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| **University of Kerala** | | |
| Discipline: CHEMISTRY |  | Time: 1 Hour 30 Minutes (90 Mins.) |
| Course Code: UK1DSCCHE105 |  | Total Marks: 42 |
| Course Title: GENERAL CHEMISTRY I |  |  |
| Type of Course: DSC |  |  |
| Semester: 1 |  |  |
| Academic Level: 100-199 |  |  |
| Total Credit: 4, Theory: 3 Credit |  |  |

**Part A.**

**6 Marks. Time: 6 Minutes**

**Objective Type. 1 Mark Each. Answer All Questions**

**(Cognitive Level: Remember/Understand)**

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| **Qn.**  **No.** | **Question** | **Cognitive**  **Level** | **Course Outcome (CO)** |
| 1. | Which branch of chemistry focuses on the composition and properties of substances? | Remember | CO-1,2 |
| 2. | Who is known as the "Father of Modern Chemistry"? | Remember | CO-3 |
| 3. | What is the main purpose of using bleach in household cleaning? | Understand | CO-4 |
| 4. | Write the name of two toxic chemicals used in a chemistry laboratory. | Understand | CO-5,6 |
| 5. | Explain the importance of peer review in science. | Understand | CO-1,2 |
| 6. | What is the term for a quantity of substance containing 6.022 x 10²³ particles? | Understand | CO-5,6 |

**Part B.**

**8 Marks. Time: 24 Minutes**

**Short Answer. 2 Marks Each. Answer All Questions**

**(Cognitive Level: Understand/Apply)**

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| **Qn.**  **No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 7. | What is the difference between a theory and a hypothesis? | Understand | CO-1,2 |
| 8. | What was Joseph Priestley's key discovery, and why is it considered important in the history of chemistry? | Understand | CO-3 |
| 9. | Identify two major chemical ingredients found in household bleach. Explain how these chemicals work to remove stains and disinfect surfaces. | Apply | CO-4 |
| 10. | Given a redox reaction, identify which species is oxidized and which is reduced, and explain your reasoning  H2​(g)+Cl2​(g) → 2HCl (g) | Apply | CO-5,6 |

**Part C.**

**28 Marks. Time: 60 Minutes**

**Long Answer. 7 marks each.**

**Answer all 4 Questions, choosing among options within each question.**

**(Cognitive Level: Understand/Apply/Analyze)**

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| **Qn. No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 11. | a. Outline the steps of the scientific method. How does each step contribute to the formulation of scientific knowledge?  OR  b. Discuss the role of chemistry as a central science. How does it connect to physics, biology, and other scientific disciplines? | Understand | CO-1,2 |
| 12. | a. Discuss the significance of Dmitri Mendeleev's periodic table in predicting the properties of undiscovered elements. How does this historical understanding apply to the contemporary use of the periodic table?  OR  b. How the collective contributions of women scientists like Franklin, Ball, Hodgkin, and Elion have transformed the field of chemistry. What strategies can be implemented to encourage more women to pursue careers in science? | Apply | CO-3 |
| 13. | a. What is the role of detergents in household cleaning? Discuss their cleansing action. Provide examples of specific types of stains that are effectively removed by detergents.  OR  b. Discuss the method of action of mothballs as a pest control agent. What are the active chemicals involved, and what safety measures should be implemented when using them? Identify potential health risks associated with improper use. | Apply | CO-4 |
| 14. | a. Compare the differences between acid-base titrations and redox titrations. What specific indicators are used for each type, and how do they change at the endpoint? Provide examples of both types of titrations.  OR  b. Examine the procedures involved in performing a complexometric titration. What specific role does EDTA play, and how do you determine the endpoint of such titrations? | Analyze | CO-5,6 |