W-2022

Seat Number | | | | | | |

PANKH-02

BP-701T : Instrumental Methods of Analysis

(747701)

Total Pages : 3]

Time: 3 Hours

Max. Marks : 75

Instruction to Candidates:

1. Do not write anything on question paper except Seat No.
2. All questions are compulsory.
3. Figures to right indicate full marks.
4. Students should note, no supplement will be provided.
5. Graph or diagram should be drawn with the black ink pen or black HB pencil.

1. Answer all the questions. 20

i) When absorption maxima (λmax) of a compound is shifted towards longer wavelength, It is called as
   a) Bathochromic shift b) Hypsochromic shift
   c) Hyperchromic shift d) Hypochromic shift

ii) Stationary phase is non polar and mobile phase is polar is called
   a) Bonded phase b) Normal phase
   c) Reverse phase d) Non-bonded

iii) Action of opposite ions is utilized in -------
   a) Affinity chromatography b) Ion exchange chromatography
   c) Size exclusion chromatography d) HPLC

iv) In chromatography, the mobile phase can be made of?
   a) Solid or liquid b) Liquid or gas
   c) Gas only d) Liquid only

v) Which of the following cannot be used as an adsorbent in Column adsorption chromatography?
   a) Magnesium oxide b) Silica gel
   c) Activated alumina d) Potassium permanganate

vi) A molecule can only absorb IR radiation when its absorption causes a change in it's....
   a)Conductivity b) Electric dipole
   c) Polarity d) Potential difference

vii) The most commonly used mulling reagent in IR is
   a) Nujol b) KCL c) HCL d) Iodine

viii) Which technique separates charged particles using electric field?
   a) Hydrolysis b) Electrophoresis
   c) Protein synthesis d) Protein denaturing

ix) For Amino acid detection ------ is used as a Visualizing Reagent.
   a) Dragendroff's reagent b) 3,5 dinitrobenzoic acid
   c)Ninhydrin in acetone d) Fehling's reagent

x) The first step in preparation of affinity chromatography column is
a) Ligand attachment to matrix b) Coupling of aromatic amines to matrix
c) Activation process d) Precipitation

xi) The sample cell is made up of.....in UV spectroscopy.
a) Stainless steel b) plastic c) Quartz d) Glass

xii) Lambert's law is concerned with
a) concentration b) thickness of medium
c) volume d) composition

xiii) Which of the following is the example of pyroelectric material used in Pyroelectric transducers in IR spectroscopy?
a) lead sulfide b) indium antimonite
c) bismuth-antimony d) triglycine sulfate

xiv) The source of continuous radiation commonly employed in fluorescence spectroscopy is
a) Hydrogen or deuterium discharge lamp b) xenon arc lamp
c) Hallow cathode lamp d) Tungsten lamp

xv) Derivatization techniques in HPLC are intended to enhance ----
a) Molecular weight b) Reversibility
c) Reproducibility d) Detectability

xvi) Affinity Chromatography can NOT be used for the ---
a) Separation of proteins according to their isoelectric points
b) Purification of compounds from a complex matrix
c) Study of enzyme-substrate interactions
d) Concentration of a compounds

xvii) Vacuum UV region generally lies between in which of the following range?
a)Below 200 nm b) 200-400 nm
c)400-800 nm d) 300-500 nm

xviii) Which of the following bending vibration takes place in different planes?
a)Asymmetric stretching b)Rocking c) Scissoring d) Twisting

xix) The size of thin layer of adsorbent is about
a) 0.1 mm b) 0.2 mmc) 0.3 mm d) 0.4 mm

xx) The intensity of the transmitted light is usually measure at which angle?
a) 90°b) 45°
c) 60°d) 180°

2. Attempt **any two** of the following

i) Define Fluorescence and Phosphorescence? Explain the various factors affecting on Fluorescence intensity indetail. **20**

ii) Explain in detail principle, instrumentation and applications of Double beam UV-Spectrophotometer.

iii) Describe the principle, instrumentation of HPLC along with their applications.

3. Attempt **any seven** of the following

i) What is the principle of Paper chromatography? Explain the various steps involved in Paper chromatography. **35**

ii) Comment on type of electrons and electronic transitions involved in UV-spectroscopy.

iii) Explain the various modes of vibration and sampling techniques used in I.R. Spectroscopy.

iv) Discuss the principle and applications of AAS. Add a note on Hollow cathode lamp.

v) Give the Principle of Nephelometry? Explain in brief instrumentation ofNephelometer.

vi) Write the principle and development techniques used in Thin layer chromatography.

vii) State Beer's and Lambert's law. Add a note on Deviations of Beer's law.

viii) Write a note on Gel chromatography.

ix) Elaborate instrumentation and applications of Gas chromatography.