

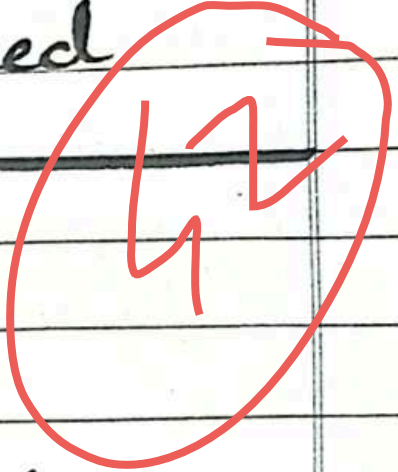
General Instructions

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1. Give numbering to headings.
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings.
3. Do not use table for comparison and contrast questions.
4. Draw figures/diagram/flowchart where needed.

Be short note



Biodiversity Loss :-

5. Start new question from fresh page.
6. Avoid writing wrong references.
7. Give more weightage to expressedly asked part/s of the question.
8. Change colour scheme for references to give them more visibility.
9. Manage time well.
10. Wide page borders are discouraged. Should be reasonable.

Biodiversity can refer to the decline of or disappearance of biological diversity that inhabits the planet.

The decrease can be within a specie, an ecosystem, a certain geographic area or earth as a whole. This loss in the variety of life can lead to a breakdown in the functioning of the ecosystem where decline has happened.

Two types of biodiversity loss:  
a) Natural loss ✓ An areas biodiversity increases or decreases with natural cycles. Natural ecological disturbances like wildfires, floods, volcanic eruption



and earthquakes changes ecosystem drastically by eliminating local populations of some species.

b) Human driven loss :-

Biodiversity loss caused by human activities tend to be more severe and long lasting. Massive conversion of forests for agricultural purposes has decreased 60% species around the world since 1970.

2.

## Remote Sensing

Remote sensing is the process of detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance. Special cameras collect remotely sensed images, which help researchers sense things about the Earth.

Some examples of remote sensing are:

- cameras on satellites and planes
- sonar systems on ships
- cameras in submarines or rovers used to map out oceans.

### Uses of remote sensing

- large forest fires can be mapped from space, allowing rangers to see much larger areas.
- Tracking clouds to help predict the weather or watching erupting volcanoes and help watching for dust storms
- Tracking the growth of urban areas and changes in demography
- Discovery and mapping of the topography of ocean floors.

3.

## REDD+

The acronym stands for "Reducing Emissions from Deforestation and forest Degradation. The + stands



for additional forest related activities that protect climate, e.g. sustainable management of forests and the conservation and enhancement of forest carbon stocks.

REDD+ framework was established under Paris Agreement. Under this framework, developing countries can receive results based payments for emission reductions when they reduce deforestation. This serves as a major incentive for their efforts.

#### 4. Sustainable Urbanization

Sustainable urbanism is the study of cities and the practices to build them. Urbanization is considered to be closely related to economic growth, particularly in developed countries where there have been



random and unplanned development or population growth. Globally, it is estimated that cities produce 80% of the GDP. The more urbanized areas indicate more per capita income and more employment opportunities. However, as seen in developing countries like Pakistan, urbanization occurs without any planning which causes severe effects on environment.

The main vision behind sustainable urbanization is the creation of such policies which will help with prosperity and well being of people along with minimum affects on environment.

Prioritizing the environment, these policies aim to protect the world's cultural and natural heritage and eliminating or reducing the environmental impacts.



## Q7(a). Environmental Impact Assessment.

EIA is the study of the effects of a proposed project, plan or programme on environment prior to decision making. It proposes to encourage the consideration of the environmental issues in planning and decision making and ultimately arrive at actions which are more environmentally compatible.

### Origin of EIA

In early 1960's investors and civil organizations formed pressure groups with the aim of getting a tool that can be used to safeguard the environment in any development.

USA responded with National Environmental Policy Act 1970 and became the first country to enact EIA legislation.



## Objectives of EIA :-

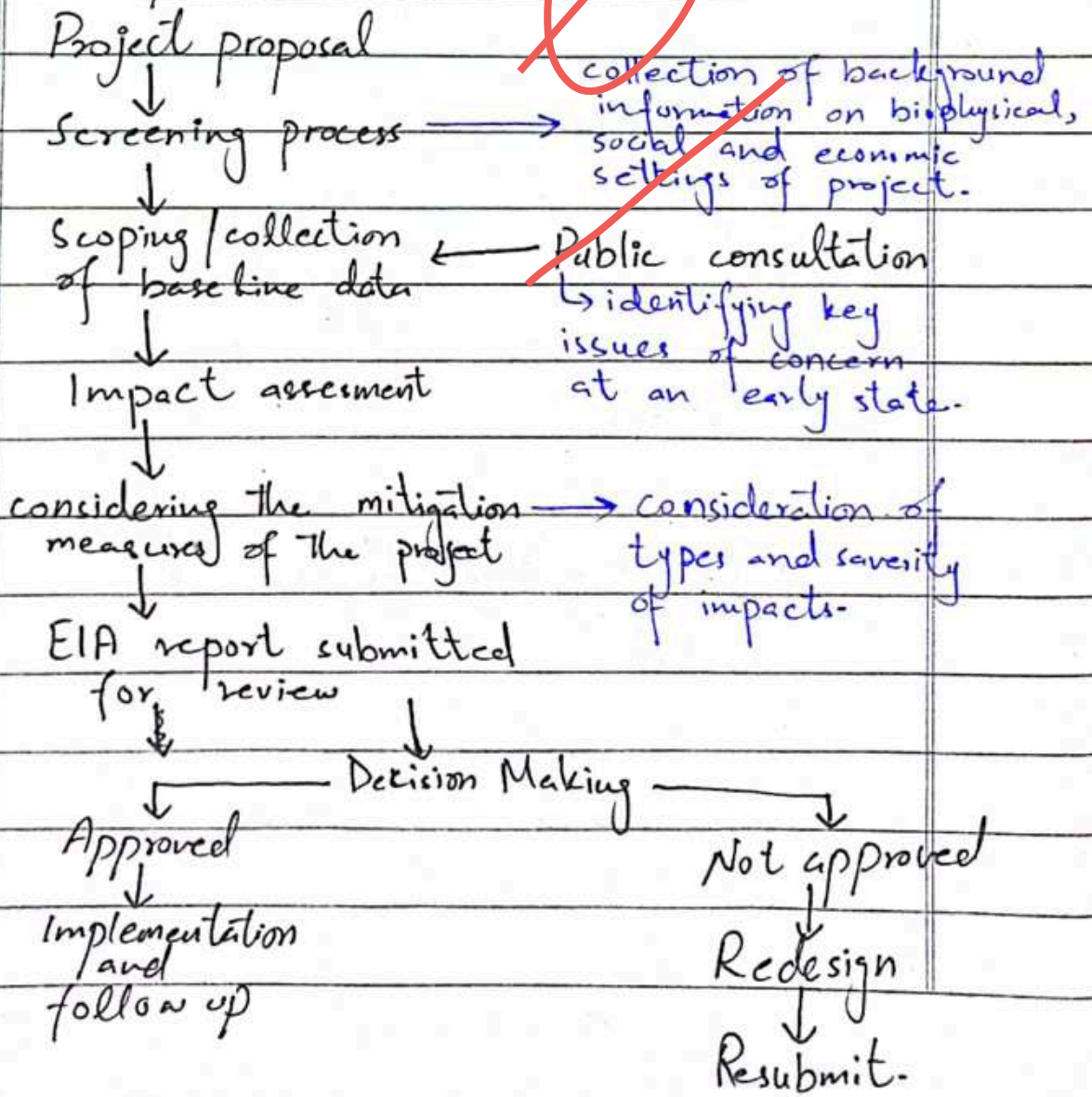
- 1) To ensure the environmental considerations are explicitly addressed and incorporated into the decision making process.
- 2) To anticipate, avoid or minimize the adverse effects of developmental projects.
- 3) To protect the productivity and capacity of natural systems and the ecological processes which maintain their functions.
- 4) To promote development that is sustainable and optimizes resources use and management opportunities.

## EIA policy Framework :-

EIA takes place within the legal frameworks established by individual countries/agencies. National legislation include a statutory requirement

for development activities.  
 In Pakistan, EIA is under the jurisdiction of Pakistan Environmental Protection Act (PEPA). This act makes it compulsory to conduct EIA studies for every project. However, institutional frameworks vary country to country.

EIA process w.r.t Pakistan





## Q7(b). Occupational health and safety measures and its benefits.

Occupational health and safety is identified as the discipline dealing with the prevention of work related injuries and diseases as well as the protection and promotion of health of workers. It aims at the improvement of working conditions and environment.

Members of different professions e.g. engineers, physicians, hygienist, nurses contribute to occupational safety.

### Objectives of OHS :-

- 1) To provide safe working conditions
- 2) safe use handling and storage of articles and substances
- 3) To provide a workspace with safe access and egress.



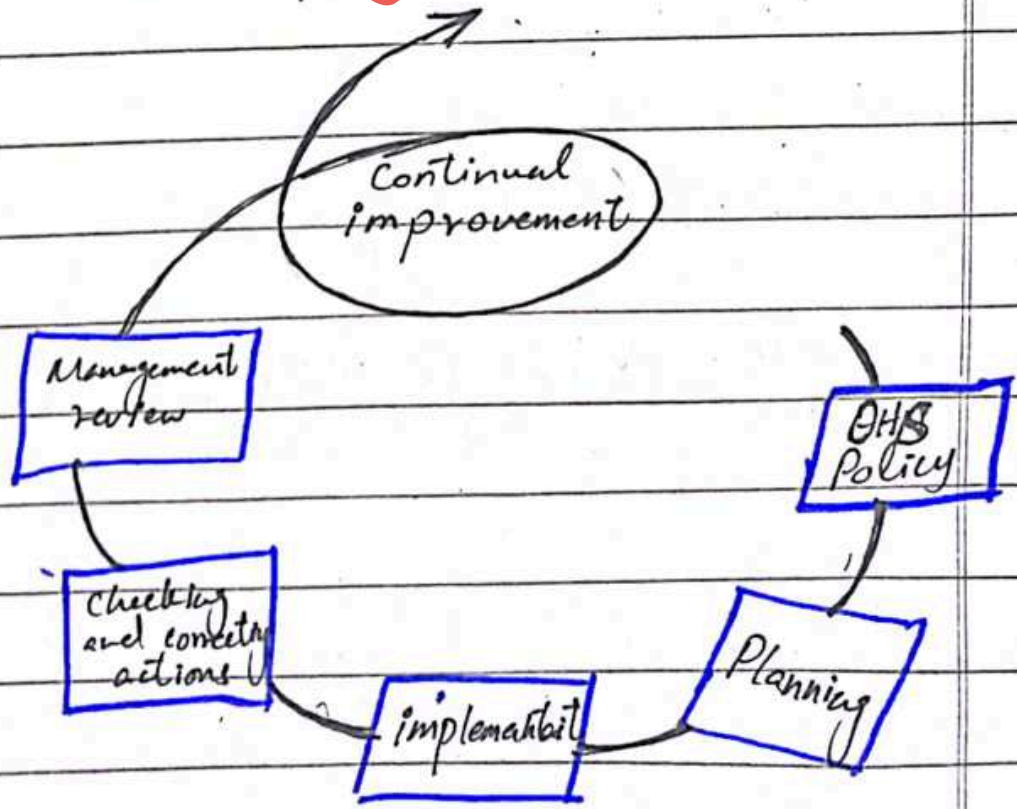
- 4. Suitable provisions of relevant information, instruction and training
- 5. welfare of employees at workspace.

Types of OHS :-

Its a discipline with broad scope mainly involves three fields.

- a) Occupational safety
- b) Occupational health
- c) Industrial hygiene.

Model for OHS





OHS models have gained more and more importance by organizations because it positively impacts on the productivity.

As the models suggest, OHS policy legislation starts the process. Legislation is different in every region or country.

The next step is planning and implementation of legislation by enforcing laws.

These laws and policies are constantly checked and improved over time. This ensures a continuous development and good management.

### Benefits of OHS

- 1) Identifying workplace hazards and implement controls.
- 2) Improved health and safety performances
- 3) reduced cost associated with work place accidents.



- 3) improved staff relations and morale
- 4) improved business efficiency.
- 5) improved public image
- 6) Lower insurance premiums
- 7) easier access to finance
- 8) increased regulatory compliance.
- 9) improved confidence of labours into their organizations
- 10) Boost up corporate and social responsibility.

## Q4(a): National Environmental Policy of Pakistan.

### Introduction?

The National Environmental Policy (NEP) of Pakistan provides a framework for addressing the environmental issues facing the country, particularly pollution of fresh water availability, pollution, lack of proper waste management, deforestation and loss of biodiversity.



## Origin of NEP

Federal Environmental Ministry was established in 1983, as a follow up to Stockholm Conf. 1972. The first commitment in this regard was Environmental protective ordinance 1983. Up until now, there have been 100+ laws regarding environment, these include federal, provincial and international laws. The first comprehensive NEP was given by the ministry in the year 2005.

## Objectives of NEP 2005

- a) Conservation, ~~of~~ restoration and efficient management of environmental resources.
- b) Integration of environmental consideration in decision making
- c) Capacity building of government and non government organizations
- d) meeting international obligations in line with national interests.



## Guidelines provided by NEP

NEP 2005 provides guidelines in following areas

- 1) water supply and management
- 2) Air quality and noise pollution
- 3) waste management
- 4) Forestry
- 5) biodiversity and protected areas
- 6) climate change and ozone depletion
- 7) energy efficiency and renewable sources of energy
- 8) agriculture and livestock
- 9) urbanization, poverty and environment
- 10) environmental agreements.

## NEP 2022

In 2022, Ministry of climate change updated the NEP. The goal of new policy is to steer Pakistan towards climate resilient and low carbon development thus it would provide a comprehensive framework for current issues.



## Q4 (b). Eutrophication, its causes, types and preventive measures.

Eutrophication is the gradual increase in the concentration of phosphorus, nitrogen and other plants nutrients in an aquatic ecosystem. The productivity or fertility of such ecosystem increases when these pollutants are added to water bodies through runoff or sewage. The excessive growth of algae and plankton in a water body are indicators of this process.

### Eutrop

A serious Environmental threat. Eutrophication is considered as a serious environmental threat as it results in the deterioration of water quality and the depletion of dissolved oxygen in water.



Eutrophic waters can eventually become dead zones that are incapable of supporting life.

Aquatic ecosystems are home to several simple and complex life forms. Eutrophication destroys the balance in these ecosystems by favouring the growth of algae. This greatly decreases the biodiversity of the ecosystems by killing off the several desirable species.

### Causes of Eutrophication

The availability of nutrients like phosphorus and nitrogen over stimulate the growth of algae and phytoplankton. These nutrients are added to water bodies

through:

- ↳ agricultural runoff containing fertilizers
- ↳ untreated sewage
- ↳ detergents containing phosphorus
- ↳ industrial discharge of waste.



## Effects of Eutrophication

The excessive growth of algae in eutrophic waters is accompanied by the generation of a large biomass of dead algae. These dead algae sink to the bottom of the water body where they are broken down by bacteria, which consume oxygen in the process.

The overconsumption of oxygen leads to hypoxic conditions i.e. low level of oxygen in water.

The hypoxic conditions at bottom of lake leads to suffocation and eventual death of larger life forms.

## Prevention of Eutrophication

Process of eutrophication can be controlled by preventing the inflow of phosphorus-rich substances into the waterbody - avoiding the overuse of fertilizers and proper channeling of waste materials.



## Q2. (a) Industrial revolution and its effects on Environment.

The invention of steam engine started a new phase of human history known as industrialization. Within few decades, the world was transformed by factories and their capitalist approach. Natural resources like fuel, wood, water and land were available in abundance and hence overexploited by industrialists. This industrial revolution started to show its adverse effects on environment within a century. In the present times industrialization has done so much damage that some components of environment are forever damaged and can not be retrieved.



## Impacts of Industrialization

There are four primary impacts of industrialization — air, water, soil and habitat.

↳ air pollution :-

The biggest problem is air pollution caused by the smoke and emissions generated by burning fossil fuels.

More than 80 different toxins can be found in industrial pollutions, from asbestos and dioxins to lead and chromium.

↳ water pollution :-

water pollution is also a problem in these areas, specifically in regions where factories are built next to natural water sources. These pollutants can come in various forms — solids, liquids, gasses and they can all end up contaminating the local water supplies.



### ↳ Soil pollution :-

The agricultural, industrial runoff is absorbed by soil causing soil contamination. The harmful elements in waste leach onto soil particles and hinder the availability of nutrients to plants. Even landfills can leach toxins into soil. Lead is the most common form of soil contamination but other heavy metals can also leach into the soil.

### ↳ Habitat destruction :-

Industrialization has led to dramatic habitat destruction. Forests are cut down for lumber, and eco systems are destroyed to create roads, housing societies, mines etc. Destroying these habitats destroys the local ecosystems and leads to specie extinction.



## The Solution

There are two possible approaches that both factories and legislatures can take to help reduce the impact of industrial pollution.

a) First, industries reduce their reliance on products that cause pollution for example use of fossil fuels.

b) Second option is to treat industrial ~~waste~~ waste to remove toxic components so that the rest of the waste can be disposed of safely.

On behalf of civilians, responsible consumerism is required. This will first require spreading awareness about commodities, their production and impacts on environment.



## Q2.(b). Stockholm Conference

The UN conference on the Human Environment was held in Stockholm, Sweden, during 1972.

The idea of this conference is to focus on human interactions with the environment. The United Nations Environmental Programme (UNEP) was created as a result of this conference.

### Stockholm Declaration:

The meeting agreed upon a declaration containing 26 principles concerning environment and development.

An action plan was also designed. Principles of this declaration were:

- 1) Human rights must be prioritized
- 2) natural resources must be safeguarded
- 3) earth's capacity to produce renewable resources must be maintained.



- 4) non-renewable resources must be shared and not exhausted
- 5) damaging oceanic pollution must be prevented.
- 6) wildlife must be safeguarded
- 7) pollution must not exceed the environment's capacity to clean itself.
- 8) Integrated development planning is needed
- 9) governments should plan their own environmental policies.
- 10) Science and technology must be used to improve environment.

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