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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **Ph.D. Course Work End Term Examinations – JAN-FEB 2025** |
| **Date:** 03 – 02- 2025 **Time:** 09:30 am – 12:30 pm |

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| --- | --- | --- |
| **School:** SOE | **Program:** Ph.D. | |
| **Course Code :** CHE806 | **Course Name :** Instrumental Methods of Analysis | |
| **Semester**: | **Max Marks**: 100 | **Weightage**: 50% |

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| --- | --- | --- | --- | --- | --- |
| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **10** | **50** | **10** | **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**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Answer ALL the Questions. Each question carries 10 marks. 6Q x 10M=60 Marks** | | | | |
| **1** | Discuss the various detectors used in HPLC technique? | **10 Marks** | **L2** | **CO1** |
| **2** | Write the expected IR peaks for Benzoic acid and Benzaldehyde. | **10 Marks** | **L3** | **CO2** |
| **3** | Draw a 1H NMR correlation chart for the following functional groups,  a) Benzene ring carbon and b) hydroxyl group in phenol | **10 Marks** | **L3** | **CO2** |
| **4** | Explain the technique used to determine the structure of a crystal | **10 Marks** | **L3** | **CO3** |
| **5** | Explain the important terms used in UV-Vis spectroscopy | **10 Marks** | **L2** | **CO2** |
| **6** | What is electron microscopy? Write any four applications of Scanning electron microscopy. | **10 Marks** | **L2** | **CO4** |

**Part B**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Answer the Questions. Each question carries 20 marks 2Q x 20 = 40 Marks** | | | | | |
| **7.** |  | Explain the principle, instrumentation and applications of UV-Vis spectroscopy | **20 Marks** | **L2** | **CO2** |
|  | | | | | |
| **8.** |  | Explain the principle, instrumentation and applications of Atomic Force Microscope (AFM) | **20 Marks** | **L2** | **CO4** |

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