U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: V**
Branch: Electronics and Instrumentation Engineering **Duration: 3 hrs.**
Course Code: 19EI5PE2AL **Max Marks: 100**
Course: Analytical Instrumentation

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1	a)	State and derive an expression for Beers Lamberts law for total absorption?	**10**
	b)	Derive and discuss Michelson interferometer with neat sketch.	**05**
	c)	List the instrumental methods that are based upon various physical and chemical properties	**05**

OR

2	a)	Draw the schematic and explain the ir photometer gas analyzer	**10**
	b)	Interpret the working of double beam spectrometer. Compare its advantages with single beam spectrometer	**10**

UNIT - II

3	a)	Illustrate the working of direct current plasma with neat sketch	**10**
	b)	With neat diagram explain the working of Inductive coupled argon plasma used for atomic emission Spectrometer	**10**

UNIT - III

4	a)	Analyze the working of energy dispersive X-ray fluorescence spectrometer with neat Diagram	**10**
	b)	Derive an expression for Nernst equation and List out any four Different types of Electrode membrane shapes	**10**

OR

5	a)	Discuss the working of x ray monochromator and detector with neat diagram	**10**
	b)	Explain the working of x ray tube with neat diagram	**10**

UNIT - IV

6	a)	With respect to the mass a spectrometer assess the working of following i) Batch inlet system ii) Magnetic sector spectrometer iii) Quadrupole mass analyzers	**12**
	b)	With neat schematics analyze the working of double beam focusing mass spectrometer	**08**

UNIT - V

7	a)	Draw the schematic of gas chromatograph and explain the following i) Carrier gas system ii) Thermal conductivity detector	**12**
	b)	Discuss with neat diagram working of elution in column chromatography	**08**

******