

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-I&II EXAMINATION – SUMMER 2025

Subject Code:3110007

Date:02-07-2025

Subject Name:Environmental Sciences

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Define: Atmosphere, Hydrosphere, Biosphere.	03
	(b) Explain role of Environmental engineer.	04
	(c) How does our interaction with the environment impact the world around us, and what can we do to promote a healthier and more sustainable environment.	07
Q.2	(a) What are some common causes of water pollution in rivers and lakes.	03
	(b) Write short note on Water quality parameter	04
	(c) Explain the concept of eutrophication with causes, effect and control measure.	07
	OR	
	(c) Explain the concept of a sanitary landfill and outline its key features. How does it differ from traditional open dumping methods?	07
Q.3	(a) Name three common air pollutants found in urban areas and briefly explain their sources.	03
	(b) Explain the differences between primary and secondary air pollutants, and provide examples of each.	04
	(c) Explain the different categories or types of biomedical waste, and provide specific examples for each category. How does the proper classification and segregation of biomedical waste contribute to safe and responsible disposal practices in healthcare facilities?"	07
	OR	
Q.3	(a) What are some common health problems that can result from exposure to excessive noise, and how can individuals protect themselves from noise-related health risks?	03
	(b) What are some common sources of noise pollution in urban areas, and how can individuals mitigate its impact on their daily lives.	04
	(c) Explain the importance of effective e-waste management in the modern world. Describe the roles and responsibilities of consumers, manufacturers, governments, and recycling facilities.	07
Q.4	(a) What is global warming, and what are its primary causes?	03
	(b) What is a carbon footprint, and why is it a key concern in the context of environmental sustainability?	04
	(c) What is the Cleaner Development Mechanism (CDM), and how does it play a role in global efforts to reduce greenhouse gas emissions?	07
	OR	
Q.4	(a) What role does deforestation play in global warming, and how can it be mitigated?	03
	(b) Explain the causes and consequences of ozone layer depletion.	04
	(c) Describe the causes and consequences of acid rain. How does it contribute to air pollution and environmental damage?	07
Q.5	(a) What is the primary objective of green building design and construction?	03
	(b) Define the concept of a smart city and explain how it aims to improve urban living.	04
	(c) Explain the importance of the "Reuse" principle in waste reduction and resource conservation, and provide real-world examples of reuse practices.	07

OR

- Q.5**
- (a)** How do green buildings contribute to energy efficiency and resource conservation? **03**
 - (b)** Enlist features of smart city. **04**
 - (c)** Explain in detail the concept of the 4R's in sustainable resource management. Provide practical examples for each of these principles and discuss their significance in minimizing waste and conserving resources. **07**

Enrolment No./Seat No _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-I & II (NEW) EXAMINATION – SUMMER 2024

Subject Code:3110007

Date:04-07-2024

Subject Name:Environmental Sciences

Time:02:30 PM TO 05:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1 (a) Define environmental pollution. **03**
(b) Write a short note on components of environment. **04**
(c) Explain the importance of environmental science subject in various engineering disciplines. **07**

- Q.2 (a) Discuss the need of sustainable development. **03**
(b) Define & Explain: **04**
(i) Ecosystem (ii) Noise pollution (iii) Ecology (iv) Environmental degradation
(c) Difference between sound & noise. Discuss sources & effects of noise pollution. **07**

OR

- (c) How the various environmental pollutants effect on the global climate and also suggest some ways to mitigate it. **07**

- Q.3 (a) Give the classification of biomedical waste. **03**
(b) Explain the causes and effects of water pollution. **04**
(c) Discuss the various sources of air pollution and also give the classification of air pollutants. **07**

OR

- Q.3 (a) Enlist the different sources of biomedical waste. **03**
(b) Write a short note on eutrophication. **04**
(c) Explain the effects of air pollution on plants, human beings and property. **07**

- Q.4 (a) Define e-waste and list out the various sources of e -waste. **03**
(b) Enlist & explain the factors affecting municipal solid waste generation. **04**
(c) Discuss the ozone layer depletion phenomena in details. **07**

OR

- Q.4 (a) Give the sources and types of solid waste. **03**
(b) Discuss the impact of e-waste on environment and human health. **04**
(c) Describe the greenhouse effect and global warming. **07**

- Q.5 (a) Define green building and state its objectives. **03**
(b) Describe the concept of 4R's. **04**
(c) Explain the various fundamental principles of green building. **07**

OR

- Q.5 (a) Write a brief note on concept of smart city. **03**
(b) Describe the applications of 4R principle with example. **04**
(c) Explain in detail the different green building rating systems. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-I & II(NEW) EXAMINATION – SUMMER 2023****Subject Code:3110007****Date:09-08-2023****Subject Name:Environmental Sciences****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1 (a)** Biomedical waste refers to any waste generated during the diagnosis, treatment, or immunization of human beings or animals, or in research activities that involve biological materials. In India, biomedical waste is regulated by the Biomedical Waste Management Rules, 2016, which specify guidelines for its handling, segregation, transportation, and disposal. Biomedical waste can be classified into four categories: infectious waste, sharps waste, chemical waste, and general waste. Healthcare facilities are required to segregate biomedical waste at the point of generation and dispose of it in a safe and environmentally friendly manner. The proper management of biomedical waste is crucial to prevent the spread of infections and to protect the environment and public health. Based on this context, write the best answers to the question(s). **03**
1. What are the different categories of biomedical waste as per the Biomedical Waste Management Rules, 2016?
 2. Why is proper management of biomedical waste crucial in healthcare facilities?
 3. How does the Indian government regulate the handling, segregation, transportation, and disposal of biomedical waste?
- (b)** Water pollution refers to the contamination of water bodies like rivers, lakes, oceans, and groundwater. The quality of water is important for the health of the environment, human beings, and animals. Water quality standards have been established to ensure the quality of water is maintained to protect public health and the environment. There are various sources of water pollution like industrial waste, domestic sewage, agricultural runoff, and oil spills. The classification of water pollutants includes physical, chemical, and biological contaminants. The effects of water pollutants are numerous and can be harmful to human health and the environment. They can cause waterborne diseases, disrupt aquatic ecosystems, harm wildlife, and damage infrastructure. Therefore, it is essential to prevent water pollution through proper waste management and responsible environmental practices. Based on this context, write the best answers to the question(s). **04**
1. What are water quality standards, and why are they important?
 2. Name three sources of water pollution.
 3. What are the three classifications of water pollutants?
 4. What are some of the effects of water pollutants on the environment and human health?
- (c)** Environmental science is a multidisciplinary field that integrates the principles of physical, chemical, and biological sciences to study the environment and the impact of human activities on it. The scope of environmental science encompasses a wide range of topics, including ecology, geology, atmospheric science, hydrology, and waste management. The principles of environmental science **07**

revolve around the concept of sustainability, which involves meeting the needs of the present generation without compromising the ability of future generations to meet their needs. The rapid development of technology has had a significant impact on the environment, leading to environmental degradation, such as air and water pollution, deforestation, and climate change. Therefore, it is essential to understand the importance of environmental science and its principles for different engineering disciplines to develop sustainable technologies that minimize environmental impacts. Based on this context, write the best answers to the question(s).

1. What is environmental science?
2. What are the principles of environmental science?
3. What is the scope of environmental science?
4. What is sustainability, and why is it important in environmental science?
5. How has technology impacted the environment?
6. What is environmental degradation, and what are its causes?
7. Why is it important for different engineering disciplines to understand environmental science principles?

- Q.2**
- (a) What are the factors that contribute to the generation of biomedical waste in Indian healthcare facilities, and what steps should be taken for its safe and efficient management? **03**
- (b) What are the main challenges faced in effectively managing solid waste in India, and what measures can be taken to address them? **04**
- (c) In India, e-waste generation has been on the rise due to factors such as increasing technology adoption, rapid urbanization, and changes in consumer behavior. Based on this context, write the best answers to the question(s). **07**
1. What are the primary sources of e-waste generation in India? Explain with examples. (3 marks)
 2. How has e-waste generation in India changed over the past decade? What factors have contributed to this change? (2 marks)
 3. What are the environmental and health hazards associated with e-waste in India? How are these hazards being addressed? (2 marks)
- OR**
- (c) In India, the management of e-waste is a growing concern due to the rapid increase in electronic waste generated from various sources. Based on this context, write the best answers to the question(s). **07**
1. What are the legal frameworks and regulations currently in place in India for the management of e-waste? (1 mark)
 2. What steps are being taken by the government and industry stakeholders to improve e-waste management practices? (2 marks)
 3. What are some of the challenges faced in effectively managing e-waste in India? How can these be addressed to promote a more sustainable and environmentally responsible approach to e-waste management? (2 marks)
 4. Suggest strategies that can be implemented to effectively manage the growing e-waste problem. (2 marks)
- Q.3**
- (a) What are the major sources of noise pollution in India, and how does it affect people's health and well-being? Provide examples of any initiatives taken by the government to control noise pollution in the country. **03**
- (b) You are a city planner tasked with addressing noise pollution in a residential area. What steps would you take to mitigate the noise pollution and what factors would you consider in your decision-making process? Explain your answer with specific examples. **04**
- (c) Air pollution is a major environmental issue in India, with severe impacts on public health and the economy. In this context, discuss the sources, effects, and control measures for particulate matter (PM) pollution in India. **07**

OR

- Q.3** (a) What are the legal provisions in India to control noise pollution, and what steps can individuals take to reduce noise pollution in their local communities? **03**
- (b) How does exposure to chronic noise pollution affect the physiological and psychological health of individuals, and what are some effective strategies for mitigating its negative effects? **04**
- (c) India has experienced alarming levels of air pollution, particularly in urban areas, due to high levels of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) emissions. In this context, discuss the sources, effects, and control measures for SO₂ and NO_x pollution in India, and the role of policy and regulations in addressing this issue. **07**
- Q.4** (a) With the rapid industrialization and urbanization, the quality of water in many Indian rivers has significantly deteriorated over the years. In this context, discuss the causes and effects of water pollution in the Ganga river basin and suggest measures to control and prevent further degradation of water quality. **03**
- (b) India's rapidly growing population, coupled with its rapid industrialization and urbanization, has resulted in increased pollution levels and environmental degradation. What measures can be taken to address this problem, particularly in urban areas, and promote cleaner development mechanisms that can help mitigate the impact of global climate change? **04**
- (c) As a policy maker, what steps would you take to effectively address the issue of climate change and promote sustainable development in a developing country like India, while balancing economic growth with environmental concerns? **07**

OR

- Q.4** (a) The groundwater in many regions of India is heavily polluted due to indiscriminate disposal of industrial waste, excessive use of chemical fertilizers, and improper disposal of human waste. In this context, discuss the health impacts of groundwater pollution on local communities. **03**
- (b) With the increasing frequency and intensity of natural disasters due to climate change, what steps can be taken by governments and communities to ensure resilient and sustainable development in vulnerable areas? How can international cooperation and funding be leveraged to address this issue? **04**
- (c) If a country is one of the largest emitters of greenhouse gases in the world, with its carbon footprint steadily increasing. What steps can the respective government take to reduce carbon emissions and promote sustainable development while simultaneously balancing economic growth and poverty reduction? **07**
- Q.5** (a) Give an example of how the 4R principles can be applied in a household to reduce waste generation? **03**
- (b) How has the depletion of the ozone layer affected India's agricultural productivity and what measures have been taken to mitigate this impact? **04**
- (c) In what ways can the concept of smart cities enhance the sustainability of urban environments in India? Discuss the role of technology and innovation in achieving the objectives of smart cities, and provide examples of successful implementation of smart city initiatives in India. **07**

OR

- Q.5** (a) How can individuals apply the 4R's principles in their daily lives to reduce waste and minimize their impact on the environment? **03**
- (b) How does the use of alternative energy sources, such as solar or wind power, relate to the issue of acid rain? Can the use of these sources help to mitigate the effects of acid rain, and if so, how? **04**
- (c) How can the concept of green building contribute to the overall sustainability of a city or region? Provide specific examples of how the principles of green building have been applied in cities or regions in India to address environmental challenges. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-I & II(NEW)EXAMINATION – SUMMER 2022****Subject Code:3110007****Date:23-08-2022****Subject Name:Environmental Sciences****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Discuss the need of sustainable development. **03**
(b) Describe the various components of environment. **04**
(c) Explain how environmental science is important for various engineering disciplines. **07**

- Q.2** (a) What is environmental science? **03**
(b) Define environmental pollution and give the various causes of it. **04**
(c) Explain the effects of toxic substance present in water and biomagnification. **07**

OR

- (c) Discuss the various water quality parameters in detail. **07**

- Q.3** (a) Narrate the concept of 4R. **03**
(b) Give the different sources of water pollution. **04**
(c) Explain the role of individual in environmental protection. **07**

OR

- Q.3** (a) Differentiate between recycle and reuse with example. **03**
(b) Write a short note on eutrophication. **04**
(c) Explain the effects of air pollution on human beings and property. **07**

- Q.4** (a) Differentiate between sound and noise. **03**
(b) Give the classification of air pollutants. **04**
(c) Enlist and explain different methods used for treatment of biomedical waste. **07**

OR

- Q.4** (a) What are effects of noise pollution? **03**
(b) Give the sources of air pollution. **04**
(c) Explain the various methods used for solid waste disposal. **07**

- Q.5** (a) Enlist different sources of biomedical waste. **03**
(b) Discuss the objectives of green building. **04**
(c) Write a short note on acid rain. **07**

OR

- Q.5** (a) Explain how e-waste should be managed. **03**
(b) Enlist the core infrastructure elements of a smart city. **04**
(c) Write a short note on ozone layer depletion. **07**