

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

CLASS: B.PHARM
BRANCH: PHARMACY

SEMESTER : VII
SESSION : MO/2022

SUBJECT: BP701T INSTRUMENTAL METHODS OF ANALYSIS

TIME: 3:00 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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PART-I

Objective types questions (Instruction: Answer all questions)

Q1. (10 x 2 = 20 Marks)

- A. _____ is visualized by using an intercalating dye, ethidium bromide and _____ are visualized by Coomassie Stain.
- B. _____ Chromatography relies on the specific interactions of a solute with a ligand and _____ Chromatography depends on the penetration of molecules into the cavities of a macroporous support, mostly made from hydrophilic gels of dextran, agarose or polyacrylamide.
- C. Auxochromes are _____ functional group that does not itself absorb in UV region but has the effect of shifting chromophoric peak to _____ wavelength.
- D. The Golay cell is a type of opto-acoustic detector mainly used for _____ spectroscopy and Photomultiplier tubes are extremely sensitive detectors used for _____ spectroscopy.
- E. Express the following frequency in terms of wave number (cm^{-1})
- a. 12000 nm
 - b. 2777 nm
- F. Convert the following transmittance data to absorbance
- a. 15.58 %
 - b. 73.28 %
- G. Express the following absorbance in terms of percentage transmittance
- a. 0.842
 - b. 0.635
- H. Fluorescence is defined as emission of photons from _____ excited states, in which the electron in the excited orbital is _____ to the second electron in the ground-state orbital.
- I. In the gas chromatography, capillary columns are basically of two type _____ and _____.
- J. Calculate the R_f value of a and b if the solvent front is at 9 cm and the distance travelled by components are:
- a. 7.2 cm
 - b. 3.6 cm

PART-II
Short Answers
(Instruction: Answer seven out of nine questions)

(7 x 5 = 35 Marks)

- Q2. Derive Beer-Lambert's Law.
- Q3. Describe working principle of Flame Photometry.
- Q4. Discuss the methodology and applications of Thin Layer Chromatography.
- Q5. Discuss the concepts of singlet, doublet and triplet electronic state.
- Q6. Describe the working and applications of Ion-exchange chromatography.
- Q7. Discuss the instrumentation and applications of Gas Chromatography.
- Q8. Discuss spectrophotometric titrations with suitable examples.
- Q9. Describe working principle of Nepheloturbidometry.
- Q10. Discuss the instrumentation and applications of Atomic Absorption Spectroscopy.

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

(2 x 10 = 20 marks)

- Q11. Draw a neat labeled ray diagram of HPLC and explain its working.
- Q12. Draw a neat labeled ray diagram of IR and explain its working.
- Q13. Explain the preparation and working of SDS-PAGE Electrophoresis.

:::21/11/2022:::M