

V. P. & R. P. T. P. SCIENCE COLLEGE  
VALLABH VIDYANAGAR – 388 120  
Internal Test -2018  
US05CINV04: ANALYTICAL INSTRUMENTATION  
Date: 5<sup>th</sup> October 2018, Time: 10:00 am to 12:00 pm

Total Marks: 50  
[8]

Q-1. **Multiple Choice Questions-**

- i pH value is dependent on .....  
(a) Resistance (b) Inductance (c) Voltage (d) Temperature
- ii Standard buffer tablet of ..... pH is available in the market.  
(a) 7 (b) 15 (c) 0 (d) 6
- iii Identify sample destructive technique from the given detectors.  
(a) FID (b) TCD (c) ECD (d) AID
- iv The term "Plug" is used in ..... Process  
(a) detection (b) sample injection (c) heating (d) none
- v If molecular weight is < 2000, method selection for liquid chromatography is  
(a) Ionic/nonionic (b) soluble/insoluble (c) high/low (d) aqueous/non aqueous
- vi Selectivity of any detector should be  
(a) High (b) Low (c) Zero (d) Adequate
- vii Snell's law is used in ..... detector.  
(a) Thermal (b) Fluorescence (c) Conductivity (d) Refractive Index
- viii Better analysis of pharmaceutical products is carried out by ..... detector.  
(a) Refractive Index (b) Fluorescence (c) Conductivity (d) Thermal

Q-2. **Answer any five**

[10]

- i Enlist different types of pH meter.
- ii Write the basic principle of pH measurement.
- iii Draw neat labeled diagram of Gas Chromatography.
- iv List important consideration for designing column oven.
- v What are drawbacks of large diameter column?
- vi Draw neat diagram of Syringe Injector for Liquid Chromatography.
- vii Enlist different types of Laser detectors.
- viii What is Snell's law?



Q-3. Draw neat diagram of Glass electrode and explain it in detail. How to handle glass electrode? [8]

OR

Q-3. Write design consideration of pH meter and explain Chopper Amplifier type pH meter in length. [8]

Q-4. Draw neat labeled block diagram of Gas Chromatography and discuss Temperature control circuit of Oven. [8]

OR

Q-4. Describe working principle of Flame Ionization Detector with its limitations and explain Electron Capture Detector. [8]

Q-5. Draw block diagram of HPLC system and explain flow measurement and control system in HPLC. [8]

OR

Q-5. Discuss operation of Constant Flow pump and Reciprocating Piston pump used in LC. [8]

Q-6. Explain with neat diagram Refractive Index detector and explain its working operation. [8]

OR

Q-6. Describe Mass detector with neat figure. [8]

\*\*\*\*\*Best of Luck \*\*\*\*\*

