# F.Y. M.Sc. - I (Chemistry) Second Semester Old <br> <br> CHE-204 - Analytical Chemistry Paper-VIII 

 <br> <br> CHE-204 - Analytical Chemistry Paper-VIII}
P. Pages : 2

Time : Three Hours


GUG/W/18/2245
Max. Marks : 80

1. a) Discuss the techniques of sampling of liquids in water and milk samples.
b) Explain the role of noise in the determination of detection limit of analytical techniques.

## OR

c) Discuss.
i) Sensitivity.
ii) Limit of quantification.
d) Discuss wet-ashing method for elemental analysis.
e) What are stoichiometric and sub-stoichiometric reaction, explain?
f) Write a note on hazards in sampling.
2. a) Discuss the principle of gas chromatography \& Instrumental set up with respect to carrier gas and sampling system.
b) Explain the principle of gel permeation chromatography and give its application.

## OR

c) Write factor affecting to the peak resolution and peak broadening.
d) Explain the principle and application of size exclusion chromatography.
e) Write a short note on Detectors in gas chromatography.
f) Write the applications of 'Supercritical fluid chromatography'.
3. a) Describe principle and types of burners in flame photometry.
b) i) Explain the principle of fluorescence and phosphorescence.
ii) Describe Jablonski diagram.

## OR

c) Discuss various types of interferences in flame photometry.
d) Explain Fluorescence quenching.
e) How the molecular weight of the polymer is determine by nephelometry.
f) Write a short note on optical sensors.
4. a) Explain principle of DC polarography. Explain various regions of polarogram with proper reasoning.
b) What is the principle behind amperometric titration. Explain nature of graphs obtained by taking various examples.

## OR

c) Why maxima appears in polarogram? How it can be removed.
d) Diffusion current constant of Zinc ion in 0.1 M KCl Sol is 3.42 . What diffusion current in microampere is obtained with a $2 \times 10^{-3} \mathrm{M}$ solution of Zinc using a capillary with a drop time of 3 second and assuming that one drop of Hg weighs 5.0 mg .
e) Derive the equation of polarographic wave and half wave potential.
f) How will you determine concentration of unknown metal ion solution by standard addition method by using polarographic technique.
5. a) If 4 g of NaOH dissolved in 500 ml water. Calculate concentration in PPM (mol. mass $\mathrm{NaOH}=40$ ).
b) Define fusion processes method for elemental analysis in organic samples.
c) Describe advantages of Gas chromatography.
d) Write the application HPLC.
e) How fluorescence intensity changes with concentration?
f) Give the principle of nephelometry.
g) Write limitations of polarography.
h) Give the advantages of DME.

