

General Instructions

PART - II

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.
5. Start new question from fresh page.
6. Avoid writing wrong references.
7. Give more weightage to expressedly asked parts 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.

I. Introduction

The Industrial Revolution, which began in the 18th century and changed in 19th and 2nd century, brought a profound changes in the society, economy, and technology. This event led to increase in industrialization for economic growth. As a result, environment badly affected from excessive air pollution, and wastes. The phenomenon of global warming and climate change also accelerated because of environmental degradation. Though the production and efficiency increased, but at the cost of environmental degradation. Hence, rapid industrialization is not sustainable for clean environment.

II. Discussion on Industrial Revolution
Impact on the Environment:
 Are as follows

(1) Increased Pollution: Massive

amount of air pollution and chemicals impact environment badly.

(2) Deforestation

The growing urban population and the need for factories, industries have led to depletion of forest land, which has detrimental impact on natural habitat and ecosystems.

(3) Water Pollution:

Various toxins, chemicals, and pollution is released to water channels existing from industries causes water pollution.

(4) Urbanization and Overcrowding

Rapid growth in urban population is because of industrialization. Therefore, serious health related issues, inadequate sanitation etc crisis also exists.

(5) Resource depletion:

Raw materials are declining such as minerals, metals etc led to resource depletion. Resultantly, environment damages due to excessive mining and extraction.

(6) Climate change

Rise in emissions of GHGs like CO_2 , CH_4 etc enhanced after Industrial Revolution, which had a devastating effect on the Earth's climate.

(7) Loss of Biodiversity:

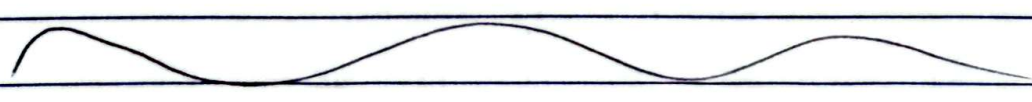
Industrialization causes pollution and habitat destruction, which led to decline of species.

(8) Technological Impact on Environment

Technological innovation and advances are also propelled by industrial revolution, massive amount of air signals and rays have affected several species and environment. As a result, environmental challenges are increased.

III. Conclusion :

Industrial revolution, indeed, has brought a tremendous advancements in technological innovation and improving the standards of living; but it has a profound and detrimental effects on the environment. On one hand, economy is improving but at the cost of environment destruction. Therefore, economic growth, industrialization, and environmental protection must go hand in hand. It is the need of hours to have a sustainable development and responsible management of natural resources alongwith economic development.



Q. No. 2 B

B. Answer: Stockholm Declaration

Introduction :

It is also known as the Declaration of United Nations Conference on the Human Environment, was adopted at the UN conference of the Human Environment, which took place in Stockholm, Sweden, from June 5 to 16, 1972. This historical conference marked a turning point in global environmental awareness and policy making.

II - Brief Account of Stockholm Declaration: Are following

(1) Historical Context : The 1972 UN Conference on the Human Environment was first major conference related to global environmental issues. It was about rising pollution, resource depletion and industrialization impact on the environment.

(2) Key objectives : To address the environmental issues at international level and to promote future international cooperation on environmental policies and agreements.

(3) Principles of the Declaration : The Declaration consisted of 26 principles, some of points

were quality environment for man, safeguard the natural resources, emphasis on sustainable development, and commitment to international cooperation. Thus, it was a comprehensive plan for environmental protection.

(4) Legacy:

The Stockholm Declaration laid the foundation of establishment of UN Environment Programme (UNEP), development of Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), and Convention of Biological Diversity (CBD).

(5) Global Impact:

It contributed to growing awareness of environmental issues worldwide and helped in shaping environmental policies. It led to some agreements like Kyoto Protocol and Paris Agreement on climate change.

III Conc. - Conclusion:

The Stockholm Declaration of 1972 was a pivotal moment in history of environmental diplomacy, establishing a framework for global cooperation on environmental sustainability. It marked the beginning to influence and create environmental friendly policy making, after which several agreements related to environment framed and implemented.

Q. 3. A.

Answer: Climate change is a
Threat to Humanity :

I- Introduction : Climate change is really a threat to humanity and planet as well. It refers to the change in average weather pattern of an area. Some of the serious impacts of climate change include Rising Sea level, extreme weather events, changes in agricultural yield, rising global temperature, loss of biodiversity, and severe impacts on human health. Additionally, if it is not taken under control, then it can wreak havoc to the whole planet. Besides, countering climate change provides several opportunities and challenges.

II. Climate change Threats to Humanity : can be explained as following

(1) Rising Global Temperature

Since industrial Revolution, the planet temperature has risen by more than 1.6°C on average. It will have consequence on wild life and on planet.

(2) Abrupt melting of Glaciers

Glaciers volume is depleting with quick melting due to climate change -

(3) Rising Sea Level and Disasters

Melting of glaciers have led to rising sea level. It is threatening to millions of people living along coastal lines.

(4) Extreme Weather Patterns :

Such as heatwaves, drought, wild fires, floods, storms etc; led to severe damage to human life

(5) Changes in Agricultural Yield

A looming threat of food crisis and food insecurity to human being.

(6) Loss of Biodiversity :

Extinction of several plants and animal species e.g. Polar Bear, Tiger etc.

(7) Impacts on human health

Heat stress / stroke, respiratory problems and vector-borne diseases to human being.

(8) Increase in frequency of natural disasters :

Now, natural disaster frequency is increased due to climate change, which impacts human across the globe.

III. Opportunities in Countering climate change.

Are as follows

(1) Reducing GHGs emissions

GHGs include CO_2 , CH_4 , CFCs, HCFCs etc, reducing these by switching to renewable resources of energy

(2) Investing in Research and Development

More innovation and development is possible through investing in research to reduce climate change.

(3) Clean energy transition :

Converting to renewable resource of energy, which is low carbon and environmental friendly.

(4) Green jobs :

It includes jobs in agricultural, forestry and other sectors.

(5) International cooperation increase

Climate change is a global issue and needs global cooperation from world leaders.

(6) Sustainable Development achievement

Economic growth and environmental protection can go hand in hand.

(7) Reduction in Disasters :

Countering climate change can effectively reduce the frequency of occurring disasters.

It will help in improvement of infrastructure and development.

IV. Challenges in Countering climate change:

Are following

(1) Cost of Transitioning to a clean energy economy:

Reducing industrialization and no using of fossil fuels may slowdown production efficiency. Also, transitioning to low-carbon economy is costly.

(2) Lack of Political will =

Balancing of interest between Superpowers like Russia, China, USA, etc etc is difficult to achieve.

(3) Difficult to maintain Human Behavior.

The human behaviour to keep environment clean is complex to achieve.

(4) The factor of Economy ::

Economic growth causes environmental degradation - like industrialization, use of fossil fuels etc

(5) Technological Barriers

The clean and green technology is slowly developing to counter climate change.

V. Conclusion: climate change is a real threat to humanity. It offers several opportunities and challenges in Countering. Addressing climate change require concerted efforts at all local, national, and international level.

Q. 3. B.

Answer. Solid Waste Disposal
Techniques .

I. Introduction : Solid waste refers to the every household waste, hospital waste, industrial wastes, construction debris etc. Its management helps in environment protection.

There are various techniques for disposal of solid ; however, it is associated with several opportunities and challenges .

II. Solid Waste Disposal Technique :
Are as follows

(1) Landfills :

Waste is collected, transported, and deposited in designated areas. This method can lead to ground water contamination and methane emissions.

(2) Incineration :

It involves burning solid waste at high temperature to convert it into smaller volume and generate energy. It requires technology to control emission.

(3) Composting :

It is biological decomposition of organic waste into nutrient rich compost, which is used in agriculture. This method is environmental friendly for managing organic wastes and reducing landfills use.

(4) Recycling : It involves the collection and processing of materials like paper, plastic, glass, and metals. 3Rs strategy - ie reduce, reuse and recycle.

(5) Waste to Energy (WTE) :

WTE facilities burn solid waste to generate electricity or heat. This is an efficient way to reduce waste and produce energy.

III- Challenges in Solid Waste Management in Pakistan : Are following.

(1) Lack of proper infrastructure

Many areas in Pakistan lack the facilities causes an open dumping and burning of wastes, causing pollution.

(2) Inadequate Collection Services

Residents in some areas may not have regular access to waste disposal - e.g Rural/Urban areas.

(3) Health Hazards :

Open dumping sites attract pests and risks to communities.

(4) Informal Waste Pickers often scavenge for recyclables in dumpsites, creates health risks and disease.

(5) Public Awareness : It is significant challenge to educate people about waste disposal responsibly.

(6) Lack of Cooperation :
Various department
in district works irregularly.

(7) No proper check and balance :
Proper check from third
Party must be held over solid waste
management department.

IV. Opportunities in Solid Waste
Management in Pakistan:
Are as follows

(1) Employment opportunities :
Particularly in waste
collection, recycling, and composting.

(2) Resource Recovery :
Reducing the need for
more resources by saving energy

(3) Environmental Benefits
Pollution reduction and
natural-eco-system protection.

(4) Energy Generation : Renewable
energy can be obtained by waste to
energy projects.

(5) International Collaboration : Funding
for it must be done on
global level, Pakistan is in dire need of it.

(6) Improve Policy making
Comprehensive waste
management policy can improve waste
collection, transportation, and disposal techniques.

(7) Sustainable development
Environmental protection
and economic growth can be achieved at
same time.

(8) Good impact on healthcare

Health of Population
of Pakistan can improve.

(9) Clean and green Pakistan :

This is a good
initiative to manage solid waste as
it will make the environment clean
and green.

V. Conclusion :

There are several
solid waste disposal techniques. In
case of Pakistan, solid waste management
offers several challenges and opportunities
as mentioned above. However,
addressing these, need a concerted
efforts by government, public,
and private sector to establish
efficient and sustainable waste
management systems.

Q.5. A.

Answer: Air Pollution Remains the Foundation of Global Warming and Climate Change.

I. Introduction:

Air pollution is a significant contributor to global warming and climate change, primarily due to the release of GHGs and other pollutants to the atmosphere. It has several causes, effects, and ways to mitigate it, including air pollution control technologies.

II. Causes of Air Pollution

Are as follows

(1) Fossil Fuel Combustion

Release of GHGs such as CO_2 , CH_4 , CFCs and NO_x into the atmosphere cause air pollution.

(2) Industrial Emissions:

It releases SO_2 , Volatile Organic Compounds, heavy metals into the air.

(3) Agricultural Practices: NH_3 from livestock wastes and N_2 from fertilizers and pesticides chemicals.

(4) Waste Management:

Improper open

burning of waste etc.

(5) Deforestation :

Excessive urbanization and massive CO₂ in the air

III - Effects of Air Pollution :

Are as follows

(1) Increase warming of the planet
GHGs trap heat in earth atmosphere, leading to global warming and rise in average earth temperature.

(2) Climate Change

Alteration in atmospheric and weather patterns, leading changes in precipitation, weather events and long-term climate patterns.

(3) Health Impacts

Causes respiratory and cardiovascular diseases.

(4) Damage to Ecosystem

Damage to forests, acidifying soils, water bodies, and affecting wildlife.

(5) Economic Costs :

Health care expenses and agricultural decline

IV - Air Pollution Control Technologies

Are as follows

(1) Emission Reduction Technologies

Reduction of pollutants at source e.g Scrubbers

in industrial processes to remove S_x .

(2) Alternative Energy Sources : Transitioning from fossil fuels to renewable resources like solar, wind and water, can reduce GHG emissions.

(3) Chimneys Electroplating :
Air/smoke release through chimneys can be filtered by the process of electrostatic precipitation. Dust and other particles can be trapped before releasing to air.

(4) Improved Transportation
Promoting electric vehicles, can reduce emissions.

(5) Carbon-Capture and Storage (CCS)
Capturing CO_2 emissions and storing them underground to prevent their release into the atmosphere.

(6) Afforestation and Reforestation :
Helps in sequester CO_2 from atmosphere and by releasing more O_2 into air.

(7) Regulatory Measures :
Government can implement air quality regulations and emissions standards.

(8) Energy Efficiency :
Improving energy efficiency in building, consumption etc.

(9) Waste Management :

Adopting 3R's strategy i-e Reduce, reuse, and recycle.

V- Conclusion :

Air pollution contributes to global warming and climate change significantly. It has various causes, effects and ways-out, including air pollution control technologies.

Besides, international cooperation and measures need to be taken at various dimensions and platforms.

Agreements like Paris Agreement (2015) can mitigate impacts of air pollution and climate change.

Q. S. R.

Answer. Kyoto Protocol

I. Introduction.

An International treaty aimed at addressing global climate change by binding emission reduction targets for industrialized countries. It was adopted in 1997 and enforced in 2005. The protocol has a complex political history and faced successes and failures in its implementation.

II. Political History of Kyoto Protocol

Are as follows

(1) Rio Earth Summit (1992) : Also known as UNCED (UN Conference on Environment and Development) ; UNFCCC was established to framework future negotiations and agreements .

(2) Berlin Mandate (1995) : First COP (Conference of the Parties) to UNFCCC in Berlin set in 1995. It legally binding emission reduction targets for countries.

(3) Kyoto Protocol Negotiations (1997)

Took place in Kyoto and called for reduction of global emissions .

(4) COP 3 (Kyoto 1997)

It aimed to reduce GHGs emission by 5.2% below 1990 levels from 2008-2012 .

(5) Ratification and Entry into Force (2005)

55 industrialized countries ratified it in 2005, which represents 55% of 1990 emissions .

III. The Failures of Kyoto Protocol

Are as follows

(1) Limited Global Participation

Major emitters, like

USA did not satisfy it.

(2) Lack of Binding Commitments for Developing Countries :

Developing countries like China and India were not addressed properly to reduce emissions.

(3) Flexibility Mechanism :

The mechanisms for emission trading and clean development mechanisms were criticized to be complex.

(4) Limited Ambition and period of time

5.2% reduction in emission target in 2008-2012 was seen as limited criteria.

(5) Non-Compliance :

Most countries did not implement it in true letter and spirit.

IV. Conclusion

Kyoto protocol played an important role in shaping international climate negotiations leading to Paris Agreement. However, it faced limitations, and marked an important step in the global effort to combat climate change.

Q.7. A.

Answer.

EIA

I- Introduction: Environmental Impact Assessment is a process used to evaluate the potential environmental consequences of a proposed project, plan or programme before implemented. It is an environmental assessment check on an activity

II- EIA Process: It involves the following step:

(1) Screening - To identify whether a project need an EIA.
- It is a check on significant environmental impacts.

(2) Scoping: Assess the boundaries of EIA study
- Potential impacts of the project is identified.

(3) Baseline Data Collection: It serves as basis for comparison before and after project conditions.

(4) Impact Assessment: Potential environmental impacts are assessed e.g. Air quality, water quality, biodiversity, land use etc.

(5) Alternative Analysis: Finding more

Sustainable option for ^{lesser} environmental impacts.

(6) Mitigation and Management :

Suggest measures to adopt to lessen environmental damage.

(7) Report Preparation : Report on baseline data, impact assessment, and mitigation measures is prepared and submitted.

(8) Public Participation :

Involving the local for feedback and assessment process.

(9) Decision Making :

Based on EIA report, decision is made to approve or disapprove a project.

(10) Monitoring and Enforcement :

After approval, proposed measures are checked regularly with implementation.

III. Advantages of EIA :-
Are as follows

(1) Environmental Protection :

Minimize harm to ecosystem

(2) Informed Decision Making : decision is based on valuable information

(3) Public Engagement : For transparency and sustainability.

(4) Sustainability : More sustainable and environmental friendly measures are adapted.

(5) Legal and Regulatory compliance : Project must comply with environmental laws and regulations.

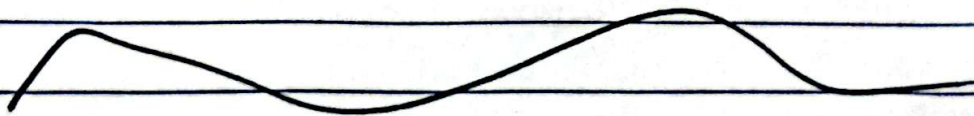
(6) Conflict Resolution : Through negotiation and planning adjustment conflicts are resolved.

(7) Economic Benefits : By addressing potential environmental risks, it can save cost of damage and disposes to in the project.

IV. Conclusion :

EIA is a systematic process that helps identify, assess, and mitigate potential environmental impacts of projects, plans or policies.

It has numerous advantages, and it plays a crucial role in promoting responsible and sustainable development.



Q. 7. B.

Answer. Occupational Health and Safety.

I. Introduction : OHS also known as Workplace Health and Safety (WHS). It is a field related to well-being, safety, and health of individuals in workplace. Its main aim is to prevent workplace accidents, injuries, illnesses, and fatalities.

II. Occupational Health and Safety Model : Typically it consists of following Key Components.

(1) Policy and Commitment : Organization prepare OHS policy and commitments for its workers and workplace.

(2) Planning and Hazard Identification : Identifying hazards and measures to mitigate it.

(3) Risk Assessment : Resources are allocated according to risk.

(4) Prevention and Control : Preventive measures are adopted through control system.

(5) Training and Education : Regular education for workers

(6) Incident Reporting and Investigation
Fair investigation is done.

(7) Emergency Preparedness and Response
Regular monitoring of performance to
be alert for any situation.

(8) Monitoring and Evaluation :
Periodic assessment and
regulations are checked.

(9) Communication :
All employees must
be aware OHS measures.

(10) Worker Involvement :
Workers are encouraged
to participate in OHS related
activities.

III - Benefits of Occupational Health
and Safety : It offers
several benefits to organizations
and its employees.

(1) Reduction in Workplace Accidents :
Decrease in
accidents and injuries

(2) Improved Employee Health :
Better well-being of
employee.

(3) Increased Productivity :

Safes work place lead
to high morale and productivity

(4) Compliance with Regulation

Comply with local, national and
international safety standards.

(5) Cost Savings :

Protecting injured and
accidents

(6) Enhanced Reputation :

For both customers

and employees.

(7) Legal Protection :

Reducing the risk of
lawsuits and penalties

(8) Sustainability :

Contributing to a
healthier environment and community.

(9) Reduced Downtime :

Due to prevention
of workers injuries and accidents

IV Conclusion :

OHS is a comprehensive approach to safeguard the well-being of workers in the workplace. It involves several components and benefits. OHS is essential for protecting both workers and the organization itself.

