



BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – B.Pharm-2019/B.Pharm-2020

**Course Name – Instrumental Methods of Analysis/Instrumental Methods of Analysis-
Theory**

Course Code - BP701T

(Semester VII)

Library
Brainware University
398, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125

Full Marks : 75

Time : 3:0 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Question)

1 x 20=20

1. Choose the correct alternative from the following :

- (i) Identify the correct option, the "shift of Wavelength in Shorter side" is known as
 - a) Red shift
 - b) Hypsochromic shift
 - c) Bathochromic shift
 - d) None of these
- (ii) Identify among the following is not a commonly used gel matrix in gel electrophoresis
 - a) Agarose
 - b) Polyacrylamide
 - c) Cellulose
 - d) Starch.
- (iii) Identify Type of chromatographic technique where 0.2mm thick layer of adsorbent is used as stationary phase
 - a) Gas chromatography
 - b) Column
 - c) Thin layer
 - d) Paper chromatography
- (iv) select the correct option in Modern UV Sample cell or Cuvette made up of ?
 - a) Glass
 - b) Plastic
 - c) Quartz
 - d) Cobalt
- (v) Predict that the intensity of a beam of monochromatic light decreases exponentially with increase in the concentration of absorbing species arithmetically which law applies in it?
 - a) Beers Law
 - b) Lamberts Law
 - c) Both of these
 - d) None of these
- (vi) Predict the following, which one is more important for the absorbance of UV spectroscopy?
 - a) Chromophores
 - b) Auxochromes
 - c) Heterochromes
 - d) None of these
- (vii) Select the correct option, Primary filter in Spectrofluorometer placed in between?

- a) Source and Cell
b) Cell & Detector
c) Source & Detector
d) Anywhere
- viii) Predict the correct option in which one of the following is used as radiation source in fluorimetry.
- a) Xenon Arc Lamp
b) Mercury Vapor lamp
c) Tungsten lamp
d) All of these
- (ix) Choose the Correct option, In UV-Vis spectroscopy what is the subject of detection for analytes
- a) Absorbance
b) Transmission
c) Scattering
d) None of these
- (x) Identify the function of Secondary filter in fluorescence spectroscopy is-
- a) Allows only excitation radiation
b) Allows only emission radiation
c) Allows both excitation and emission radiations
d) Allows transmitted radiation
- (xi) Name the Most widely used Detector in Spectrofluorometer is.
- a) Barrier layer
b) Golay Detector
c) Bolometer
d) Photo Multiplier Tube
- (xii) Identify the Instrument in which Interferometer is generally used?
- a) MS
b) FTIR
c) AAS
d) NMR
- (xiii) Choose the correct option, in Gratings of Monochromator the grooves are made of
- a) Epoxy resin
b) diatomaceous earth
c) Hydrogels
d) None of these
- (xiv) Predict the florescence occurs for which listed compound?
- a) Riboflavin
b) Quinin Sulphate
c) Both A & B
d) None of these
- (xv) Identify the correct option, What is the difference between an absorption band and an emission band?
- a) An absorption band is a region of the spectrum where a compound absorbs light, while an emission band is a region of the spectrum where a compound emits light.
b) An absorption band is a region of the spectrum where a compound is excited, while an emission band is a region of the spectrum where a compound is de-excited.
c) Both (a) and (b) are correct.
d) None of these are correct.
- (xvi) select the correct option, florescence is measured by checking,
- a) Emission
b) Transmission
c) Absorption
d) None of these
- (xvii) predict the Sources of light in a UV spectrophotometer?
- a) Deuterium Lamp
b) Neon Lamp
c) Hexane Lamp
d) None of the Above
- (xviii) Choose the correct option, In IR what region is basically used for the detection of molecules?
- a) Fingerprint region
b) Functional group region
c) Both A & B
d) None of these
- (xix) Identify the correct option, Which of the following factors can affect the absorbance of a solution?
- a) The concentration of the analyte
b) The path length of the light
c) The temperature of the solution
d) All of these
- (xx) Relate which of the following, can cause a quenching effect in Florescence activity?

- a) Structure rigidity
- c) PH of the medium

- b) Dissolved oxygen
- d) Both B & C

Group-B

(Short Answer Type Questions)

5 x 7=35

- 2. Classify the "Gas Chromatographic technique" on based on the principle of separation. (5)
- 3. Write the advantages and disadvantages of TLC over paper chromatography? (5)
- 4. Describe briefly about the principle of "Atomic Absorption Spectroscopy (AAS)"? (5)
- 5. Differentiate about Gas chromatography and thin layer chromatography (5)
- 6. Summarize the principle and mechanism of gel chromatography. (5)
- 7. write in detail the compare between Atomic Spectroscopy and Uv- visible spectroscopy (5)

OR

- Write the applications of UV-Vis spectroscopy. (5)
- 8. Illustrate the principle behind Phosphorescence and fluorecence. (5)

OR

Focus on Quenching. Give example.

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Group-C

(Long Answer Type Questions)

10 x 2=20

- 9. Enumerate with a neat schematic diagram the instrumentation and working of a double beam UV-Vis spectrophotometer. (10)
- 10. Illustrate schematically the principle, working and instrumentation of Atomic Absorption Spectroscopy. (10)

OR

Illustrate a neat schematic diagram of HPLC, classify the pumps and detectors used in HPLC. (10)

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