Briefly answer the following questions.

1. Propose a method to detect systematic error. 6%
2. Describe the procedures of performing a paired t test. 6%
3. Describe the advantage of using internal standard in a calibration curve based chemical analysis. 6%
4. Describe the technique of stripping analysis in electrochemistry. 6%
5. Describe the advantages of fourier transform infrared spectroscopy over dispersive IR. 6%
6. Explain that high pressure pump is needed in HPLC operation. 6%
7. Explain that KCl not NaCl is used in salt bridge. 6%
8. In the measurement of cell potential, explain that little current is allowed to flow through the cell. 6%
9. Using the Van Deemter equation, explain the advantage of open tubular column. 6%
10. Explain that there is a minimum solubility of AgCl in KCl solution. 6%
11. Explain that buffer solution is not prepared by mixing the calculated amount of a weak acid and its conjugated base. 6%
12. Propose a method to eliminate the interference resulting from the radiation of the analyte in atomic absorption spectroscopy. 6%
13. For a amphiprotic substance NaHA, please derive the equation for calculation $[H_3O^+]$ of isoelectric point. 6%
14. Describe the advantage of using pH meter over indicator in acid-base titration. 6%
15. Describe the technique of selected reaction monitoring in chromatography-mass spectrometry. 6%
16. In HPLC detectors, explain that (a) fluorescence is often more sensitive than UV detection. (b) fluorescence is not used as often as UV. 10%

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