**Assignment: Chromatographic Techniques (Separation & Purity Analysis)**

**Topic Focus:** Paper Chromatography  
**Subject:** Pharmaceutical/Analytical Chemistry  
**Marks:** 25  
**Submission Deadline:** *(Instructor to specify)*  
**Instructions:**

* Attempt all questions.
* Write answers in your own words.
* Illustrate with diagrams wherever applicable.
* Use neat handwriting and proper formatting.

**Section A: Short Answer Questions (2 marks each × 5 = 10 marks)**

**Answer in 3–4 sentences.**

1. Define chromatography and mention two major phases involved.
2. State the principle of paper chromatography.
3. Write the formula for Rf value and explain its significance.
4. Name any two visualizing agents used in paper chromatography.
5. List any two differences between ascending and descending paper chromatography.

**Section B: Descriptive Questions (5 marks each × 2 = 10 marks)**

**Answer in 80–100 words.**

1. Explain the step-by-step procedure of performing paper chromatography in the laboratory.
2. Discuss the factors affecting the resolution and separation of components in paper chromatography.

**Section C: Application & Critical Thinking (5 marks)**

**Answer in detail. Use examples if possible.**

1. A student performed paper chromatography of plant pigments and observed 3 distinct spots. What could be the reason for the separation? How can the identity of each pigment be confirmed? Suggest two ways to improve separation if the spots were overlapping.