Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **17CH3016** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INSTRUMENTAL METHODS OF ANALYSIS** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | List out various types of Errors in instrumental analysis with prevention methods. Explain it. | CO2 | 10 |
| b. | Discuss Accuracy and precision with suitable examples. | CO3 | 10 |
| **(OR)** | | | | |
| 2. | a. | The volume of a liquid is 20mL. A student measures the volume of liquid using a cup and obtains following results.  i) 20mL, 19.3mL, 18.8mL, 18.6mL  ii) 16mL, 16.1mL, 16.0mL, 16.2mL.  iii) 20.2mL, 20.0mL, 20.2mL, 20.2mL.  iv) 18.6mL, 17.8mL, 15.6mL, 16.2mL.  Give your suggestion in terms of accuracy and precision. | CO2 | 10 |
| b. | The analysis of a hematite sample yield FeO percentages of 55.98, 56.00, 56.04, 56.18 and 56.22. The last value appears anomalous: should it be retained or rejected at the 90% confidence level?  (at 90% confidence level; when N=3, Qcri = 0.941; N=4, Qcri = 0.765, N=5, Qcri = 0.642; N=6, Qcri = 0.560). | CO5 | 10 |
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| 3. | a. | Discuss Paper chromatography with neat diagram and write its demerits. | CO2 | 10 |
| b. | i) In gas chromatographic separation of benzene, toluene and xylene the areas under the peak were noted to be 31.0, 14.5 and 53.2 cm. repesctively. Calculate the percentage composition of the sample.  ii) What are the advantages of TLC over paper chromatography? | CO3 | 10 |
| **(OR)** | | | | |
| 4. | a. | Describe the principle and techniques involved in Column Chromatography with neat diagrams. | CO2 | 10 |
| b. | Sketch High performance Liquid Chromatography with it merits. | CO2 | 10 |
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| 5. | a. | Enumerate the principle and applications of Differential Thermal Analysis. | CO2 | 10 |
| b. | Discuss the differential scanning calorimetry with suitable examples. | CO2 | 10 |
| **(OR)** | | | | |
| 6. | a. | Explain the thermogravimetric analysis and its applications. | CO2 | 10 |
| b. | Write the the factors affecting TG, DTA and DSC Curves. | CO2 | 10 |
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| 7. | a. | Write a detailed account on XRD. | CO2 | 10 |
| b. | What do you understand from Scanning Electron Microscope? Give its applications. | CO2 | 10 |
| **(OR)** | | | | |
| 8. | a. | Give an account on Atomic Absorption Spectroscopy. | CO2 | 10 |
| b. | Discuss in detail the Transmission Electron Microscopy. | CO2 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Discuss in detail the Body Fluid Analysis. | CO2 | 10 |
| b. | Describe Food analysis with suitable examples. | CO2 | 10 |