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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **End - Term Examinations – JANUARY 2025** |
| **Date:** 06 / 01/ 2025 **Time:** 9:30 am – 12:30 pm |

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| **School:** SOE | **Program:** B-Tech-CIV/EEE | |
| **Course Code :** CIV2001 | **Course Name :** Sustainability Concepts in Engineering | |
| **Semester**: V | **Max Marks**: 100 | **Weightage**: 50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **18** | **41** | **41** | **-** | **-** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

|  |  |  |  |  |
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| **Answer ALL the Questions. Each question carries 2marks. 10Q x 2M=20M** | | | | |
| **1** | Name some Multilateral Environmental Agreements (MEAs). | **2 Marks** | **L1** | **CO1** |
| **2** | Sustainability creates and maintains the conditions under which humans and nature. List the three components of sustainability. | **2 Marks** | **L1** | **CO1** |
| **3** | Define biocapacity in measuring sustainability. | **2 Marks** | **L1** | **CO1** |
| **4** | List the aims of the CDM in addressing global climate challenges. | **2 Marks** | **L1** | **CO1** |
| **5** | Discuss how ISO 14001 contributes to reducing environmental impact and achieving regulatory compliance. | **2 Marks** | **L2** | **CO2** |
| **6** | List the key benefits of ISO standards for organizations and industries. | **2 Marks** | **L2** | **CO2** |
| **7** | Define biomimicry and explain how it inspires innovation in engineering and design. 2M | **2 Marks** | **L2** | **CO2** |
| **8** | Industrial ecology focuses on optimizing the use of materials and energy, and reducing the environmental impact of industrial processes. Define industrial ecology. | **2 Marks** | **L2** | **CO3** |
| **9** | A renewable fuel that can be made from plant materials like sugar cane, sugar beet, or corn. What are biofuels | **2 Marks** | **L2** | **CO3** |
| **10** | 'Greenhouse gases' are crucial to keeping our planet at a suitable temperature for life. What is the greenhouse effect? | **2 Marks** | **L2** | **CO3** |

**Part B**

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| **Answer the Questions Total 80 Marks** | | | | | |
| **11.** |  | Explain the purpose of the Clean Development Mechanism (CDM) with the help of a flowchart. | **10 Marks** | **L1** | **CO1** |
| **Or** | | | | | |
| **12.** |  | Explain the objectives and salient features of the Air Act and how it regulates air quality. | **10 Marks** | **L1** | **CO1** |
|  |  |  |  |  |  |
| **13.** |  | Explain the findings of an LCA study comparing electric vehicles to gasoline vehicles over their lifecycle. | **10 Marks** | **L2** | **CO2** |
| **Or** | | | | | |
| **14.** |  | Analyze the environmental impacts of using glass bottles vs. plastic bottles based on an LCA approach. | **10 Marks** | **L2** | **CO2** |

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| **15.** |  | What are the challenges in accurately replicating nature’s designs in biomimicry? | **10 Marks** | **L2** | **CO2** |
| **Or** | | | | | |
| **16.** |  | Explain any five ISO standards and its importance to ensure quality, safety, efficiency, and interoperability across various industries and sectors. | **10 Marks** | **L2** | **CO2** |

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| **17.** |  | How have lotus leaves inspired the development of self-cleaning surfaces in technology and discuss the role of shark skin in the design of anti-fouling technologies for ships. | **15 Marks** | **L2** | **CO2** |
| **Or** | | | | | |
| **18.** |  | Write a brief note on regional and Local Environmental Issues and describe how a carbon tax functions as a tool for reducing greenhouse gas emissions. | **15 Marks** | **L2** | **CO2** |

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| **19.** |  | Explain how climate change poses a threat to sustainable development, with major key threats. | **10 Marks** | **L2** | **CO3** |
| **Or** | | | | | |
| **20.** |  | Differentiate between conventional energy sources and non-conventional energy sources with examples and Limitations | **10 Marks** | **L2** | **CO3** |

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| **21.** |  | What are the benefits and challenges of rainwater harvesting, and how does it contribute to sustainable water management? | **10 Marks** | **L2** | **CO3** |
| **Or** | | | | | |
| **22.** |  | Explain how climate change poses a threat to sustainable development, with major key threats. | **10 Marks** | **L2** | **CO3** |

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| **23.** |  | Explain how lifestyle changes such as reducing meat consumption, adopting sustainable transportation, and practicing energy conservation contribute to mitigating climate change. Provide examples to support your answer. | **15 Marks** | **L2** | **CO3** |
| **Or** | | | | | |
| **24.** |  | a) What are biofuels? Explain the differences between ethanol, biodiesel, and biogas.10M  b) Compare onshore and offshore wind farms in terms of energy generation potential and limitations.5M | **15 Marks** | **L2** | **CO3** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***