Total No. of Questions: 3 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Pharmacy
End Sem Examination Dec 2024
PY3CO29 Instrumental Methods of Analysis

Programme: B. Pharm. Branch/Specialisation: Pharmacy

Duration: 3 Hrs. **Maximum Marks: 75**

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	Define chromophores and auxochromes.	**2**	1	2	1	
	ii.	Write any four applications of UV spectroscopy.	**2**	2	2	1	
	iii.	Write any four applications of flame photometry.	**2**	2	2	2	
	iv.	Enlist any four detectors used in IR.	**2**	2	2	2	
	v.	Write any two advantages & disadvantages of TLC.	**2**	2	2	3	
	vi.	Define adsorption & partition column chromatography.	**2**	1	2	3	
	vii.	Draw the ray diagram of HPLC.	**2**	2	2	4	
	viii.	Write any four applications of gas chromatography.	**2**	2	2	4	
	ix.	Define affinity chromatography.	**2**	1	2	5	
	x.	Define ion exchange chromatography.	**2**	1	2	5	
Q.2		Attempt any two:					
	i.	Explain the principle, instrumentation & applications of UV Spectroscopy.	**10**	2	2	1	
	ii.	Explain modes of vibrations, instrumentation and applications of IR spectroscopy.	**10**	2	2	2	
	iii.	(a) Explain Instrumentations and application of fluorimetry.	**5**	2	2	1	
		(b) Explain principle & instrumentation of atomic absorption spectroscopy.	**5**	2	2	2	

Q.3		Attempt any seven: Two questions from each section is compulsory.					
		Section - A					
	i.	Explain principle and methodology of thin layer chromatography.	**5**	2	2	3	
	ii.	Explain various techniques of gel electrophoresis .	**5**	2	2	3	
	iii.	Write development techniques of paper chromatography.	**5**	2	2	3	
		Section - B					
	iv.	Write an exhaustive note on gas chromatography.	**5**	2	2	4	
	v.	Write about derivatization in gas chromatography.	**5**	2	2	4	
	vi.	Explain instrumentation of HPLC with well labelled diagram.	**5**	2	2	4	
		Section - C					
	vii.	Explain theory, instrumentation and applications of gel chromatography.	**5**	2	2	5	
	viii.	Enlist various applications of ion exchange chromatography? Explain the mechanism of the ion exchange process.	**5**	2	2	5	
	ix.	Write an brief note on affinity chromatography.	**5**	2	2	5	

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Marking Scheme

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Q.1	i)	Definition of Chromophores and Auxochromes	1 Mark Each	**2**
	ii)	Any four applications of UV spectroscopy	0.5 Mark Each	**2**
	iii)	Any four applications of Flame Photometry	0.5 Mark Each	**2**
	iv)	Any four detectors	0.5 Mark Each	**2**
	v)	Two advantages & Disadvantages of TLC	0.5 Mark Each	**2**
	vi)	Definition of Adsorption & Partition Column Chromatography	1 Mark Each	**2**
	vii)	Ray Diagram of HPLC	2 Mark	**2**
	viii)	Four applications of Gas Chromatography	0.5 Mark Each	**2**
	ix)	Definition of Affinity Chromatography	2 Mark	**2**
	x)	Definition of Ion Exchange Chromatography	2 Mark	**2**

Q.2 Attempt any two:

i.	Principle of UV Spectroscopy	3 Marks	**10**
	Instrumentation of UV Spectroscopy	5 Marks	
	Applications of UV Spectroscopy	2 Marks	
ii.	Modes of vibrations IR spectroscopy	3 Marks	**10**
	Instrumentation IR spectroscopy	5 Marks	
	Applications of IR spectroscopy	2 Marks	
iii.	a) Instrumentations of fluorometry	3 Marks	**5**
	application of fluorometry	2 Marks	
	b) Principle of Atomic Adsorption	2 Marks	**5**
	Instrumentation of Atomic Adsorption	3 Marks	

Q.3 Attempt any seven: Two questions from each section is compulsory.

Section - A

i.	Principle of Thin Layer Chromatography	2.5 marks	**5**
	Methodology of Thin Layer Chromatography	2.5 marks	
ii.	Techniques of Gel Electrophoresis	5marks	**5**
iii.	Principle of chromatography	5 Marks	**5**

Section - B

iv.	Gas Chromatography	5 Marks	**5**
v.	Reverse phase chromatography Definition	2 Marks	**5**
	Derivatization in Gas Chromatography	3 Marks	
vi.	HPLC Ray Diagram	2 Mark	**5**
	Instrumentation of HPLC	3 Mark	

Section - C

vii.	Theory of Gel Chromatography	1 Mark	**5**
	Instrumentation	3 Marks	
	Applications of Gel Chromatography	1 Mark	
viii.	Applications of ion exchange chromatography	2 Marks	**5**
	Mechanism of the ion exchange process	3 Marks	
ix.	Affinity Chromatography	5 Mark	**5**

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