

Model Question Paper-2 with effect from 2019-20 (CBCS Scheme)

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Fourth Semester B.E. Degree Examination
Subject Title: Instrumental Analysis (18CH46)

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module -1			*Bloom's Taxonomy Level	Mark s
Q.01	a	Explain principle, procedure of Thin layer chromatography	L1	08
	b	Discuss solid phase extraction technique.	L2	08
	c	Define the following terms i) Retention factor ii) Column efficiency	L1	06
OR				
Q.02	a	Define chromatography. Explain the classification of chromatographic techniques based on separation mechanism	L1	08
	b	Discuss principle, techniques of paper chromatography	L2	08
	c	Discuss the applications of Thin layer chromatography	L1	04
Module-2				
Q. 03	a	Discuss the effect of column temperature on gas chromatography	L2	06
	b	Explain the principle, instrumentation involved in High performance liquid chromatography	L1	08
	c	Explain the role of carrier gas and its applications in gas chromatography	L1	06
OR				
Q.04	a	Explain the working of TCD and ECD detectors used in gas chromatography	L1	08
	b	Discuss applications of high performance thin layer chromatography	L2	08
	c	Discuss advantages and disadvantages of gas chromatography	L2	04
Module-3				
Q. 05	a	Define electromagnetic spectrum. Explain instrumentation of IR spectroscopy	L1	08
	b	Discuss the applications of infra red spectroscopy.	L2	06
	c	Discuss Auxophores with example	L2	06
OR				
Q. 06	a	Define finger print region and explain the conditions for a compound to be IR active.	L1	08
	b	Discuss bath chromic and hypsochromic shift with suitable examples.	L2	08
	c	Discuss limitations of Beer- Lambert's law	L2	04
Module-4				
Q. 07	a	Explain how positively charged ions are produced by electron impact and chemical ionization method	L1	08

	b	Describe how molecular weight is identified from mass spectrometer	L2	08
	c	Discuss important applications of mass spectra	L2	04
OR				
Q. 08	a	Distinguish between a base peak and a molecular peak in a mass spectrum.	L2	08
	b	Explain the various components of a mass spectrometer	L1	06
	c	Discuss the different modes of fragmentation in mass spectroscopy	L2	06
Module-5				
Q. 09	a	Define chemical shift and explain the effect of electronegative atom and hybridization on chemical shift	L1	08
	b	Construct the ^1H NMR spectral splitting pattern in $\text{CH}_3\text{CH}_2\text{Cl}$	L3	06
	c	Explain the splitting of signal in the spectrum i) H_3COH ii) $\text{C}_2\text{H}_5\text{OH}$	L1	06
OR				
Q. 10	a	Discuss the factors influencing on shielding and de-shielding in NMR	L2	08
	b	Explain the instrumentation of NMR spectroscopy.	L1	08
	c	Discuss the applications of NMR spectroscopy.	L2	04

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.