M.Sc. (Chemistry) (CBCS Pattern) Second Semester CBCS

PSCCHT08 - Analytical Chemistry Paper-VIII

P. Pages : 2 **GUG/W/18/11231**

Time : Three Hours * 3 3 3 4 * Max. Marks : 80

Notes : 1. All question are compulsory.
2. All question carry equal marks.

1. a) How gases are sampled? Explain procedure adopted in sampling of ambient air? **8**

b) 0.28 g of $CaCO_3$ was dissolved in HCL and the solution made up to one litre with distilled water. 100ml of the above solution required 28ml of EDTA solution on titration. 100ml of hard water sample required 33ml of same EDTA Soln on titration. After boiling 100ml of water Sample, cooling, filtering and then titrated required 10ml of EDTA. Calculate the temporary & permanent hardness of water Sample in PPM. **8**

OR

c) Explain method followed in Sampling of soil samples? **4**

d) Discuss the technique followed in the sampling of ground water from well? **4**

e) Explain Safety aspects in handling hazardous chemicals? **4**

f) Explain acid digestion? **4**

2. a) Discuss the various types of columns used in GC with their limitations? **8**

b) Describe instrumentation in HPLC using well labelled schematic diagram? **8**

OR

c) Explain the main applications of Gel chromatography? **4**

d) Describe in details two types of detectors used in Gas chromatography? **4**

e) Write Van- Deemter equation and explain HETP? **4**

f) Discuss the principle of diode array detector? **4**

3. a) Discuss the principle, Technique and applications of Nephelometry? **8**

b) Discuss the instrumentation & various types of burners in Flame photometry? **8**

OR

c) Discuss the effect of concentration on fluorescence intensity? **4**

d) Explain the radiative and non- radiative transitions in fluorometry on the basis of Jablonki diagram? **4**

e) Discuss the various interferences in flame photometry? **4**

f) Explain four applications of phosphorimetry? **4**

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

b) Describe experimental determination of half- wave potential? Explain residual current affects the sensitivity of polarographic technique? **8**

OR

c) Describe limitations of Polarography? **4**

d) Discuss **4**

i) Migration Current. ii) Residual Current.

e) Give types of Amperometric titrations with examples? **4**

f) Write Ilkovic equation and explain in details the terms involved in it? **4**

5. a) Convert 0.04 N. Solution of NaOH (molecular wt. 40) into parts per million (PPM)? **2**

b) Explain the detection limit of analytical techniques. **2**

c) Name carrier gases used in gas chromatography. **2**

d) Write applications of supercritical fluid chromatography. **2**

e) Give any two applications of flame photometry? **2**

f) Explain Fluorescence Quenching? **2**

g) Explain Adsorption current and kinetic current? **2**

h) Explain maximum suppressor and supporting electrolyte? **2**

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