BRAINWARE UNIVERSITY

ODD Semester Examinations 2021- 22

Programme – Bachelor of Pharmacy - 2018 [B.Pharm]

Course Name – Instrumental Methods of Analysis

Course Code – BP701T

(Semester VII)

Time allotted : 1 Hour 30 Minutes | Full Marks : 75

(Multiple choise type question) | 75 x 1 = 75

Choose the correct alternative from the following

(I) HPLC is referred as ,

A) High pressure liquid chromatography
B) High performance liquid chromatography
C) Both A & B
D) Highly placed liquid chromatography

(II) Theoretical plate signifies for,

A) Estimating the efficiency of a column.
B) Determine the thickness of the stationary phase
C) Measure the distribution of the analyte between mobile and stationary phases
D) None of the these

(III) What does the electrophoresis apparatus consist of?

A) Gel buffer chamber and fire pack
B) Buffer chamber and electrophoresis unit
C) Electrophoresis unit and gel separator
D) Power pack and electrophoresis unit

(IV) From the followings, which one is more important for the absorbance of UV spectroscopy?

A) Chromophores
B) Auxochromes
C) Heterochromes
D) None of these

(V) Ion exchange chromatography is the method of choice for the separation of ?

A) Metals
B) Sugars
C) Fatty acids
D) sterols

(VI) Which statement is true about gel filtration?

A) Smaller molecule elutes faster
B) Large molecule elutes faster
C) Size doesn’t matters in gel filtration
D) None of these

(VII) From which of the following is the commonly used support material for the packed column in gas chromatography?

A) Glass
B) Metal
C) Diatomaceous earth
D) Stainless steel

(VIII) A retention gap is placed between the injector and the front of the column to

A) Retain contaminants and prevent them from reaching the column
B) Retain the sample and release it gradually to the column
C) Prevent backflush of the injected solution
D) All of the above

(IX) The Fingerprint region ranging for IR from?

A) 4000cm-1-1450cm-1
B) 1250cm-1-450cm-1
C) 1450cm-1-500cm-1
D) 1850cm-1-900cm-1

(X) If the compound C2H4O was completely reduced, what will be the possible transitions it can undergo?

A) n-p*
B) s-s*
C) p-p*
D) n-s*,s-s*

(XI) For separation of which of the following substances, Gas-Solid chromatography is being used ?

A) Thermally stable organic components
B) Volatile organic components

C) Thermally stable inorganic components
D) Low molecular weight gaseous species

(XII) A1%1cm stands for ?
A) Specific absorbance
B) Specific wavelength
C) Wavelength maximum
D) None of the these

(XIII) Which would be best to separate a protein that binds strongly to its substrate ?
A) Gel filtration
B) Affinity chromatography
C) Cation exchange
D) Anion exchange

(XIV) In IR what kind of transitions are generally shown ?
A) Electronic transitions
B) Rotational & Vibrational Transitions
C) Rotational Transition only
D) All the electronic, rotational, vibrational Transitions

(XV) The speed of migration of ions is depending upon ?
A) Shape and size of molecule
B) Magnitude of charge and shape of molecule
C) Magnitude of charge, shape and mass of molecule
D) Magnitude of charge and mass of molecule

(XVI) From which of the following is the principle of flame emission photometers?
A) Radiation is absorbed by non-excited atoms in vapor state and are excited to higher states
B) Medium absorbs radiation and transmitted radiation is measured
C) Color and wavelength of the flame is measured
D) Only wavelength of the flame is measured.

(XVII) Choose the correct sequence of flame photometry?
A) Sample residue > excited state atoms > Return in ground state > Emission of radiation
B) Sample residue > Ground state > Excited state > Emission of radiation
C) Emission of Radiation > Excited state > Ground state > Sample residue.
D) all of the statements are incorrect

(XVIII) In FTIR Fourier transformation is refers from a mathematical conversion of
A) Time domain to frequency domain
B) Frequency domain to time domain
C) Time domain to concentration domain
D) Concentration domain to time domain

(XIX) In descending paper chromatography, which is responsible for separation of compounds?
A) Partition
B) Adsorption
C) Gravitational force
D) All of these

(XX) Rf value refers to ?
A) Distance travelled by the compound at its point of maximum
B) Distance travelled by the standard
C) Length of the chromatographic plate
D) None of these

(XXI) In Modern UV Sample cell or Cuvette made up of ?
A) Glass
B) Plastic
C) Quartz
D) Cobalt

(XXII) Over tones are mainly seen in ?
A) Near IR
B) Mid IR
C) Far IR
D) Not shown in IR region

(XXIII) The Primary filter in Spectrofluorometer placed in between?
A) Source and Cell
B) Cell & Detector
C) Source & Detector
D) Anywhere

(XXIV) From which of the following statement is false regarding nephelometry?
A) It is more sensitive (>100mg/litre)
B) Wavelength is not important
C) Intensity of the light and concentration graph is linear
D) It is not used in analysis of colloidal systems

(XXV) How many vibrational modes are possible for CCl4 ?
A) 9
B) 5
C) 152
D) 10

(XXVI) In gel filtration chromatography, separation of proteins are based on their ?
A) Size and net charge
B) Size and shape

C) Size and specific affinity
D) None of these

(XXVII) For separating two complex mixtures by using paper chromatography, which technique is applied from the followings?
A) Ascending
B) Descending
C) Radiation
D) Two dimensional

(XXVIII) Which of the following polymer is often used for matrix materials in affinity chromatography?
A) Agarose
B) Cellulose
C) Dextrose
D) All of these

(XXIX) Size of the spot in paper chromatography is
A) 2-5mm
B) 1-2mm
C) 7-8mm
D) 6-8mm

(XXX) From the following IR regions, which is applicable for qualitative analysis?
A) Near IR
B) Mid IR
C) Far IR
D) All of these

(XXXI) What are the benefits of decreasing the internal diameter of columns?
A) Increased sample capacity
B) Increased resolution
C) Reduced risk of column overloading
D) All of these

(XXXII) Which of the following transition is responsible for the fluorescence? P. n-p* Q. s-s* R. n-s* S. s-s*
A) P & S
B) Q & R
C) P Only
D) S Only

(XXXIII) 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

(XXXIV) Which factors are responsible for affecting electrophoresis mobility?
A) Molecular size
B) Shape of protein
C) A & B Both
D) None of these

(XXXV) What is the wavelength range corresponding to UV-Visible region?
A) 400-800nm
B) 200-800nm
C) 25µm-2.5 µm
D) 2.5 µm-1mm

(XXXVI) What does λmax stands for?
A) Wavelength where has the strongest photon absorption.
B) Wavelength where has the maximum elimination
C) Both of these
D) None of these

(XXXVII) From which of the following gases is unsuitable for using a carrier gas in GC ?
A) Nitrogen
B) Helium
C) Oxygen
D) All of these

(XXXVIII) The chromatographic method of separating biochemical mixture of compounds, based on highly specific biological interactions is referred to as
A) Thin layer chromatography
B) Ion-exchange chromatography
C) Affinity chromatography
D) Gel permeation chromatography

(XXXIX) Atomic emission spectroscopy is?
A) The measurement of intensity of emitted light at a particular wave length from the atoms that are excited thermally
B) The measurement of absorbance of emitted light at a particular wavelength from the atoms that are excited thermally
C) The measurement of intensity of emitted light at a particular wavelength from the atoms that are excited thermally
D) The measurement of intensity of absorbed light at a particular wavelength from the atoms that are excited thermally

(XL) Which of the following chromatographic technique depends on the highly specific interactions between pairs of biological materials such as enzyme substrate?
A) Adsorption chromatography
B) Ion- exchange chromatography
C) Affinity chromatography
D) Gel- permeation chromatography

(XLI) Which of the following is not a step involved in gel filtration ?

A) Gel preparation
B) Precipitation
C) Sample application
D) Elution of the sample

(XLII) Fluorescence occurs due to transition of electron from,

A) Singlet ground state to singlet excited state
B) Lower singlet excited state to singlet ground state.
C) Triplet excited state to singlet ground state
D) Triplet ground state to singlet excited state

(XLIII) Which one of the Following are used as sources in fluorometry ? P. Deuterium discharge lamp Q. Incandescent wire R. Xenon Arc lamp. S. Mercury Vapor Lamp

A) Q,R
B) P,S
C) P,Q
D) R,S

(XLIV) In chromatographic techniques, the mobile phase is generally?

A) Solid or liquid
B) Liquid or gas
C) Gas only
D) Liquid only

(XLV) In column chromatography the stationary phase & the mobile phase is respectively made of ?

A) Solid & Liquid
B) Liquid, Liquid
C) Liquid , Gas
D) Solid, Gas

(XLVI) The phosphorescence occurs due to which of the following transitions? P. n-p* Q. s-s* R. n-s* S. p-p*

A) P
B) Both P & S
C) Q
D) R

(XLVII) How many Vibrational modes are possible for CHCl3

A) 9
B) 5
C) 8
D) 122

(XLVIII) From which of the followings is used as a spraying agent in paper chromatography?

A) Conc. Hcl
B) Nacl solution
C) Ninhydrin solution
D) Cuso4 solution

(XLIX) The eluent strength is a measure of

A) Solvent adsorption energy
B) Solvent absorption energy
C) Solvent diffusivity
D) Solvent mixing index

(L) From which of the followings can be used for detection purpose in GC ?

A) Infrared Spectroscopy
B) NMR
C) Flame ionization
D) Electrical conductivity

(LI) At low Pressure Mercury lamp Liner Radiation wavelength is ?

A) 254nm
B) 700nm
C) 800nm
D) 600nm

(LII) In electrophoresis , DNA will migrate towards

A) Cathode or positive electrode
B) Anode or negative electrode
C) Cathode or negative electrode
D) Anode or positive electrode

(LIII) Which of this is not true while selecting a solid matrix or column during affinity chromatography?

A) The matrix should interact weakly with enzymes
B) The matrix should be based on inorganic compounds
C) The matrix should exhibit good flow property
D) The matrix should be highly porous

(LIV) The main purpose of derivatization in HPLC is

A) To increase the resolution
B) To increase the detectability of a compound
C) To decrease the retention time
D) All of these

(LV) From which of the followings is not an application of ion –exchange chromatography ?

A) It is used for softening of water
B) It is used to prepare demineralized water
C) It is used for separation of similar ion in one sample
D) It is used in Preformulation

(LVI) In atomic emission spectroscopy the flame acts as ? P. Excitation Q. Nebulisation R.Ionization S. Vaporization

A) P & Q
B) R & S

C) R & P D) Q & R

(LVII) Ion exchange chromatography is based on the

A) Electrostatic attraction B) Electrical mobility of ionic species

C) Adsorption chromatography D) Partition chromatography

(LVIII) The far IR region ranging from?

A) cm-1-10cm-1 B) 500cm-1-50cm-1

C) 400cm-1-40cm-1 D) 400cm-1-100cm-1

(LIX) The elution power of a solvent is determined by ?

A) Its overall polarity B) The polarity of stationary phase

C) The nature of the sample components D) All of the mentioned

(LX) In which type of chromatographic technique 0.2mm thick layer of adsorbent is used for stationary phase ?

A) Gas chromatography B) Column

C) Thin layer D) Paper chromatography

(LXI) Column chromatography is based on the principle of

A) Ion-Exchange B) Exclusion principle

C) Differential absorption D) Absorption

(LXII) The pattern on the paper in paper chromatography is called ?

A) Chroming B) Chroma

C) Chromatograph D) Chromatogram

(LXIII) Turbidimetry is similar to

A) Fluorimetry B) Colorimetry

C) UV-visible D) NMR

(LXIV) Which of the following is not a way of non-specific elution ?

A) Solvent exchange B) PH change

C) Reversible denaturation D) Competition to suitable complementary protein

(LXV) From which of the following you can state as a application of flame photometry?

A) To determine functional group B) To study of chemical structure

C) To determine assay of specific drug D) To estimate metallic ions like sodium, Potassium e.t.c.

(LXVI) What is the principle of paper chromatography?

A) Partition B) Adsorption

C) None of these D) Both A & B

(LXVII) In reversed phase HPLC, what type of column and solvent is used?

A) Non- polar solvent / polar column B) Polar solvent / non polar column

C) Polar solvent/polar column D) All of these

(LXVIII) For Acetaldehyde (CH3-CHO) how many Vibrational modes may occur?

A) 28 B) 29

C) 15 D) 7

(LXIX) What is the UV Region in Spectra?

A) 200-400nm B) 100-200nm

C) 1-5nm D) 500-100nm

(LXX) In atomic absorption spectroscopy the most strongly absorbed light is called as ?

A) Resonance line. B) Base line

C) Stokes line D) Anti stokes line

(LXXI) Which of the following statement is true for a refractive index detector in HPLC ?

A) It is more sensitive than a UV detector B) It can only be Used for isocratic elution

C) It does not respond to many solutes D) None of these

(LXXII) When molecules are excited in visible region ,which lamp is used?

A) Hydrogen deuterium lamp B) Xenon lamp

C) Tungsten Lamp D) Mercury Lamp

(LXXIII) Sample Cell shape generally used in UV Spectrophotometry is?

A) Cylindrical B) Quadrangular

C) Both A&B D) None of this

(LXXIV) For IR radiation absorption, what type of molecule is appropriate?

A) Homonuclear diatomic molecule B) Heteronuclear diatomic molecule

C) Both D) None of these

(LXXV) Chromatography is a physical method that is used to separate and analyse ?

A) Simple mixture B) Complex mixtures

C) Viscous mixture D) Metals