

IMA- Question Bank for Test – 2

Portions:

- Planar Chromatography
- Thermal methods – Thermo gravimetric analysis (TGA), Differential thermal analysis (DTA), Differential scanning calorimetry (DSC)

Part A (2 mark questions)

1. Draw the TGA thermogram of Calcium oxalate monohydrate ($\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$) mentioning the chemical changes happening.
2. Draw the TGA thermogram of copper sulphate pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) mentioning the chemical changes happening.
3. Draw the typical thermo gravimetric analysis (TGA) and differential thermo gravimetric analysis (DTG) curve for $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$.
4. What is the need for buoyancy correction in TGA?
5. What is meant by 'sample controlled heating rate' in TGA?
6. What are the applications of TGA?
7. What is the advantage of differential thermogravimetry over conventional TGA?
8. What are the applications of Differential Scanning Calorimetry (DSC)?
9. What are the advantages of DTA over TGA?
10. Compare DTA and DSC.
11. How specific heat of sample at various temperatures is measured by DSC?
12. How the enthalpy melting of a sample is measured by DSC?
13. What are the applications of DSC?
14. Compare TLC with HPLC.
15. Enlist the typical solvents used with TLC.
16. Enlist the typical sorbents used with TLC.
17. What is the significance of R_f in TLC?
18. What is two-dimensional TLC?

Part B (16 marks questions)

1. Explain the method of simultaneous identification of Amino-acids mixture with Thin-layer chromatography.
2. Explain how TGA is used in qualitative and quantitative determinations.
3. Explain the applications of DSC.

4. Explain with a schematic, the principle, applications, instrumentation and typical output of: (i) TGA, (ii) DTA, (iii) DSC.

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