DR PANJABRAO DESHMUKH KRISHI VIDYAPEETH AKOLA
SEMESTER END THEORY EXAMINATION
B.Sc. (Hons.) Agriculture

Semester	: III (New)	**Term: I**	Academic year: 2020-2021
Course No	: ESDM-231/EVS-231	**Title:**	Environmental Studies and Disaster Management
Credits	: 3 (2+1)		
Day and Date	**: Tuesday19-01-2021**	**Time: 12.00to14.00**	**Total Marks:** 80

	SECTION "A" **(Write the answers in 4-5 sentences only. Each question carries 4 marks)**	**32**
Q. 1	**Enlist any eight role of an individual in controlling pollution** **Ans:-** 1. Individuals should minimize wastage of resources such as electricity. Every unit of electricity saved is equivalent unit of electricity produced as it not only saves the fuel that would be used to produce that electricity, but also help to prevent pollution that is accompanied by burning of that fuel. Therefore, person should always switch off appliances when not in use. 2. Individuals should prefer walking or use cycles instead of using motor vehicles, especially when distances to be travelled are small. 3. Individuals can make considerable contribution by using mass transport (buses, trains, etc) instead of using personal vehicles. 4. When going to workplace, colleagues from nearby localities should pool vehicles instead of going in individual personal vehicles. 5. Taking personal vehicles for periodic pollution checks at centres approved by authorities. 6. Individuals should reuse items whenever possible. 7. Products that are made of recycled material should be given preference. 8. Use gunny bags made of jute instead of plastic bags. 9. Take part in environment conservation drives such as tree planting drives. 10. Use water resources efficiently.	
Q.2	**Give the classification of disaster with example** Ans. . **1)** Natural disasters:-A natural event such as a flood, earthquake, or hurricane that causes great damage or loss of life. E.g. Flood, Earthquakes, Cyclones Landslide, Volcanic Eruption, Tsunami i) Geological disaster ii) Atmospheric disaster iii) Other natural disaster **2)** Manmade disaster:- Accidents, Deliberates, Forest fires	

Q.3

What are natural resources? Give the classification of natural resources with example

Ans: - Life on this planet earth depends upon a large number of things and services provided by the nature, which are known as Natural resources.

Types of natural resources:-

The natural resources are of two kinds:

l Renewable resources :

Which are in exhaustive and can be regenerated within a given span of time e.g. forests, wildlife, wind energy, biomass energy, tidal energy, hydro power etc. Solar energy is also a renewable form of energy as it is an inexhaustible source of energy.

2 Non-renewable resources :

Which cannot be regenerated e.g. Fossil fuels like coal, petroleum, minerals etc. Once we exhaust these reserves, the same cannot be replenished. Types of natural resources as below:

(i) Forest resources
(ii) Water resources
(iii) Mineral resources
(iv) Food resources
(v) Energy resources
(vi) Land resources.

Q.4

Enumerate the various causal factors of threat to biodiversity

Ans:-

Threats to biodiversity:

i) Forests and grasslands are changed to agricultural land. Encroachments are being repeatedly legalized.

ii) Natural wetlands are drained to establish crop lands leading to loss of aquatic species.

iii) Mangroves have been cleared for fuel wood and prawn farming, which has led to decrease in the habitat essential for breeding of marine fish.

iv) Grasslands are changed to other forms, degraded by overgrazing. Loss to cattle, goat and sheep.

v) Natural forests are being deforested for timber and replanted for teak, sal etc. Such monoculture does not support biodiversity as in forests which have closed canopy and rich undergrowth. Excess collection of fire wood by lopping of branches of trees canopy is opened up altering the local biodiversity.

vi) Foraging cattle retard regeneration of forest as young seedlings are trampled.

vii) Ever increasing population gradually decreases buffer zones and forested areas. A prime example is Gir national park, the last bastion of Asiatic lion with a meter gauge railway line, state expressway and 3 temples.

viii) Repeated fires by local grazers to increase growth of grass ultimately reduce regeneration of grasses.

ix) Introductions of exotic weeds e.g. lantana bushes, Eupatorium shrubs and 'congress' grass are invading at the expense of indigenous undergrowth species. Following traditional farming techniques like slash and burn in Himalayas, and rab, lopping of tree branches for making wood ash fertilizer in Western Ghats are now leading to loss of

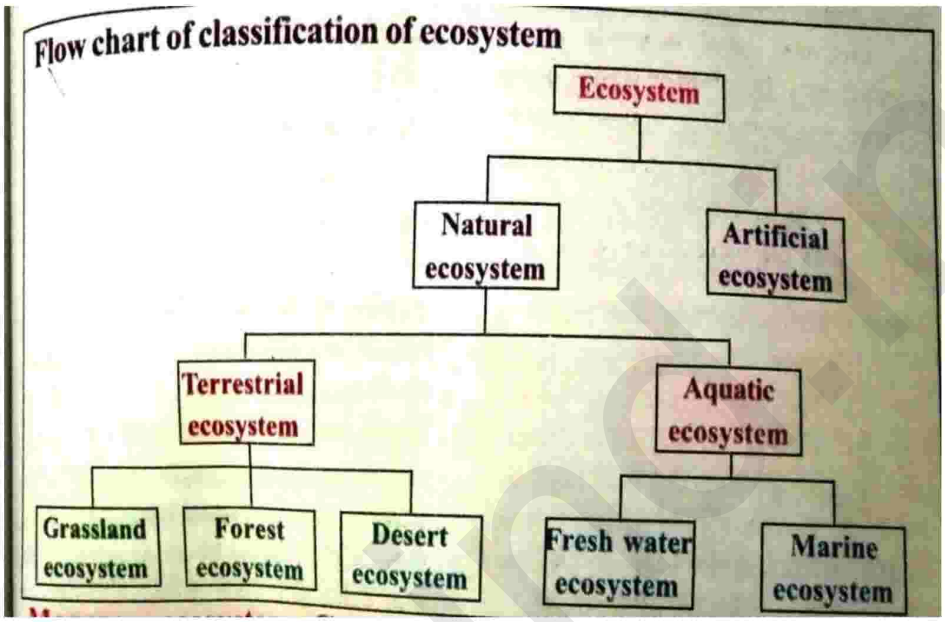
	biodiversity. **x)** Over harvesting of fish by large trawling boats is leading to depletion of fish stocks. Marine turtles caught in the net are massacred of the coast of Orissa. The rare whale shark, a highly endangered species, is being killed off the coast of Gujarat. **xi)** **Poaching:** Specific threats to certain animals are related to large economic benefits. The skin and bones from tigers, ivory from elephants, horns from rhinos and perfume from the musk deer are extensively used abroad.	
Q.5	What is Pollution? State the causes, effects and control of air pollution Ans: Pollution :It refers to direct or indirect change in any component of the biosphere That is harmful to the living organisms. **State the causes:** Air pollution may originate from one or more variety of sources. The natural pollution include sources such as oceanic aerosol, volcanic emissions, biogenic sources, Windblown terrestrial dust and lightening. The artificial pollution generates from human activities and includes sources such as fuel burning, refuge burning, transportation, Construction of buildings, chemical factories, metallurgical factories and, vehicles. The third category includes solvent usage and sources include spray painting And solvent extraction. Automobiles are the first rate of polluters. Industries occupy Second position. Causes of air pollution 1) Over population 2) Increasing Urbanization 3) Increasing vehicles **Control of air pollution:** 1. Strengthening and introduction of mass transit system as these use significantly Less fuel per person per kilometer. 2. Vehicles with old technology should be banned for big cities. 3. Two/three-wheelers should be upgraded to four-stroke engines. 4. Heavy duty vehicles should not be allowed to ply on the inner city roads at peak hours (8 to 12 noon and 4 to 8 p. m.) so as to reduce traffic stagnation. 5. Catalytic converters should be made compulsory for all petrol-driven vehicles and diesel vehicles must have a particle trap. 6. Better urban design to avoid congestion and reduce transport needs. 8. Encourage the introduction of modem technology in vehicles and also, the use of electric or battery-operated vehicles.	

Q.6 **State scope of environmental science.**

Ans:-

1) The environment is complex and actually made up of many different Environments ,including natural, constructed and cultural environments
2) environmental studies is the inter disciplinary examination of how biology , geology , politics policy studies ,law, geology, religion engineering, chemistry and economics combine to inform the consideration of humanity's effects on the Natural world.
3) This subject educates the students to appreciate the complexity of Environmental issues and citizens and experts in many fields. By studying
   Environmental science, students may develop breadth of the inter disciplinary And methodological knowledge in the environmental fields that enables them to Facilitate the definition and solution of environmental problems.
4) The scope of environmental studies is that, the current trend of environmental Degradation can be reversed if people of educated communities are organized and empowered; experts are involved in sustainable development. Environmental factors greatly influence every organism and their activities.
5) It is essentially a multidisciplinary approach and its components include Biology, Geology, Chemistry, Physics, Engineering, Sociology, Health Sciences, Anthropology, Economics, Statistics and Philosophy.
6) It is essentially a multidisciplinary approach. An Understanding of the working of the environment requires the knowledge from wide ranging fields.
7) Environment is not a single subject, it is an integration of several subjects that Include both science and social studies.
8) To understand all the different aspects of our environment, we need to understand biology, chemistry, physics, geography, resources management, economics, and population issues .Thus, the scope of environmental studies extremely wide and covers some aspects of nearly every major discipline.
9) .We lives in a world where natural resources are limited. Water, air, soil, minerals, oils, the products we get from forests, grasslands, oceans and from agriculture and livestock, are all a part of our life support systems. Without them, life itself would be impossible. If we use them more and more, the earth's resources must inevitably shrink.
10) The earth cannot be expected to sustain in definitely due to over utilization of **resources**, misuse of resources .We waste or pollute large amount of clean water. We discard plastic, solid waste sand liquid wastes from industries which cannot be managed by natural processes.

Q.7	**Draw flowchart indicating classification of ecosystem**	



Q.8 **Enlist different types of ecological pyramids. Explain anyone**

Ans:-

Ecological pyramids: It is a graphical representation of tropic structures and functions of an ecosystem, starting with producers at the base and successive tropic levels at the apex.

Ecological pyramids are of three types:

1. Pyramid of numbers: It represents the number of individual organisms at each tropic level. It may have upright or inverted pyramid of numbers depending upon the types of ecosystem and food chain.

2. Pyramid of Biomass: It is based upon the total biomass at each tropic level in a food chain.

3. Pyramid of Energy: The amount of energy present at each tropic level is considered for this type. Pyramid of energy gives the best representation of the tropic relationships and it is always upright.

Pyramid of Numbers

It indicates the numerical relationship between different tropic levels of a food chain. The more abundant species from the base of pyramid and the less abundant species remain near the top. It is the relationship between the number of producers, consumers of primary,

Secondary and tertiary orders constituted. The form of the pyramid of numbers depends and varies according to different communities and depends on whether producers are small (phytoplankton, grass) or large (oak trees). Sometimes, number of individuals varies so widely that it is difficult to represent the entire ecosystem on the same numerical scale. Such data could best be Presented in a tabular form.

In grassland ecosystem, the producers are mainly grass? And are always in maximum number. This number then show a successive decrease towards apex, as the primary consumers (herbivores), which are rabbits, mice, etc., are lesser in number than the grasses and green plants. Finally the top (tertiary) consumers, the hawks and birds, are least in number. Thus, the pyramid becomes upright.

SECTION – B

(Write the answers in one sentence only. Each question carries 2 marks)

Q. 11	Do as directed (Any Twelve)
a)	Spell out IPCC and NDMA Ans:- **IPCC :**Intergovernmental Panel On Climate Change **NDMA:** The National Disaster Management Authority
b)	What do you mean by biodiversity? **Ans: Biodiversity** refers to the variety and variability among all groups of living organisms And the ecosystem complexes in which they occur.
c)	List out the basic biotic components of any ecosystem Ans: 1. Producers 2. Composers 3. Decomposer are the biotic components of pond ecosystem
d)	Enlist the levels of biodiversity 1) Genetic biodiversity 2) Species biodiversity 3) Ecosystem biodiversity

e)	What is difference between reforestation and aforestation **Ans: reforestation** :clearing some naturally growing trees and replacing them by economically important trees **Deforestation:** The process of denuding and degrading a forested land initiates a desert producing cycle that feeds on itself.
f	What do you mean by disaster? **Ans:-**Any occurrence causing damage, ecological disruption, loss of human lives, deterioration of health and health services on a scale sufficient to warrant any extraordinary intervention from outside the affected community
g	Enlist any four abiotic climatic components of ecosystem. Ans: - 1. **Climatic factors:** These include light, temperature, precipitation, atmospheric humidity and wind.
h	Give any four ways of water conservation **Ans**: • Keep taps closed when brushing teeth and taking a bath • Use drip and sprinkler type of irrigation in agricultural fields • Practice rain water harvesting techniques • Reuse the waste water from kitchens and bath for garden use
\i	State the different types of pollution Ans: • Water pollution • Soil Pollution • Air Pollution • Noise Pollution
j	List out any four natural disasters **Natural Disasters:** • **Flood** • **Earthquakes** • **Cyclones** • **Landslide** • **Volcanic Eruption** • Tsunami
k	Define environmental science Ans: It is applied Science with the multi disciplinary approach to the study and management of the environment consisting biotic and abiotic factors and issues that affects living organisms make human civilization
l	List out the prominent solid wastes Ans: • Household Hazardous Waste (HHW) • Construction and Demolition Debris. • Industrial/Commercial Waste. • Fluorescent and HID Lamps. • Regulated Medical Waste. • Used Electronic Equipment. • Used Oil. • Waste Tires
m	Give four important channels used for disaster warning 1) Mass animal migration 2) Mass Die off 3) Cloudy sky

n	List out any four renewable resources 1) Solar energy 2) Wind energy 3) Biomass energy 4) Hydro energy 5)

SECTION – C (Choose the correct option. Each question carry 1 mark)				
Q. 12				
1)	Floods can be prevented by _____			
	[a]	Afforestation	[b]	Deforestation
	[c]	Soil erosion	[d]	None of these
2)	**A.G. Tansley** proposed the term ecosystem			
	[a]	Ernst Haeckel	[b]	E. Odum
	[c]	**A.G. Tansley**	[d]	Lindeman
3)	Exhaustible energy resources includes **Petroleum products**			
	[a]	Solar energy	[b]	**Petroleum products**
	[c]	Tidal enerby	[d]	None of these
4)	**Biosphere** is the highest level of organization in nature			
	[a]	Organism	[b]	Community
	[c]	Population	[d]	**Biosphere**
5)	Autotrophs are generally **Producers**			
	[a]	**Producers**	[b]	Consumers
	[c]	Decomposers	[d]	None of these
6)	**Photosynthesis** is primary function of any complete terrestrial ecosystem			
	[a]	Respiration	[b]	Decomposition
	[c]	**Photosynthesis**	[d]	None of these
7)	As per the National Policy, India should have **33 per cent** per cent of land under forest			
	[a]	50 per cent	[b]	45 per cent
	[c]	**33 per cent**	[d]	12 per cent
8)	**Energy** is the driving force to the work of ecosystem			
	[a]	Water	[b]	Atmosphere
	[c]	**Energy**	[d]	Animals
9)	World Water Day is observed on **22 March**			
	[a]	**22 March**	[b]	2 February
	[c]	15 August	[d]	14 December
10)	Biosphere comprises of **Three** major components			
	[a]	Two	[b]	**Three**
	[c]	Four	[d]	Five
11)	Sources of fresh water does not includes **Ocean**			
	[a]	Groundwater	[b]	**Ocean**
	[c]	Glaciers	[d]	Surface runoff
12)	Natural disaster includes **Flood and cyclone**			
	[a]	Train mishap	[b]	Deforestation
	[c]	Pollution	[d]	**Flood and cyclone**
13)	Water conservation in Agriculture can be achieved through use of _____			
	[a]	Conservation tillage	[b]	Drought tolerant crops
	[c]	Water efficient crops	[d]	**All of these**
14)	Deforestation caused due to _____			
	[a]	Over grazing	[b]	Forest Fires
	[c]	Urbanization	[d]	**All of these**

15)	**Aquatic Ecosystem** has inverted pyramid of biomass			
	[a]	Forest Ecosystem	[b]	Grassland Ecosystem
	[c]	**Aquatic Ecosystem**	[d]	Dessert Ecosystem
16)	**Seed Bank** is the Ex-situ technique of biodiversity conservation			
	[a]	**Seed Bank**	[b]	National Park
	[c]	Wildlife Sanctuary	[d]	None of these
17)	**Savannah and Tundra** is an example of terrestrial ecosystem			
	[a]	Ocean and Lake	[b]	**Savannah and Tundra**
	[c]	Wetlands and Marshes	[d]	None of these
18)	_____ group of crops are the food resources			
	[a]	Pulses	[b]	Cereals
	[c]	Oil seeds	[d]	**All of these**
19)	The World Food Day is observed on **16 October**			
	[a]	21 November	[b]	**16 October**
	[c]	21 March	[d]	16 December
20)	**Biome** is a community of organisms having common characteristics.			
	[a]	Cybernetics	[b]	Biosphere
	[c]	**Biome**	[d]	Tropic level
21)	**Clay** is an example of non-metal mineral resources			
	[a]	Copper	[b]	Gold
	[c]	Platinum	[d]	**Clay**
22)	**Solar energy** is an example of perpetual kind of natural resource			
	[a]	**Solar energy**	[b]	Fossil fuel
	[c]	Mineral	[d]	Human being
23)	The indirect values of biodiversity includes _____			
	[a]	Ethical values	[b]	Aesthetic values
	[c]	Cultural values	[d]	**All of these**
24)	**Secondary consumers** are the group of predators usually not preyed in an ecosystem.			
	[a]	Primary consumers	[b]	**Secondary consumers**
	[c]	Tertiary consumers	[d]	Quaternary consumers

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