importance of forest:- • Regulation of global climate and temperature • Reduction of Global Warming • Production of Oxygen • Conservation of Soil • Habitat to wild life • Absorption of Noise • Absorption of air pollutants (Explanation on above point is to be given in brief)	4
Q. 6	What is ecosystem? Give the classification of ecosystem and explain in brief the pond ecosystem.	

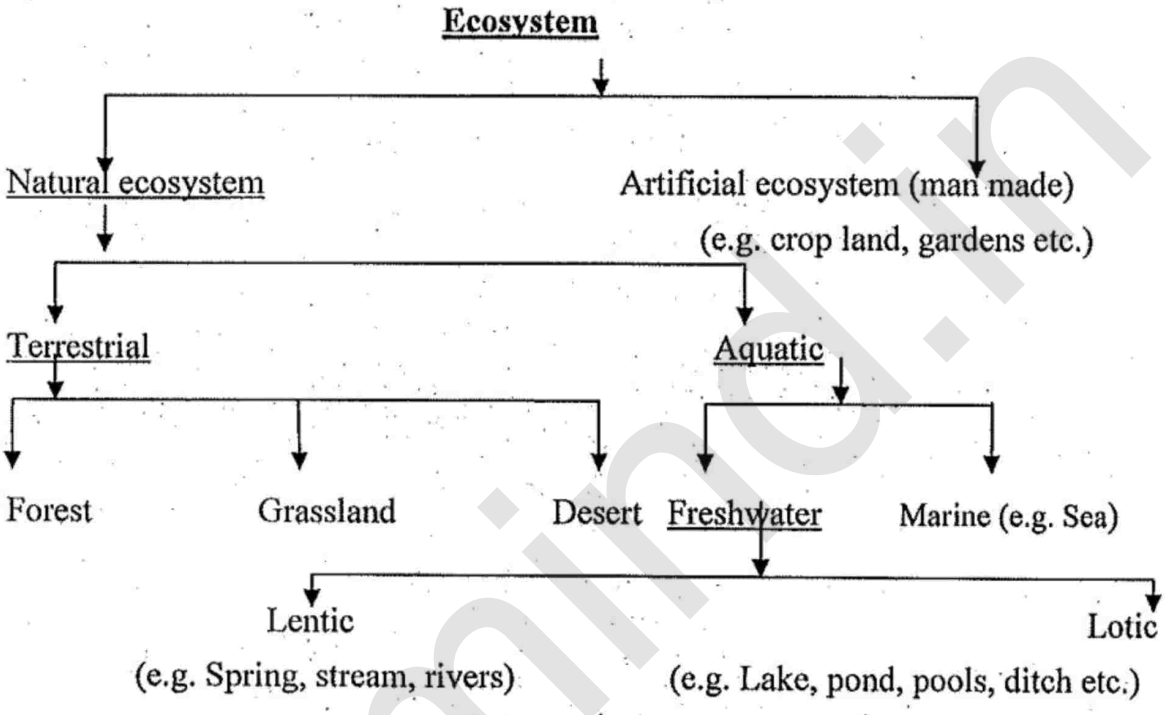
Definition-

A community of interdependent organisms and the interactions with the physical environment in which they live. OR

It can also be defined as the Abiotic and biotic factors and the interactions between them.

1

Classification of ecosystem:



3

Pond ecosystem:-

Components of Ecosystem-

I) Abiotic components-

- The chief substances are heat, light, pH Values of water.
- The basic inorganic organic compounds such as water itself, carbon dioxide, oxygen, calcium, nitrogen, phosphate, amino acids, humic acids etc.
- The light intensity is measured by a Lux- photometer, the pH of the water and mud is determined by pH meter, Dissolved oxygen, carbon dioxide content, phosphate and nitrogen content of water are estimated by appropriate method.

II) Biotic component

1. **Producers-**

- These are autotrophic. Ex. Green plants and some photosynthetic bacteria.
- The producers fix radiant energy and with the help of minerals derived from the water and mud.
- They manufacture complex organic substances as carbohydrates, proteins, lipids etc.

4

	Two types- a) **Macrophytes-** Rooted larger plants those are partly or completely submerged. Ex. Trapha, typha, Potamogeton. Free floating- ex. Azolla, salvinia **b) Phytoplanktons-** These are minute, floating or suspended lower plants. Ex. Spirogyra, olothrix etc. **2. Consumers-** They are heterotrophs which depends for their nutrition on producers, the green plants. a) **Primary consumers (Herbivores)-** These are herbivores feeding directly on living plants (Producers) or plants remains. These may be large as well as minute in size. ex. Fish, insect larvae, beetles, mites etc. b) **Secondary consumers (Carnivores)-** They are carnivores which feed on primary consumers (herbivores). These are chiefly insects and fish. **c)Tertiary consumers** These are some large fish those feed on the smaller fish and thus become tertiary (top) consumers. **3. Decomposers-** • They are also known as micro consumers. • They absorb only a fraction of the decomposed organic matter. • They bring about the decomposition of complex dead organic matter of both plants and animals in to simple form. • Thus they play an important role in the return of mineral elements again to medium of the pond. Ex. Bacteria, actinomycetes and fungi	
Q. 7	Enlist the different acts passed by Govt. of India to protect environment. Describe forest conservation act 1980.	
	The environmental (protection) Act, 1986 The air (prevention and control of pollution) Act, 1981 The water (prevention and control of pollution) Act, 1974 The wild life (protection) Act, 1972 The forest (conservation) Act, 1980	2
	An Act to provide for the conservation of forests and for matters connected therewith or ancillary or incidental thereto. Be it enacted by Parliament in the Thirty-first Year of the Republic of India as follows: - **1. Short title, extent and commencement-**	6

(1) This Act may be called the Forest (Conservation) Act, 1980.

(2) It extends to the whole of India except the State of Jammu and Kashmir.

(3) It shall be deemed to have come into force on the 25th day of October 1980.

2. Restriction on the de-reservation of forests or use of forest land for non-forest purpose Notwithstanding anything contained in any other law for the time being in force in a State, no State Government or other authority shall make, except with the prior approval of the Central Government, any order directing –

i) that any reserved forest (within the meaning of the expression "reserved forest" in any law for the time being in force in that State) or any portion thereof, shall cease to be reserved;

ii) that any forest land or any portion thereof may be used for any non-forest purpose;

iii) that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any authority, corporation, agency or any other organisation not owned, managed or controlled by Government;

iv) that any forest land or any portion thereof may be cleared of trees which have grown naturally in that land or portion, for the purpose of using it for reafforestation.

Explanation - For the purpose of this section, "non-forest purpose" means the breaking up or clearing of any forest land or portion thereof for

a) the cultivation of tea, coffee, spices, rubber, palms, oil-bearing plants, horticultural crops or medicinal plants;

b) any purpose other than reafforestation; but does not include any work relating or ancillary to conservation, development and management of forests and wildlife, namely, the establishment of check-posts, fire lines, wireless communications and construction of fencing, bridges and culverts, dams, waterholes, trench marks, boundary marks, pipelines or other like purposes.

3. Constitution of Advisory Committee The Central Government may constitute a Committee consisting of such number of persons as it may deem fit to advise that Government with regard to

i) the grant of approval under Section 2; and

ii) any other matter connected with the conservation of forests which may be referred to it by the Central Government.

3A. Penalty for contravention of the provisions of the Act

Whoever contravenes or abets the contravention of any of the provisions of Section 2, shall be punishable with simple imprisonment for a period, which may extend to fifteen days.

3B. Offences by the Authorities and Government Departments

1) Where any offence under this Act has been committed –

(a) by any department of Government, the head of the department; or

	(b) by any authority, every person who, at the time the offence was committed, was directly in charge of, and was responsible to, the authority for the conduct of the business of the authority as well as the authority; shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly: Provided that nothing contained in this sub-section shall render the head of the department or any person referred to in clause (b), liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence. 2) Notwithstanding anything contained in sub-section (1), where an offence punishable under the Act has been committed by a department of Government or any authority referred to in clause (b) of sub-section (1) and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of any officer, other than the head of the department, or in the case of an authority, any person other than the persons referred to in clause (b) of sub-section (1), such officer or persons shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly. **4. Power to make rules** 1) The Central Government may, by notification in the Official Gazette, make rules for carrying out the provisions of this Act. 2) Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule. **5. Repeal and saving** (1) The Forest (Conservation) Ordinance, 1980 is hereby replaced. (2) Notwithstanding such repeal, anything done or any action taken under the provisions of the said Ordinance shall be deemed to have been done or taken under the corresponding provisions of this Act.	
Q. 8	What is carbon credit? Explain the types of carbon credits and write its advantages and disadvantages.	
	A carbon credit is a tradable permit or certificate that provides the holder of the credit the right to emit one ton of carbon dioxide or an equivalent of another greenhouse gas – it's essentially an offset for producers of such gases. The main goal for the creation of carbon credits is the reduction of emissions of carbon dioxide and other greenhouse gases from industrial activities to reduce the effects of global warming.	1

	Types of Carbon Credits There are two types of credits: 1. **Voluntary emissions reduction (VER):** A carbon offset that is exchanged in the over-the-counter or voluntary market for credits. 2. **Certified emissions reduction (CER):** Emission units (or credits) created through a regulatory framework with the purpose of offsetting a project's emissions. The main difference between the two is that there is a third-party certifying body that regulates the CER as opposed to the VER.	3
	Advantages:- 1. Technology transfer from developed to developing countries 2. Better technology for company 3. Can change country's financial situation 4. Development of cleaner technologies 5. Environmental benefits 6. Good alternative option for investment 7. Helps in developing extra income **Disadvantages:-** 1. Gives false sense of pollution 2. It is not regulated 3. Developed countries purchase CER's rather than finding new way to reduce emission. 4. Lack of comprehensive and structured international system.	4
Q. 9	What do you mean by information technology? Enlist different IT useful in environment and explain role and application of IT in environmental protection.	
	Definition:-Information technology is the application of computers and other technologies to the acquisition, organization, retrieval and dissemination of information.	1
	1. Remote sensing Technology (RS) 2. Geographical Information system (GIS) 3. Global Positioning System 4. Internet and computers	3
	Role and application of IT in Environment:- • **Forest-** ➢ Forest resources are important and are linked with environment and biodiversity. ➢ Satellite remote sensing is used to map forest. ➢ This enables to assess forest stock, forest density, and status of forest. • **Biodiversity Conservation-** ➢ Conservation of biodiversity can only be achieved through conservation of biological habitat. ➢ Remote sensing is utilized to conduct detailed survey and inventory of existing bio-resources for conservation of ecosystem.	4

	➢ This is used for preservation and protection of habitats. • **Environment Management-** ➢ it is necessary to obtain environmental data base, collected across the space and time. ➢ Remote sensing technology along with GIS, GPRS has proved its capability to identify the source of pollution, accurately determine the location, extent and type of pollutants, interfering with land, water, soil or atmosphere i) **Water Pollution-** • Satellite remote sensing techniques can be provide us information about water quality parameters such as turbidity, suspended sediments, aquatic weeds, chlorophyll concentration by studying extent of light penetration of different spectral bands in to water. ii) **Air Pollution-** • Acid rain and build up of green house gases in the atmosphere are two major byproducts of air pollution today. • Impact of super power thermal power complexes (fly ash, large smoke plumes) on vegetation cover has been successfully monitored. iii) **Land Pollution-** • Mining and land use planners can study the environmental impact of open cast mining and mine fires by using remote sensing technology **Natural Resource Management-** Remote sensing can provide useful information related to agriculture, forestry, land resources and soil mapping, underground and surface water and ocean reources.	
Q. 10	Write short notes on (Any two)	
1.	**Food chain:-** All living organisms (plants and animals) must eat some type of food for survival. Plants make their own food through a process called photosynthesis. Using the energy from the sun, water and carbon dioxide from the atmosphere and nutrients, they chemically make their own food. Since they make or produce their own food they are called producers. Organisms which do not create their own food must eat either plants or animals. They are called consumers. Some animals get their energy from eating plants while other animals get energy indirectly from plants by eating other animals that already ate the plants. Food chains show the relationships between producers, consumers, and decomposers, showing who eats whom with arrows. The arrows show the movement of energy through the food chain. For example, in the food chain, the small fish (silverside) gets its energy by eating the plankton and the large fish (bluefish) gets its energy by eating the small fish. Finally, the bacteria eats the fish after it dies, getting its energy from the large fish. The bacteria also returns nutrients back to the environment for use by the phytoplankton.	4
2.	**Rain water harvesting:-** It is the activity of direct collection of rain water Rain water can be stored for direct use or can be recharged into the ground water aquifer **Rain Water Harvesting– Advantages**	4

1.Provides self-sufficiency to water supply

2.Reduces the cost for pumping of ground water

3.Provides high quality water, soft and low in minerals

4,Improves the quality of ground water through dilution when recharged

5.Reduces soil erosion & flooding in urban areas

6.The rooftop rain water harvesting is less expensive & easy to construct, operate and maintain

7. In desert, RWH only relief

8. In saline or coastal areas & Islands, rain water provides good quality water

The typical roof top rain water harvesting system comprises

Roof catchment:- The roof of the house is used as the catchment for collecting rain water. The style construction and material of the roof effect its suitability as a catchment, Roofs made of corrugated iron sheet , asbestos sheet, Tiles or Concrete can be utilized for harvesting the rain water.

Gutters:- Gutters are channels fixed to the edges of roof all around to collect & transport the rainwater from the roof. Gutters can be made in semi-circular and rectangular shape with cement pipe, plain galvanized iron sheet, PVC pipes, bamboos etc. Use of locally available material reduce the overall cost of the system.

Down Pipe:-It is the pipe which carries the rainwater from the gutters to the filter & storage tank. Down pipe is joined with the gutters at one end & the other end is connected to the filter unit of the storage tank. PVC or GI pipe of 50mm to 75mm are commonly used for down pipe. Bamboo can be also used wherever available and possible.

First Flush Pipe:- Debris, dust & dirt collect on the roof during non rainy periods when the first rain arrive. A first flush system arrangement is made to avoid the entering unwanted material into the Filter media & storage tank. This is a simple manually operated arrangement or semi-automatic system with a valve below the 'T' junction.

Filter Unit:- The filter unit is a container or chamber filled with filter media such as coarse sand, charcoal, coconut fiber, pebbles & gravels to remove the debris & dirt from water that enters the tank. The filter unit is placed over the storage tank or separately. It may be of Ferro cement filter unit, Aluminum, Cement rings or Plastic bucket etc.

Storage Tank:- It is used to store the water that is collected from the roof through filter. For small scale water storage plastic buckets, jerry cans, clay or cement jars, ceramic jars, drums may be used. For larger quantities of water, the system will require a bigger tank with cylindrical or rectangular or square in shape constructed with Ferro cement or cement rings or plain cement concrete or reinforced cement concrete or brick or stone etc. The storage tank is provided with a cover on the top to avoid the contamination of water from external sources. The storage tank is provided with pipe fixtures at appropriate places to draw the water to clean the tank

	& to dispose of extra water. A provision for keeping the vessel to collect the water is to be made.	
3.	**Women and child welfare:-** Women, especially lower income group both in rural and urban sector, work longer hours than men. Their work pattern differs and is more prone to health hazards. The daily collection of water, fuel wood and fodder is an difficult task for rural women.In urban areas, where lower economic group women live in crowded smoke filled in small huts in unhygienic slums, they spend long hours indoors, leading to respiratory diseases.In urban caters, a number of women strengthen their living by garbage picking. They separate plastics, metal and other recyclable material from the waste. During this process, they can get several infections.They provide an environmental practice of great value, but earn an inadequate money from this work and are exposed to various infections.Women's and girls are often the last to eat, as their role in traditional society is to cook the family meal and feed their husband and son first. This leads to malnutrition and anemia due to inadequate nutrition.The girl child is given less attention and educational facilities as compared to boys in India. A. **Problems of Women-** • Female infanticide • Child prostitution • Gender inequality • Denial of property act • Acid throwing • Eve teasing • Child raping • Gang raping • Prostitution • Dowry torture • Bride burning • Dowry • Polygamy **B. Women Welfare-** • Movement for self respect of women and women independence • Women education • Right in panchayat and politics • Right in property • Role in business, industry politics • Women welfare projects • Family and child welfare projects	4

- Womens health project
- Social education for women
- Legal assistance, laws
- Equal remuneration act 1976
- Dowry prohibition Act 1961

C. Child Problems-

1. Killing of female child
2. Child labour
3. Child begger
4. Child prostitution
5. Child marriage
6. Child rape
7. Sale of children
8. Denying education

D. Child Welfare-

1. Provision of balance diet
2. Avoiding malnutrition
3. Compulsory education
4. Free medical health care like polio etc.
5. Prevention of child labour, sale of children, child marriage, child rape etc.

	SECTION " B "	
Q. 11	Define the following terms.	1
1	**Afforestation:-** Planting new forests on lands that have not been recently forested.	1
2	**Decomposers:-** consumers, mostly microbial, that change dead organic matter into minerals and heat	1
3	**Ozone hole:-** An area in the ozone layer where the amount of ozone is reduced or so that harmful radiation from the sun can pass through it.	1
4	**Ecological pyramid:-** An ecological pyramid is a graphical representation of the relationship between the different living organisms at different trophic levels.	1
5	**Acid rain:-** Rain or other forms of precipitation that is unusually acidic.	1
6	**Eutrophication:-** An increase in chemical nutrients, typically compounds containing nitrogen or phosphorus, in an ecosystem.	1
7	**Global warming:-** The observable increase in global temperatures considered mainly caused by the human induced enhanced greenhouse effect trapping the Sun's heat in the Earth's atmosphere.	1
8	**Lentic:-** The term lentic (from the Latin lentus, meaning slow or motionless), refers to standing waters such as lakes and ponds.	1
Q.12	Fill in the blanks.	
1.	**Ultra violet (UV)** radiations are absorbed by ozone layer.	1
2.	**Man** is an example of omnivore.	1
3.	The wild life protection act was passed in the year**1972.**	1
4.	Interlocking of food chain is known as **Food web.**	1
5.	Autotrophs are also called as **producers.**	1
6.	The term 'ecosystem' was introduced by **A. G. Tansley.**	1
7.	The maximum average permissible noise levels during day time hours as per environment protection act in India is **45 dB**	1
8.	**Energy pyramids** are always upright.	1

Signature of course instructor
Name : Dr. M. G. Palshetkar
(M) : 9405960170

Signature of Head of the Department
Name : Dr. R. L. Kunkerkar
(M) : 8879034388