

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2023****Subject Code:3140609****Date:19-01-2024****Subject Name: Civil Engineering - Societal & Global Impact****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) What are the impacts of global warming on ecosystems and society. **03**
 (b) What are the key differences between the first and second industrial revolutions, and how did they impact the field of civil engineering? **04**
 (c) What are the key components of the future vision for Civil Engineering, and how do they address the evolving needs and challenges of our world? **07**
- Q.2** (a) Explain the concept of smart cities & their role in the future of urban development. **03**
 (b) Explain the critical role of water provisioning infrastructure in addressing water scarcity challenges **04**
 (c) Discuss the various sources of renewable energy for power generation. **07**
- OR**
- (c) Explore the role of green infrastructure in sustainable urban development **07**
- Q.3** (a) Discuss the economic and social contributions of civil engineering to GDP, employment, product quality, and stakeholder safety. **03**
 (b) What is Lean Construction, and how does it improve the quality and sustainability of civil engineering projects? **04**
 (c) Evaluate the potential advantages and challenges of implementing futuristic transportation systems like the Hyperloop. **07**
- OR**
- Q.3** (a) Name one advanced construction technique that enhances sustainability and explain its benefits. **03**
 (b) How can civil engineering projects reduce greenhouse gas emissions? **04**
 (c) Discuss the futuristic visions for infrastructure development and how they align with sustainability goals **07**
- Q.4** (a) Name three common sources of atmospheric pollution and briefly explain their impacts on air quality. **03**
 (b) Explain two methods commonly used for the disposal of solid waste **04**
 (c) Write short note on: EIA **07**
- OR**
- Q.4** (a) Describe the role of water purification in ensuring access to safe drinking water. **03**
 (b) Discuss the importance of real-time environmental monitoring systems. **04**
 (c) Explain the greenhouse effect and its role in global warming, and mention one mitigation measure to reduce greenhouse gas emissions. **07**
- Q.5** (a) Explain the significance of climate control in indoor environments **03**
 (b) Discuss the role of recycling in reducing waste and promoting sustainability within built environments. **04**
 (c) Define smart buildings and discuss their potential impact on sustainability, energy efficiency, and occupant comfort. **07**

OR

- Q.5** (a) How can energy-efficient features in buildings contribute to sustainability? **03**
(b) Describe the LEED rating system and its importance in evaluating the sustainability of built environments. **04**
(c) Discuss the challenges and methodologies involved in the conservation, repair, and rehabilitation of heritage structures. **07**

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