

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.Ph. SEMESTER-VII • EXAMINATION – WINTER-2020**

**Subject Code: BP701TP****Date:01/01/2021****Subject Name: Instrumental Method of Analysis****Time: 10:30AM To 12:30PM****Total Marks: 54****Instructions:**

1. Attempt any **THREE** questions from Q-1 to Q-6.
2. Q.7 is compulsory to attempt.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.

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|-------------|---|-----------|
| <b>Q.1</b>  | (a) Derive Beer's Law. Give reasons for deviations from Beer's law?   | <b>06</b> |
|             | (b) Define Chromophores, auxochromes and Bathochromic shift with example.   | <b>05</b> |
|             | (c) What is chemical quenching? Give its example.   | <b>05</b> |
| <b>Q.2</b>  | (a) Explain sample handling in IR spectroscopy.   | <b>06</b> |
|             | (b) Describe Principle and instrumentation of Flame photometry.   | <b>05</b> |
|             | (c) Describe thermal detectors used in IR spectrophotometry.  | <b>05</b> |
| <b>Q.3</b>  | (a) Describe principle involved in separation in TLC along with stationary Phases used in TLC.  | <b>06</b> |
|             | (b) Give advantages and disadvantages of Adsorption chromatography  | <b>05</b> |
|             | (c) What are the modes of development in paper chromatography?  | <b>05</b> |
| <b>Q.4</b>  | (a) Write a note on Gel electrophoresis along with its applications.  | <b>06</b> |
|             | (b) Give applications of Thin Layer Chromatography.   | <b>05</b> |
|             | (c) Describe principle and applications of Atomic absorption spectroscopy   | <b>05</b> |
| <b>Q.5</b>  | (a) What is the principle and which carrier gas is suitable for use in<br>a. Katharometer b. Flame ionization detector c. Electron capture detector | <b>06</b> |
|             | (b) Differentiate between isocratic and gradient elution technique.   | <b>05</b> |
|             | (c) Define Retention time, Retention Volume, Resolution and HETP.   | <b>05</b> |
| <b>Q. 6</b> | (a) What is an Ion exchange resin?  | <b>06</b> |
|             | (b) Write factors affecting ion exchange chromatography   | <b>05</b> |
|             | (c) Give application of Gel and affinity chromatography.  | <b>05</b> |
| <b>Q.7</b>  | (a) Which principle is involved in Normal Phase and Reverse Phase chromatography  | <b>06</b> |
|             | <b>OR</b>   |           |
|             | (a) What are the different types of vibrations? Explain in detail   | <b>06</b> |
|             | <b>OR</b>   |           |
|             | (a) Explain Instrumentation of UV-Visible spectrophotometer   | <b>06</b> |

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