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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **End - Term Examinations – JANUARY 2025** |
| **Date:** 11 – 01- 2025 **Time:** 01:00 pm – 04:00 pm |

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| **School:** SOE | **Program:** B.Tech in Petroleum Engineering | |
| **Course Code :** PET2030 | **Course Name :** Occupational Health and Safety | |
| **Semester**: III | **Max Marks**: 100 | **Weightage**: 50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **20** | **20** | **30** | **30** | **-** |

**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** | List the key considerations for ensuring safety while drilling in landfills. | **2 Marks** | **L1** | **CO3** |
| **2** | Define personal protective equipment (PPE) and list some examples. | **2 Marks** | **L1** | **CO3** |
| **3** | List the difference between weather and climate. | **2 Marks** | **L1** | **CO3** |
| **4** | State the abbreviation and define the following-LD50, LC50, LDLO, LCLO. | **2 Marks** | **L1** | **CO3** |
| **5** | State the importance of regular training and refresher courses in promoting a culture of safety among employees. | **2 Marks** | **L1** | **CO3** |
| **6** | List the heat stress and psychosocial hazards encountered at a drill site. | **2 Marks** | **L1** | **CO4** |
| **7** | Define oil spillage and its impact on the environment. | **2 Marks** | **L1** | **CO4** |
| **8** | Mention the different uses of booms. | **2 Marks** | **L1** | **CO4** |
| **9** | List four differences between physical adsorption and chemisorption. | **2 Marks** | **L1** | **CO4** |
| **10** | Recall the concept of gravity separation in water treatment. | **2 Marks** | **L1** | **CO4** |

**Part B**

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| **Answer the Questions Total 80 Marks.** | | | | | |
| **11.** | Discuss the significance of both the Paris Agreement and the Kyoto Protocol in shaping global efforts to combat climate change. In your response, identify the key commitments made by countries under the Paris Agreement to limit global warming to well below 2°C, and examine how these commitments differ from those in the Kyoto Protocol. Additionally, outline the main achievements of the Kyoto Protocol in reducing greenhouse gas emissions and discuss its limitations in addressing the global climate crisis. | | **20 Marks** | **L2** | **CO1** |
| **or** | | | | | |
| **12.** | Explain the role of deforestation and land-use changes in contributing to global warming, and evaluate the effectiveness of sustainable land management practices in mitigating these impacts. In your response, examine how shifts in climate patterns, such as temperature increases and altered precipitation, serve as key indicators of global warming. Furthermore, explain in detail the five principal environmental concerns associated with the petroleum industry, focusing on how these concerns relate to climate change and contribute to the overall environmental impact. | | **20 Marks** | **L2** | **CO1** |
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| **13.** | In the context of risk assessment and safety management, discuss and critically analyze the different hazard analysis methods used to assess potential risks. Focus on Event Tree Analysis (ETA), explaining its principles in detail and providing real-world examples that highlight how different actions lead to specific consequences. Furthermore, explore the significance of hazard analysis in proactively identifying, evaluating, and managing risks within a system, emphasizing how it can influence decision-making, improve safety protocols, and prevent catastrophic outcomes. | | **20 Marks** | **L2** | **CO2** |
| **or** | | | | | |
| **14.** | There are various acts and regulations which govern the environmental policies.  Explain the following in details:   1. Minimal National Standards (MINAS) 2. Hazardous Waste (Management & Handling) Rules – 1989 3. The Air Act. 4. The Public Liability Insurance Act 1991 | | **20 Marks** | **L2** | **CO2** |

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| **15.** | A drilling site has to be designed in a remote, environmentally sensitive region that presents a variety of operational and environmental challenges. These include difficult terrain, limited access roads, and the necessity to adhere to stringent environmental regulations. In addition, optimizing well spacing is critical for efficient resource extraction, while ensuring that health and safety standards are maintained throughout the operation.  As part of the project team, you are assigned to develop a comprehensive site layout that accounts for these factors. Your task is to prepare a detailed report that assesses the specific challenges posed by the site, including the topography, infrastructure limitations, and environmental considerations. Based on this analysis, Develop a site layout design that addresses these challenges effectively, ensuring not only operational efficiency but also compliance with regulatory and safety requirements. The layout should reflect thoughtful planning that optimizes resource extraction while mitigating the impact on the surrounding environment and ensuring the safety of personnel on-site. | **20 Marks** | **L3** | **CO3** |
| **Or** | | | | |
| **16.** | For enhancing safety culture at a drilling site, you are tasked with evaluating how safety policies can be effectively communicated and integrated into the organizational culture at a drilling site. Consider how these policies can be communicated to all personnel, from drill floor workers to top management, ensuring safety is a core value.  Discuss strategies to promote a safety culture where everyone actively contributes to maintaining a safe work environment. Analyze the importance of equipment safety, highlighting how regular maintenance and checks reduce accidents. Examine the role of personal protective equipment and how its integration with safety protocols, like pre-operation checks, enhances safety culture. The report should assess how these practices shape the overall safety environment, contributing to a safer and more efficient drilling operation. | **20 Marks** | **L3** | **CO3** |

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| **17.** | Discuss the process of water treatment by explaining the methods used for the removal of (a) suspended hydrocarbons and (b) suspended solids. Compare their subtopics in terms of principles, applications, and limitations, and propose improvements to enhance their efficiency in industrial applications. | **20 Marks** | **L2** | **CO4** |
| **Or** | | | | |
| **18.** | For recovery of oil on water skimmers are used. There are various classification of skimmers according to their basic operating principles. Explain each of them along with the subtopics with a suitable diagram wherever is required. | **20 Marks** | **L2** | **CO4** |

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