

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

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Fourth Semester B.E. Degree Examination

Scientific and analytical Instrumentation (18EI46)

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 and explain basic functions of Instrumentation	6
	b	List and explain the terms associated with chemical analysis	6
	c	Explain the various radiant sources used in Infrared spectrometer.	8
		OR	
Q.02	a	With neat sketch explain Golay Pneumatic cell.	7
	b	Explain the working of the detector Thermocouple used in infrared spectrometer	5
	c	Brief the concept fundamental laws of photometry, Derive its equation	8
		OR	
Q. 03	a	With typical optical arrangement explain the working of double beam Instruments(spectrometer)	8
	b	With neat block diagram explain instrument modules for measuring absorption of radiation	6
	c	Explain the brief the working of hydrogen and Deuterium discharge lamps	6
		OR	
Q.04	a	With neat diagram explain the working of Absorption filter	7
	b	With a neat diagram explain the working of photodiode.	7
	c	Explain the working of arrangement of Czerny tuner mounting monochromator	6
		OR	
Q. 05	a	With a neat diagram demonstrate the arrangement of Heat Graphite Atomizer.	7
	b	List various interferences associated with the Flames and furnaces. With neat diagram explain the working of Zeeman splitting	6
	c	With neat diagram explain the working of photo emissive tube.	7
		OR	
Q. 06	a	Sketch a neat diagram of optical schematic of two channel, double beam atomic absorption spectrometer. Explain the working of the same.	8
	b	Give comparison between FES and AAS.	5

	c	With neat diagram of laminar flow burner, explain how analyte will be converted to free atoms.	7
Module-4			
Q. 07	a	With neat diagram brief the column arrangement in gas chromatography.	8
	b	Draw a neat schematic diagram of oven temperature controller used in gas chromatography and explain its working	6
	c	With a neat diagram explain the working of the detector Kathrometer	6
OR			
Q. 08	a	With neat block diagram explain the working of High Pressure Liquid Chromatography	8
	b	With a neat diagram explain the working of dual Reciprocating Piston pumps	6
	c	With a neat schematic diagram explain the working of Gradient Elution or Solvent programming	6
Module-5			
Q. 09	a	Portrait a neat diagram of complete blood gas Analyzer arrangement and explain its working	8
	b	With a neat diagram explain the detection process of carbon monoxide in air using Non-Dispersive Infrared Analyzer.	6
	c	With a neat diagram explain blood pO ₂ electrode.	6
OR			
Q. 10	a	With a neat diagram discuss how the amount of dissolved oxygen is found in water with help of electrodes.	5
	b	With a neat diagram explain the conductivity method for measurement of Sulphur dioxide in air	7
	c	Discuss the various steps involved in Automated Wet Chemical Air Analyzer System.	8