

## Model Question Paper-2 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**.

#### Module -1

- Q.01 a With a neat flow diagram describe the important considerations in analytical methods. 8
- b Discuss the components of IR Spectrophotometers. 8
- c Discuss the fundamental laws of photometry. 4

OR

- Q.02 a With a neat diagram describe the working of FTIR spectrometer. 10
- b Describe about the construction and working of Litrow mounting type monochromator. 8
- c Define Analytical technique and analytical method 2

#### Module-2

- Q. 03 a With a neat diagram explain the working of single beam spectrometer. 8
- b With a neat diagram , explain the working of PMT. 7
- c Brief about the radiation source that are used in UV Visible Spectroscopy. 5

OR

- Q.04 a With a neat diagram explain the working of double beam spectrometer. 8
- b Discuss the role of wavelength selectors in spectrophotometer. Explain Interefernce filter with neat diagram. 6
- c What is Photo detector ?Discuss the working of Photo emissive tube. 6

#### Module-3

- Q. 05 a With a neat block diagram explain Flame Emission Spectroscopy. 8
- b Explain the working of electro thermal atomizer. 7
- c How the background absorption causes the error detection at the detector? How it can be reduced? 5

OR

- Q. 06 a With a neat block diagram explain Atomic Absorption Spectroscopy. 8
- b Explain the construction and working of Hallow cathode lamp in AAS. 7
- c Give a comparison between FES and AAS. Mention any 4 application of FES and AAS. 5

#### Module-4

- Q. 07 a With a neat diagram explain the basic parts of Gas Chromatography. 10

b Explain Flame ionization and Katharometer detector 10

OR

Q. 08 a With a neat diagram explain HPLC instrumentation. 10

b Explain differential refractometer detector 5

c Explain the construction and working of Syringe type pump 5

**Module-5**

Q. 09 a With a neat block diagram, explain the construction and working of Blood gas analyzer. 10

b Explain how the laser could be used to measure the pollutants in air. Explain its application with a neat diagram in NO measurement. 10

OR

Q. 10 a With a neat block diagram, explain the construction and working of Automated wet chemical analysis. 10

b Explain the measurement of SO<sub>2</sub> in air using conductivity meter. 5

c How Nephelometry is used to measure the turbidity of water? 5