

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: B.PHARM
BRANCH: PHARMACY**

**SEMESTER: VII
SESSION: MO'2023**

SUBJECT: BP701T INSTRUMENTAL METHODS OF ANALYSIS

TIME: 3.00 Hours

FULL MARK: 75

INSTRUCTIONS:

1. The missing data, if any, may be assumed suitably.
2. Before attempting the question paper, be sure that you have got the correct question paper.
3. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
4. This question paper consists of (03) three parts. Read the part wise instructions before attempting the questions.

PART-I

Objective type questions (Instruction: Answer all questions)

Q1. (10 x 2 = 20 Marks)

- A. Define fingerprint region in IR spectroscopy.
- B. Mention two sets of examples of fuel and oxidants combinations used in atomic absorption spectroscopy.
- C. Describe- bathochromic and hypsochromic shifts.
- D. State the basic principle of electrophoresis.
- E. Mention one example for each of cation and anion exchanger used in ion-exchange chromatography.
- F. Define static and dynamic quenching.
- G. State the advantages and disadvantages of KBr-pellet method in IR spectroscopy
- H. Recall the detector used in IR spectroscopy working on the principle of gas expansion.
- I. Enumerate different types of Paper Chromatography and discuss them briefly.
- J. Discuss the Chromatographic Parameters of HPLC.

PART-II

Short Answers

(Instruction: Answer seven out of nine questions)

(7 x 5 = 35 Marks)

- Q2. Enumerate the relationship between fluorescence intensity and concentration.
- Q3. State the working principle of hollow cathode lamp.
- Q4. Discuss various modes of fundamental vibrations in IR spectroscopy.
- Q5. Describe the principle of cation-exchange chromatography.
- Q6. Discuss various factors affecting electrophoretic mobility.
- Q7. Write down the qualitative and quantitative applications of UV-Vis spectroscopy.
- Q8. Define and derive the equation of Beer-Lambert's law.
- Q9. Discuss the various techniques of column packing in column chromatography.
- Q10. Give a Comparative account of HPLC, GLC and HPTLC.

PART-III
Long Answers
(Instruction: Answer two out of three questions)

(2 x 10 = 20 marks)

- Q11. Draw a neat labelled diagram of UV-vis spectrophotometer and discuss its components in details.
- Q12. Describe the phenomenon upon the introduction of sample in aerosol form into the flame of flame emission spectroscopy and atomic absorption spectroscopy. (3+7)
- Q13. Write notes on—(a) Reverse & Normal Phase Chromatography with suitable examples (b) Adsorbents and Elutropic Series of solvents.

:::21/11/2023:::M