

V. P. & R. P. T. P. SCIENCE COLLEGE  
VALLABH VIDYANAGAR – 388 120  
INTERNAL EXAMINATION - 2013  
US05CINV04: ANALYTICAL INSTRUMENTATION  
Friday, 4<sup>th</sup> October, 2013 , Time: 3:30pm to 5:00pm

Total Marks: 30

Note: The figures to the right indicate maximum marks.

Q-1. **Multiple Choice Questions-** [6]

- (a) pH measurement is based on ..... equation.  
(i) Ohm's (ii) Faraday's (iii) Nernst's (iv) Galvani's
- (b) Asymmetry potential is observed when ..... solutions are placed inside & outside the bulb of glass electrode.  
(i) identical (ii) opposite (iii) chloride (iv) sodium
- (c) The sample when injected as rapid as possible and in concentrated form is known as  
(i) plot (ii) palm (iii) plug (iv) plate
- (d) Flame Ionization Detection is a type ..... technique  
(i) mixing (ii) destructive (iii) non destructive (iv) equalizing
- (e) If mobile phase is liquid and stationary phase is solid chromatography is of ..... type  
(i) adsorption (ii) desorption (iii) gel (iv) partition chromatography
- (f) If the sample's molecular weight is greater than 2000 than method selected for LC is  
(i) water soluble (ii) ionic (iii) non ionic (iv) acidic

Q-2. **Short answer type (attempt any three)** [6]

- (a) Draw neat labeled diagram of Glass electrode.
- (b) Write the basic principle of pH measurement.
- (c) List ideal characteristics of Detector.
- (d) Why columns are of Helical type?
- (e) Draw block diagram of Liquid Chromatography with neat labels.



**Long answer type**

- Q-3. Draw neat diagram of Reference electrode and explain it in detail. [6]  
OR
- Q-3. Explain Chopper Amplifier type pH meter in length. [6]
- Q-4. Discuss working principle of Flame Ionization Detector with its limitations. [6]  
OR
- Q-4. Define the term Thermal Conductivity and explain Thermal Conductivity Detector. [6]
- Q-5. Explain flow measurement and control carried out in Liquid chromatography. [6]  
OR
- Q-5. Discuss Constant Flow Pumps used in LC. [6]

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