

- (8) What do you understand by Thin film Chromatography?
- (9) Draw neat diagram of Syringe Injector for Liquid Chromatography.
- (10) List requirements for detectors.
- (11) State different types of Laser detectors.
- (12) What is Snell's law?
- Q-3. (a) Write the Nernst's equation with appropriate interpretation and explain Null type pH meter. [7]
- (b) Draw labeled diagram of Reference electrode. Write cell equation. [3]
- OR**
- Q-3. (a) Explain Chopper Amplifier type pH meter in length. [7]
- (b) State precautions to be taken to handle Buffer. [3]
- Q-4. (a) Discuss Flame ionization detector (FID) used in GC and give its limitations. [7]
- (b) Explain importance of Capillary column in Gas Chromatography. [3]
- OR**
- Q-4. (a) Define the term Thermal Conductivity and explain Thermal Conductivity Detector. [7]
- (b) Explain working principle of Electron Capture Detector (ECD). [3]
- Q-5. (a) Discuss Constant Flow Pumps used in LC. [6]
- (b) What do you mean by Gradient Elution and its mode? [4]
- OR**
- Q-5. (a) Write a short note on Liquid Chromatography with its block diagram. [6]
- (b) Explain Syringe type pump. [4]
- Q-6. (a) Explain principle working of Refractive Index detector. [5]
- (b) Discuss Fluorescence Detector used in Liquid chromatography. [5]
- OR**
- Q-6. (a) Describe working of Mass detector. [5]
- (b) Discuss UV absorbance detector. [5]

(23)

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SARDAR PATEL UNIVERSITY

T. Y. B. Sc. Examination - 2013

US05CINV04 – Analytical Instrumentation

Wednesday, 20th November, 2013, 10:30 am – 1:30 pm

Total Marks: 70

Note: The figures to the right indicate maximum marks.

Q-1. **Multiple Choice Questions-** [10]

- (1) Asymmetry potential is observed when solutions are placed inside & outside the bulb of glass electrode.
(a) identical (b) opposite (c) chloride (d) sodium
- (2) The variation of is proportional quantity to pH.
(a) Current (b) Resistance (c) Potential (d) Inductance
- (3) pH measurement is dependent
(a) flow (b) pressure (c) level (d) temperature
- (4) The term "Plug" is used in Process
(a) detection (b) sample injection (c) heating (d) none
- (5) Flame Ionization Detection is a type technique
(a) mixing (b) destructive (c) non destructive (d) equalizing
- (6) If the sample's molecular weight is greater than 2000 than method selected for LC is
(a) water soluble (b) ionic (c) non ionic (d) acidic
- (7) If mobile phase is liquid and stationary phase is liquid, chromatography is of type
(a) adsorption (b) desorption (c) gel (d) partition chromatography
- (8) The type of chromatography is defined from its
(a) Two phase (b) Stationary phase (c) Three phase (d) Mobile phase
- (9) Snell's law is used in detector.
(a) Thermal (b) Fluorescence (c) Conductivity (d) Refractive Index
- (10) Better analysis of pharmaceutical products is carried out by detector.
(a) Refractive Index (b) Fluorescence (c) Conductivity (d) Thermal

Q-2. **Short answer type (attempt any ten)** [20]

- (1) Write the basic principle of pH measurement.
- (2) What care should be taken to handle glass electrode?
- (3) Draw neat labeled diagram of Glass electrode.
- (4) Draw the block diagram of Gas chromatography (GC).
- (5) List important consideration for designing column oven.
- (6) Write a brief note on helical column.
- (7) What precaution should be taken while sample injection in GC?