Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

USN | | | | | | | | | | |

Fourth Semester B.E. Degree Examination
Scientific and Analytical Instrumentation

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE FULL QUESTIONS**, choosing at least **ONE QUESTION** from each **MODULE**.
02. .
03. .

		Module -1	
Q.01	a	List the principal types of instrumental techniques employed in Analytical instrumentation.	04
	b	Discuss the various Deviations from Beer's law.	06
	c	With a flow chart explain the major steps in solving an analytical problem.	10
		OR	
Q.02	a	Discuss the different types of radiation sources used in Infrared spectrophotometers.	08
	b	With a graph explain the typical infrared spectrum.	04
	c	Draw and explain the Pneumatic Golay detector used in IR Spectroscopy.	08
		Module-2	
Q. 03	a	Discuss Absorption & Interference filters employed in UV & Visible Spectrometry.	10
	b	With a neat diagram explain principle & working of the Photoemissive tube.	10
		OR	
Q.04	a	Draw the schematic of a single beam spectrophotometer & explain the working of the same.	10
	b	Discuss the Radiation sources used in UV & Visible Spectrometry.	10
		Module-3	
Q. 05	a	Draw and explain the construction & operation of pneumatic nebulizer used for sample delivery.	06
	b	Explain the process of Atomization and draw the flowchart.	06
	c	With a neat diagram discuss the principle & working of Flame Emission Spectrometry	08
		OR	
Q. 06	a	Draw the schematic of an Atomic Fluorescence spectrometry & explain the working	06

		of the same.	
	b	Discuss the techniques employed to overcome Background absorption & spectral line interferences occur in FES and flame AAS .	07
	c	Write the applications and comparison between Flame emission spectrometry and Atomic absorption spectrometry,	07
		Module-4	
Q. 07	a	Draw the block diagram of a Gas chromatograph and briefly explain the working of gas chromatograph.	10
	b	Discuss the principle and working of Katharometer cell used as detector in gas chromatograph.	10
		OR	
Q. 08	a	List the various types of pumps used for solvent delivery in HPLC and explain any one with diagram.	10
	b	With a neat diagram explain the principle & working of Differential Refractometer.	10
		Module-5	
Q. 09	a	Write short note on a complete blood gas analyser.	10
	b	Discuss the conductivity method for the measurement of SO_2 in air.	10
		OR	
Q. 10	a	With a block diagram explain measurement of Nitric oxide using CO laser.	10
	b	Draw schematic of the sampling system used for Automated wet chemical air analysis and discuss the same.	10