BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Pharm-2019
Course Name – Instrumental Methods of Analysis
Course Code - BP701T
(Semester VII)

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 Type Question) 1 x 20=20

1. *Choose the correct alternative from the following :*

(i) Thin layer chromatography works based on the principle of

a) Partition b) Absorption
c) Solubility d) None of these

(ii) Identify Nujols/Mulls Technique is used in IR Spectroscopy for the analysis of-

a) Solid Samples b) liquid Samples
c) semisolid Samples d) gas Samples

(iii) select Ultraviolet Spectrophotometry works based on the principle of

a) Lambert Beers Law b) vibration
c) solubility d) scattering

(iv) Observe the cuvette are made up of

a) quartz b) stainless steel
c) iron d) gold

(v) choose the correct answer the Sample Cell shape generally used in UV Spectrophotometry is?

a) Cylindrical b) Quadrangular
c) Both A&B d) None of this

(vi) observe that the Punch is used in which instrumentation

a) NMR b) IR SPECTROSCOPY
c) GAS CHROMATOGRAPHY d) HPLC

(vii) select the correct option which detector is used in Fluorometry ?

a) Photo Voltaic cell b) Photo Multiplier Tube
c) Phototube d) All of these

(viii) Choose the correct option in UV Spectra which range comes under the visible Region?

a) 200-400nm b) 100-200nm
c) 1-5nm d) 500-100nm

(ix) Predict the correct option in which one of the following is 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

(x) Choose the Correct types of Transition possible in UV-visible region for a compound with molecular formula C2H4O are- P. n-p* Q. s-s* R. n-s S.p-p*

a) P,Q,R
b) Q,R
c) P,S
d) P,Q,R,S

(xi) 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

(xii) determine that when molecules are excited in the visible region, which lamp is used?

a) Hydrogen deuterium lamp
b) Xenon lamp
c) Tungsten Lamp
d) Mercury Lamp

(xiii) Determine the correct option 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*

(xiv) Predict 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

(xv) OBSERVE THE FOLLOWING LAMDA MAX OF PARACETAMOL IN NaOH SOLUTION

a) 257nm
b) 200nm
c) 280nm
d) 276mn

(xvi) Calculate the solvent required for 0.4N NaOH by dissolving 4g of the sample.

a) a.200 ml
b) b. 1000 ml
c) c. 500 ml
d) d. 250 ml

(xvii) Determine at alkaline PH, if the phenol (i) is converted to phenoxide ion (ii), then from i & ii which will be showing more absorption?

a) i
b) ii
c) The absorption ratio will be same
d) None of these

(xviii) Determine the type of filter that can be used to convert UV radiation to Visible Radiation.

a) Primary Filter
b) Secondary Filter
c) Both A & B
d) None of this

(xix) observe the following in UV Spectrophotometer, the graph plot between

a) concentration vs absorbance
b) concentration vs time
c) concentration vs area
d) area vs absorbance

(xx) predict the correct option from which of the following increase the fluorescence of aromatic compounds.

a) Para substitution
b) Ortho
c) Meta
d) All of these

Group-B

(Short Answer Type Questions) 5 x 7=35

2. Explain about thin layer chromatography (5)
3. Explain briefly the theory and principle of Nephaloturbidometry? (5)
4. Explain about the various visualization techniques used in Thin layer chromatography (5)

5. Distinguish different types of sampling techniques used in IR spectroscopy? (5)
6. Write comparison and difference between Flame Ionization Detector and Refractive index detector? (5)
7. Define edge effect? How to minimize it. (5)

OR

Describe about the factors affecting electrophoretic mobility? (5)

8. Define absorption maxima? Write its significance? (5)

OR

explain briefly the theory of UV Spectroscopy? (5)

Group-C

(Long Answer Type Questions) 10 x 2=20

9. Compare and differentiate between HPLC and Gas Chromatography in detail. (10)
10. Explain in brief about atomic absorption spectroscopy. (10)

OR

Explain the Working of IR spectrophotometer with schematic diagram. (10)

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