M.Sc.(Chemistry) CBCS Pattern Semester-II

PSCCHT08 - Paper-VIII : Analytical Chemistry

P. Pages : 2 **GUG/W/23/11231**

Time : Three Hours * 6 2 5 9 * Max. Marks : 80

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1. a) Explain collection of soil sample for chemical analysis? What are various tools used in the procedure of taking soil sample and preparation? **8**

b) Discuss the role of Noise in determination of detection limit of analysis techniques. **8**

OR

c) A 0.060g of solid monoprotic acid was dissolved in water & titrated with 0.100 N NaOH required 10ml, calculate the molecular cut of the acid. **4**

d) Discuss wet-ashing method for elemental analysis. **4**

e) What are stoichiometric and sub-stoichiometric reaction, explain? **4**

f) Explain safety aspects in handling hazardous chemicals? **4**

2. a) Discuss the principle of gas chromatography & Instrumental set up with respect to carrier gas and sampling system. **8**

b) Discuss principle and instrumentation in HPLC using well labeled schematic diagram. **8**

OR

c) Write note on “Supercritical fluid chromatography” and their analytical aspect. **4**

d) Explain the types of columns and their advantages in GC analysis. **4**

e) Write a short note on Detectors in gas chromatography. **4**

f) Explain the main applications of normal phase and reverse phase chromatography. **4**

3. a) Discuss the principles of fluorescence & phosphorescence on the basis of Jablonski diagram. **8**

b) Explain the principle and discuss various types of interferences in flame Photometry. **8**

OR

c) Explain Fluorescence quenching. **4**

d) Explain concentration dependence of fluorescence intensity. **4**

e) Discuss standard-addition method in Flame Photometry. **4**

f) Write a short note on turbidimetry. **4**

4. a) Derive equation of polarographic wave and explain its significance? **8**

b) What is the principle behind amperometric titration? Explain nature of graphs obtained by taking various examples. **8**

OR

c) Why maxima appears in polarogram? How it can be removed? **4**

d) Explain- **4**
i) Adsorption Current ii) Kinetic current

e) Advantages and limitation of DME. **4**

f) What are Reversible & Quasi-reversible electrode reactions explain? **4**

5. a) What is acid digestion? **2**

b) Calculate the volume of 4M solution of HCl required to prepare 250ml of 0.5M HCl solution? **2**

c) Name detectors used in HPLC? **2**

d) Write the applications in gas chromatography. **2**

e) Draw a neat diagram of Nephelometry. **2**

f) Explain optical sensor. **2**

g) Write Ilkovic equation and explain the terms involved in it. **2**

h) Give advantages of DME. **2**

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