

Total Number of Pages : 01

Registration No:

M.Tech P2EVCC14

(2 x 10)

2nd Semester Regular Examination 2018-19 INSTRUMENTAL METHODS FOR ENVIRONMENTAL ANALYSIS BRANCH : ENVIORN ENGG. Max Marks : 100

Time : 3 Hours

Q.CODE : F571

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10)

- State Beer's Lambert's law.
- b) What is the main function of a gas chromatograph?
- c) What is mass spectroscopy?
- d) What is the use of cyclic voltammetry?
- e) What is the function of an ion selective electrode?
- **f)** Why do we perform X-ray diffraction?
- g) Define fluorescence.

a)

- h) What is kjeldahl nitrogen?
- i) What is an aspirator?
- j) Show that 1 ppm is equal to 1 mg/L.

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- a) What are the applications of instrumental analysis?
- b) Differentiate between the function of a gas chromatograph and mass spectroscope. Discuss how the combination of GC and MS work.
- c) Write a short note on polarography.
- d) Differentiate between a spectrophotometer and flame photometer.
- e) Explain fluorescence. What is its use?
- f) Briefly explain the principle behind optical analysis
- g) Briefly discuss about the principle and working of a flame photometer.
- h) What are analytes? Where they are used and what is their use?
- i) Discuss about gravimetric method for analysis of total solids in water sample.
- j) Discuss about Paper chromatography.
- k) Define absorbance and transmittance. Discuss about beer's law and its application in spectroscopy.
- I) Give an account of UV visible spectrophotometry.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3 Describe in details about the principle and working operation of an atomic absorption (16) spectrophotometer.
- Q4 Give the working operation of a gas chromatograph. Which types of columns are used in (16) them? How does it differ from HPLC?
- Q5 Discuss in details the determination of fluoride ion and nitrate ion using ion selective (16) electrodes. What is the principle behind it?
- **Q6** Give an account of the biosensors used for parameter monitoring.

(16)