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

PSCCHT08 - Paper-VIII : Analytical Chemistry-II

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

Time : Three Hours * 1 4 0 9 * Max. Marks : 80

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1. a) Explain sampling of soil for chemical analysis. What are various tools used for sampling of soil. **8**

b) Outline the analytical procedure for stoichiometry method and sub stoichiometry method? Calculate how many moles of methane are required to produce 22g of CO_2(g) after combustion? **8**

OR

c) Explain methods of sampling of exhaust gases from industry . **4**

d) Write a note on safety aspects in handling hazardous chemicals. **4**

e) Explain limit of detection & limit of quantification in detail. **4**

f) Explain how 0.1 N H_2SO_4 solution is prepared from concentrated solution? Is it a primary standard? **4**

2. a) Discuss Instrumentation in HPLC using a schematic diagram. **8**

b) Discuss detectors used in GC analysis. **8**

OR

c) Write Van-Deemter equation and specify its role in principle of GC. **4**

d) Explain principle and application of size exclusion chromatography. **4**

e) What are the types of columns used in GC? Explain. **4**

f) Explain packing materials in HPLC? **4**

3. a) What are radiative and non-radiative transitions? Explain with the help of Jablonski diagram. **8**

b) Explain the principle of flame photometry. Discuss types of burners used in flame photometry. **8**

OR

c) Give working and advantages of optical sensor? **4**

d) Explain principal and technique of Nephelometry. **4**

e) Discuss concentration dependence of fluorescence intensity. **4**

f) Discuss various types of interference in flame photometry. **4**

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

b) What are amperometric titration? Give their advantages and techniques. **8**

OR

c) Give an account of pulse polarography. **4**

d) Explain :- **4**
i) Residual current ii) Migration current

e) Describe applications of polarography in **4**
i) Metal ion speciation studies
ii) Co-ordination chemistry.

f) Calculate conc. of Cd^{2+} from following **4**
$D = 7x10^{-6} cm^2 S^{-1}$ $m = 2.5\ mg/S$
$t = 5 sec$ $id = 100 \mu A$

5. a) Explain 'Representative sample: **2**

b) Convert 20g/L solution of Na_2Co_3 (mol. wt 106) into **2**
i) Normality ii) Molarity

c) Explain supercritical fluid chromatography. **2**

d) Give application of HPLC. **2**

e) Draw schematic diagram of turbidimetry. **2**

f) Explain 'Fluorescence quenching'. **2**

g) Write ILLKOVIC equation and explain terms involved with units. **2**

h) What is oxygen interferences and deaeration. **2**

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