# GUJARAT TECHNOLOGICAL UNIVERSITY
## B.Ph. - SEMESTER–VII • EXAMINATION – SUMMER-2022

**Subject Code: BP701TP**                                    **Date:  01/06/2022**
**Subject Name: Instrumental Method of Analysis**
**Time: 02:30PM TO 05:30PM**                          **Total Marks: 80**

**Instructions:**
1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | State and derive Beer-Lambert's Law | **06** |
| | **(b)** | Write applications of UV-Spectrophotometry | **05** |
| | **(c)** | Describe the factors affecting fluorescence | **05** |
| **Q.2** | **(a)** | Explain the terms (i) Auxochromes (ii) Singlet, doublet and triplet electronic states (iii) Quenching | **06** |
| | **(b)** | Explain the principle of flame photometry. What are the applications of flame photometry? | **05** |
| | **(c)** | Explain the different modes of vibrations in poly atomic molecules | **05** |
| **Q.3** | **(a)** | Write a brief note (i) Instrumentation of atomic absorption spectroscopy (ii) Nephelometry | **06** |
| | **(b)** | Explain the working principle of Michelson Interferometer. What are the advantages of FTIR? | **05** |
| | **(c)** | Give advantages and disadvantages of adsorption chromatography | **05** |
| **Q.4** | **(a)** | What are the types of paper chromatography? Give the applications of paper chromatography in pharmaceutical science | **06** |
| | **(b)** | Explain Rf value. Describe the working principle of thin layer chromatography | **05** |
| | **(c)** | Write a brief note on resins used in ion exchange chromatography | **05** |
| **Q.5** | **(a)** | Give a brief account on (i) Capillary electrophoresis (ii) Factors affecting electrophoretic mobility | **06** |
| | **(b)** | Explain the basic principle of affinity chromatography. Enumerate its applications | **05** |
| | **(c)** | Explain the instrumentation of gel chromatography | **05** |
| **Q. 6** | **(a)** | Explain the terms (i) HETP (ii) Tailing (iii) Resolution | **06** |
| | **(b)** | Give brief account on columns used in HPLC | **05** |
| | **(c)** | Discuss about Derivatisation in gas chromatography | **05** |
| **Q.7** | **(a)** | Give brief account on (i) Photomultiplier tube (ii) Applications of HPLC | **06** |
| | **(b)** | Describe the sample handling in IR spectroscopy | **05** |
| | **(c)** | Draw the schematic diagram of the Flame Ionization Detector. What ate the advantages of gas chromatography? | **05** |

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