Environmental Studies an Environmental And Disaster Management

Introduction to Environment

The term environmental has been defined under section 2(A) of environment protection Act (1986) to include water, Air and human beings other living creature, plants microorganisms and property.

Definition of environment:- The term environment is used to describe in the aggregate all the external forces, influence and conditions, which affect the life nature behavior and the growth development and maturity of living organism.

Type of environment:- the environment may be divided into

- **Physical/abiotic environment**
- **Biotic environment**
- **Cultural environment**

Physical Environment

The basis of physical characteristics and state, abiotic or physical environment in subdivided into

Solid (Lithosphere)

Liquid (Hydrosphere)

Gas (Atmosphere)

These environments can be termed as Lithosphere, Hydrosphere, Atmosphere environment which can be further broken into smaller units based on different spatial scales like:- Mountain environment, Plateau plain

The physical environment may also be viewed in terms of climate conditions providing contain suite of habits for biological communities like-Tropical temperature and polar environment etc.

Biotic environment

The organism work to form their social groups and organizations at several levels.

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The organizations work to derive matter from the physical environment for their sustenance and development.

It may be pointed out that of all the organism man is the most skilled and civilization and social organization is most systematic.

It is significant to note that three aspects of man, physical, social and economic have different characteristics and function in the Biotic environment

It consists of flora and fauna including man as an important factor.

They decided into-

Floral environment

Faunal environment

Components of environment

The basic components of the environment are atmosphere or the Air, Lithosphere or the or rocks and soil Hydrosphere or the water and the living components of the environment or the biosphere.

Atmosphere (ATM) the thick gaseous layer surrounding the earth.

It spreads up to 300km above the earth surface.

A part from gases there are water vapor, industrial gases, dust and smoke particular in suspended state microorganism etc.

Lithosphere:- the core which is around 7000km in diameter and is situated at the earth's center.

The mantle which environs the core and has a thickness of 2900km.

The crust floats on top of the mantle and is composed of basalt rich oceanic crust and granitic rich continental crust.

Hydrosphere:- the Hydrosphere include all water on or near earth surface and include oceans, lakes, rivers, clouds, soils, etc.

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Pollution

Pollution is the introduction of harmful materials into the environment. These harmful materials are called **Pollutions**.

Pollution is the intro of contamination into the natural environment that causes adverse change.

In 2020 pollution killed 9million people worldwide.

Many type of pollution like:- **Air pollution**, **Noise Pollution**, **Plastic Pollution**, **Soil Pollution, Radioactive pollution, Water Pollution, Visual Pollution,** and **Thermal Pollution.**

1) Water Pollution:- Water Pollution is the Contamination of water bodies usually as a result of human activities.

When harmful substances often chemical or microorganism contamination a stream river, Lake, Ocean, or other body of water degrading water quality and rendering it toxic to human or the environment.

Factors Contributing Water Pollution and their effects:-

Water pollution is caused due to several reasons. Here are the few major cause of water Pollution.

Industrial waste:- Industrial waste contains pollution like asbestos,lead, mercury and petrochemical which are extremely harmful to bath people and environment.

Industrial waste is discharged into likes and rivers by using flesh water making the water Pollution.

Acid Rain:- Acid rain is pollution of water caused by Air pollution in the atmosphere (ATM) mix with water vapour it result in acid rain.

Global warming:- There is an increase in water temperature.

The increase in temperature results in death of aquatic plants and animals. This also result in bleaching of coral reels in water.

Oil Pollution:- Sea water gets pollutied due to oil spilled from ships and tankers while traveling.

The spilled oil does not dissolve in water and forms a thick sludge Pollution the water.

Domestic waste water Pollution:- It mainly caused by sewage.

Sewage is defined as the water borne waste derived includes human excreted, Soaps, organic materials, detergents, paper and clothes.

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Treatment of domestic waste water Pollution:-

They waste water potable and usable by employing wastewater treatment technologies that filter and treat the wastewater by removing contamination such as sewage and chemicals.

Four common ways to treat wastewater include:-

- Physical water treatment
- Biological Water treatment
- Chemical Water treatment
- Sludge water treatment

• **Physical water treatment:-** In this methods are used for cleaning the wastewater processes like screening, sedimention and skimming are used to remove the solids no chemical are involved in this process.

The main techniques of physical waste water treatment including sedimention which is a process of suspending the heavy particles from the wastewaterwater.

It insoluble material settled down at bottom you can separate the pure water.

• **Biological Water treatment:-** This use various biological processes to break down the organic matter present in wastewater such as soap, human waste oil and food etc.

It can be divided into three categories:-

(1) **Aerobic processes:-** Bacteria decomposes the organic matter and converts it into carbon dioxide that can be used by plants. Oxygen is used in this process.

(2) **Anaerobic Processes:-** Here fermentation is used for fermenting the waste at a specific temperature. Oxygen is not used in anaerobic process.

(3) **Composting:-** A type of Aerobic process where wastewater is treated by mixing it with sawdust or other carbon sources.

Chemical Water Treatment:-

(a) The use of chemicals in water chlorine an oxidising chemical is commonly used to kill bacteria which decomposes water by adding contaminate to it.

Another oxidising agent used for purifying the wastewater is Ozone.

(b) Neutralization is a technique where an acid or base is added to bring the water to its natural pH of 7 chemicals prevent the bacteria from reproducing in water thus making the water pure.

• **Sludge water treatment:-** This is a solid liquid separation process where the least possible residual moisture is required in the solid phase and the lowest possible solid particles residuals are required in the separated liquid phase.

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Air Pollution

Definition:-

- Air Pollution is a mixture of solid particles and gases in the air. Car emission chemical fromfactories, dust, pollen and mold spores may be suspended as particles.
- Ozone a gas is a major part of air Pollution in cities.
- When Ozone forms air Pollution it's also called smog.

Type of Air Pollutions:-

The most common and harmful Pollutant outdoors include:-

1. Particulate matter
2. Nitrogen dioxide
3. Ozone
4. Sulphur dioxide

(1) Particulate matter:- Particulate matter is a mix of solid and liquids including carbon complex organicchemicals, sulphates, Nitrates, Mineral dust, and water suspended in the air.

(2) Nitrogen dioxide:- Nitrogen dioxide is a gas and is a major component of urban air Pollution episodes

(3) Ozone:- Ozone is a gas composed of 3atoms of Oxygen. It the upper level of the earth's atmosphere. It absorbs harmful ultraviolet radiation.

(4) Sulphur dioxide:- So2 is a colorless gas with a pungent, suffocating smell. It's produced by burningSulphur containing fuels such as Coal and Oil. This includes vehicles, power generation and heating.

Caused of Air Pollution:-

- It caused by solid and liquid particles and certain gases that are suspended in the air. These Particles and gases can come from car, truck exhaust, factors, dust and wildfire.
- It solid and liquid particles suspended in our air are called Aerosol.

Effect of Air Pollution on environmental:-

Air Pollution can damage crops and trees in a variety of ways. Ground level Ozone can lead to reductions in agricultural crops and commercial forest yields reduced growth and survivability of tree seedlings and increase plant susceptibility to decrease pests and other Environmental stresses.

Monitoring and control of Air Pollution:-

Monitoring is an exercise to measure ambient air Pollution levels in an area.

The date will indicate the status of the quality of air we breathe.

The date over a long term allows us to tease out patterns that help support air Pollution control.

Control measures techniques:- Some effective techniques to control air Pollution are as follow:-

A. Source Correction Methods
B. Pollution Control Equipment
C. Diffusion of Pollutant in air
D. Vegetation
E. Zoning

A) Source Correction Methods:- Industries make a major contribution towards causing Air Pollution Formation of Pollutants can be prevented and their emission can be minimised at the source itself.

This source correction method are.

1) Substitution of row materials:- If the use of a particular row material result in air Pollution then It should be substituted by another purer grade row material which reduces the formation of Pollutants.

- Low Sulphur fuel which has less Pollution potential can be used as an alternative to high Sulphur fuels.
- Comparatively more refined LPG or LNG(Liquefied Natural Gas) can be used instead of traditionalhigh contamination fuels such as Coal.

2) Process Modification:- It coal is washed before Puluerization then fly-ash emissions are considerably reduced.

If air intake of boiler furnace is adjusted then excess Fly-ash Emission at power Plant can be reduced.

B) Pollution Control Equipment:- Sometimes Pollution control at source is not possible by preventing the emission of Pollutants. Then it becomes necessary to install Pollution control equipment to remove the gaseous Pollutants from the main gas stream.

They are classified into two types

•Control devices for particulate contamination.

• Control devices for gaseous contaminates

C) Diffusion of Pollutants in Air:-

- Dilution of the Contaminate in the atmosphere is another approach to the control of air Pollution.
- The Pollution source release only a small quantity of the Contaminates then Pollution is not noticeable as these pollutants easily diffuse into the Atmosphere but if the quality of air contamination is beyond the limited capacity of the environment to absord the contaminats then Pollution is caused.
- However dilution of the contaminats in the atmosphere can be accomplished through the use of tall stacks which penetrate the upper atmosphere layers and disperse the contaminats so that the ground level Pollution is greatly reduced the hight of the stacks is usually kept 2 to 2½ time the height of nearbystructures.
- The disadvantage of the method is that it is a short term contract solution that actually brings highlyundesirable long range effect.
- This is so because dilution only dilutes the contaminats to level at which their harmful effects are lessnoticeable near their original source where as at a considerable distance from the source these very contaminats eventually come down in some form or another.

D) Vegetation:- Plants contribute towards controlling Air Pollution by utilising CO2 and O in the processof photosynthesis.

This purifies the air (removal of gaseous pollutant - Co2) for the respiration of men and animals.

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Noise Pollution

Noise Pollution also known as environmental noise sound Pollution is the propagation of noise with ranging impact on the activity of human or animal life.

Source:-
The source of outdoor noise worldwide is mainly caused by Machines, Transport and propagation system.

Effect of noise Pollution on human health and Animals

- Noise pollution refers to a sound that is annoying a nuisance or undesired for the ears and that which can impact the activity or behavior of the animal and human life.
- Noise is regarded as a pollutant majorly because it disrupts the natural flow of hearing or normal hearing Sense.
- Noise Pollution is effect the many problem like- Tinnitus, Hearing problem etc. Cardiovascular disease problems.

Control of noise Pollution

- A man inserting an earplug in his ear to reduce the noise exposure.
- Noise reduction mats and spray foams are common vehicle or building solution.
- Hedges are quite effective in Noise reduction.
- This highway has an added barrier that will aid in Noise reduction for the surrounding area.

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Radioactive Pollution

The Radioactive Pollution is defined as the physical Pollution of living organism and their environment as a result of release of Radioactive.

Source of Radioactive Pollution:-

- The environment during nuclear explosions and testing of nuclear weapons and decommissioning mining of Radioactive.

Effect of Radioactive Pollution:-

Effects on Plants:-

- The plants are also expected to radiation and the damage is mostly done due to the increased Ultraviolet waves different Plant get affected differently.
- The stomata stop to evaporate during the increase of radiation. When the radiation hits the chromosome the reproduction gets hampered it result in altered shapes size and health in plants.

Effects on Animals:-

- The animals at Different levels suffer different levels suffer differently the higher level organisms get more affected then insects and flies.
- These radionuclide enter their metabolic cycles and affect their DNAs (mentioned - ionizing)
- This ends up having a mutated animal generation with a higher risk of health issues by just a small amount of Radionuclides.

Effects on Human:-

- Cancer is the most dominant radiation related disease.
- It has developed over the years and poses a great risk in global health others like- leukemia, anemia, hemorrhage a reduction in the life spine.
- Kids born have adverse defects caused by genetic mutations like low weight during birth

Prevention and control of Radioactive Pollution:-

- Avoid ordering radioactive materials in quantities that exceed your intended usage.
- Non-radioactive waste must never be mixed with Radioactive waste failure to do this significantly increase the volume of waste.
- Substitute with short lived Radionuclides where feasible. Limit the number of users of radioactive material.

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[65,500 प्रतियाँ]

Code No. : 2100

Q1) Attempt any two parts of the following : [2×5=10]

a) What are the main causes of deforestation?

b) What are the specific areas of National Action Plan on Climate Change (NAPCC) launched by Government of India?

c) "Environmental pollution is an incurable disease." Explain.

Q2) Attempt any two parts of the following : [2×5=10]

a) Effect of air pollution on human health.

b) Why soiling and corrosion are hidden cost of air pollution? Explain.

c) Define BOD. How does BOD determine the pollution of water?

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Q3) Attempt any two parts of the following : [2×5=10]

a) How do individual contaminants affect human health?

b) E-waste pollution, Explain.

c) What level of noise is called noise pollution? What is acceptable "Noise pollution level" or "sound pressure level" (SPL) in India?

Q4) Attempt any two parts of the following: [2×5=10]

a) Why do we refer Environmental protection act 1986 as an umbrella act?

b) Functions of National Green Tribunal (NGT).

c) How do greenhouse gases cause global warming?

Q5) Attempt any two parts of the following: [2×5=10]

a) What are the main causes of ozone depletion?

b) What are the gases that cause acid rain? Why is acid rain a problem?

c) Is recycling truly beneficial for the environment?

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(हिन्दी अनुवाद)

नोट : सभी प्रश्नों के उत्तर दीजिए। सभी प्रश्नों के अंक समान हैं।

प्र.1) निम्नलिखित में से किन्हीं दो भागों का उत्तर दें : [2×5=10]

अ) वनों की कटाई के मुख्य कारण क्या हैं?

ब) भारत सरकार द्वारा शुरू किए गए जलवायु परिवर्तन पर राष्ट्रीय कार्य योजना (NAPCC) के विशिष्ट क्षेत्र क्या हैं? www.noteskarts.com

स) " पर्यावरण प्रदूषण एक लाइलाज बीमारी है।" समाझाइए।

प्र.2) निम्नलिखित में से किन्हीं दो भागों का उत्तर दें : [2×5=10]

अ) वायु प्रदूषण का मानव स्वास्थ्य पर प्रभाव।

ब) क्यों भिगोना (Soiling) और संक्षारण वायु प्रदूषण की छिपी हुई लागत है? समझाइए।

स) बी.ओ.डी. को परिभाषित कीजिए। बी.ओ.डी. जल प्रदूषण को कैसे निर्धारित करता है?

प्र.3) निम्नलिखित में से किन्हीं दो भागों का उत्तर दें : [2×5=10]

अ) व्यक्तिगत संदूषक मानव स्वास्थ्य को कैसे प्रभावित करते हैं?

ब) ई–अपशिष्ट प्रदूषण, स्पष्ट करें।

स) किस स्तर का शोर ध्वनि प्रदूषण माना जाता है? भारत में "ध्वनि प्रदूषण का स्तर" या "ध्वनि दाब स्तर" किस सीमा तक स्वीकार्य है?

प्र.4) निम्नलिखित में से किन्हीं दो भागों का उत्तर दें : [2×5=10]

अ) हम पर्यावरण संरक्षण अधिनियम 1986 को एक छत्र (Umbrella) अधिनियम के रूप में क्यों संदर्भित करते हैं?

ब) राष्ट्रीय हरित अधिकरण के कार्य।

स) ग्रीन हाऊस गैसें ग़्लोबल वार्मिंग का कारण कैसे बनती हैं?

प्र.5) निम्नलिखित में से किन्हीं दो भागों का उत्तर दें : [2×5=10]

अ) ओजोन के क्रमिक ऱ्हास के प्रमुख कारण क्या हैं?

ब) कौन सी गैसें अम्ल वर्षा का कारण बनती हैं? अम्लीय वर्षा एक परेशानी क्यों है?

स) क्या रीसाइक्लिंग वास्तव में पर्यावरण के लिए फायदेमंद है?

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[70,350 प्रतियाँ] Code No. : 0020

ENVIRONMENTAL EDUCATION & DISASTER MANAGEMENT

Time : 2.30 Hours] [Maximum Marks : 50

[Minimum Marks : 17

NOTES :

i) Attempt **all** questions.

ii) Students are advised to specially check the Numerical Data of question paper in both versions. If there is any difference in Hindi Translation of any question, the students should answer the question according to the English version.

iii) Use of Pager and Mobile Phone by the students is not allowed.

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Q.1) Answer any two parts of the following:

a) Discuss the importance of eco system in this modern environment.

b) Enumerate the significance of Biodiversity in human life.

c) Explain the term:

i) Urbanization

ii) Biodegradation.

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Q.2) Answer any three parts of the following:

a) Explain in brief the sources of pollution.

b) Differentiate between natural and man-made pollution with examples.

c) Differentiate between Biodegradation and Biodegradibility .

d) Discuss the use of biopesticides and biofungicides to uproot the problem of microbes from Plants.

e) Write a note on Ozone layer depletion and its effect on environment.

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Q.3) Answer any two of the following:

a) Discuss the role of green house in disaster management.

b) Explain the term deforestation. Discuss the factors promoting deforestation.

c) Discuss a case study of bad impact of deforestation in India.

Q.4) Write short notes on any four of the following:

a) Biofungicides. www.noteskarts.com

b) Management of water Pollution

c) Ozone layer depletion. .

d) Natural and man made pollution

e) Cyclones

f) Bog fillers

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Q.5) Answer any two of the following:

a) Discuss the treatment methods of effluent domestic water, waste water and industrial / mining waste water.

b) Explain the term 'Air Pollution'. Discuss the types of air pollutants which causes air pollutions.

c) Discuss ventricular pollution and its control with special emphasis of Euro - I, Euro - II, Euro - III and Euro - IV

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(हिन्दी अनुवाद)

नोट :- सभी प्रश्नों का उत्तर दीजिये।

प्र.1) निम्नलिखित में से किन्हीं दो का उत्तर दें:

क) किसी एक आधुनिक व्यवस्था के अन्तर्गत इको सिस्टम की उपयोगिता का उल्लेख करें।

ख) बायोडाईवरसीटी (Biodiversity) का.मानविक जीवन में उपयोगिता को दर्शाये।

ग) निम्न की व्याख्या करें -

i) अरंबनाईजेसन (urbanization) (नगरीकरण).

ii) बायोडिग्रेडेसन (Biodegradation)

प्र.2) निम्नलिखित में से किन्हीं तीन भागों का उत्तर दें:

क) संक्षेप में प्रदूषण के स्त्रोतों को बताये।

ख) पर्यावरणीय तथा मानविक प्रदुषण में सोदाहरण अन्तर स्पष्ट करें।

ग) बायोडिग्रेडेशन (Biodegradation) तथा वायोडिग्रेडिबिलिटी (Biodegradability) में अन्तर स्पष्ट करें।

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घ) पेडो के जड़ो से सूक्ष्म प्राणियों (microbes) को नष्ट करने के लिये व्यवहार में आये biopesticides तथा biofungicides के सम्बन्ध में वर्णन करें।

ओजोन सतह क्षरण (Ozone layer depletion) के पर्यावरण में प्रभाव पर एक संक्षिप्त लेख लिखें।

प्र.3) निम्नलिखित में से किन्हीं दो भागों का उत्तर दें:

क) आपदा प्रबन्धन में ग्रीन हाउस (green house) के भूमिका को दर्शाये।

ख) Deforestation शब्द की व्याख्या करें तथा उन घटकों का वर्णन करें जो (deforestation) में सहायक होते हैं।

ग) भारत में deforestation के खराब प्रभाव पर एक लेख लिखें।

प्र.4) निम्नलिखित में से किन्हीं चार पर टिप्पणी लिखें।

क) बायोफन्जीसाईड्स (Biofungicides)

ख) जल प्रदूषण का प्रबंधन

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ग) ओजोन (Ozone) सतह का श्रृंखलन (depletion)

घ) पर्यावरणीय तथा मानविक प्रदूषण

ङ) साईक्लोन्स (Cyclones)

च) बग फिलर्स (Bog Fillers)

प्र.5) निम्नलिखित में किन्हीं दो भागों का उत्तर दें।

क) Effluent domestic water, waste water तथा Industrial / mining waste water के शुद्धिकरण के विधि का वर्णन करें।

ख) 'वायु प्रदूषण' शब्द की व्याख्या करें। विभिन्न प्रकार के वायु प्रदूषण की व्याख्या करें जो वायु प्रदूषण में भाग लेते हैं।

ग) Ventricular pollution से तात्पर्य तथा इसके नियंत्रण के विधियों को दर्शाये। तथा इस अभिक्रिया में Euro - I. Euro - II, Euro - III एवं Euro - IV के भूमिका की व्याख्या करें।