**Formal system specification** is the use of **mathematical techniques** to precisely describe the functionality and behavior of a system. It is part of the **requirements engineering** process, especially in safety-critical or complex systems where precision is essential.

**Key Points:**

1. **Definition (1 mark):**  
   A formal specification describes what a system should do using **formal logic and mathematical notation**, instead of natural language, to remove ambiguity.
2. **Purpose (1 mark):**  
   It ensures **clarity, consistency, and correctness** in requirements, helping detect errors early in the development process.
3. **Formal Methods (1 mark):**  
   Common formal methods include:
   * **Z notation**
   * **VDM (Vienna Development Method)**
   * **B-Method**  
     These use **sets, relations, functions**, and **state machines** to model systems.
4. **Precision and Unambiguity (1 mark):**  
   Unlike natural language, formal specifications are **mathematically precise** and cannot be misinterpreted.
5. **Verification (1 mark):**  
   Formal specifications allow for **mathematical proof** or **automated checking** (e.g., model checking) to verify that a system satisfies its requirements.
6. **Use in Critical Systems (1 mark):**  
   Widely used in **aerospace, medical, and financial systems** where errors can be catastrophic.
7. **Drawbacks (1 mark):**  
   They are **complex and require specialist knowledge**, making them less common in general commercial software development.