**a) What do you understand by the Swarm Drones.**

**Solution:**

**Definition**: Swarm drones refer to a coordinated group of unmanned aerial vehicles (UAVs) that work together to achieve a common goal. These drones operate as a single entity, sharing information and coordinating actions to perform complex tasks that would be difficult or impossible for a single drone to accomplish alone.

In the context of the given project, swarm drones would be employed to autonomously navigate and search a grassy land to locate specific targets (such as lost equipment or enemy personnel). Here’s how the swarm technology would be utilized:

1. **Autonomous Flight and Navigation**:
   * The UAV fleet is programmed to take off, navigate, and land autonomously. Each drone is equipped with sensors and GPS to navigate the terrain and avoid obstacles.
2. **Target Detection and Identification**:
   * Drones use onboard cameras and computer vision algorithms to identify the target among various objects scattered on the grassy land. They can distinguish targets based on predefined specifications like uniform colors or shapes.
3. **Communication and Coordination**:
   * Upon spotting the target, the detecting drone communicates the location to the other drones in the swarm using wireless communication protocols. This enables the swarm to converge on the target and relay accurate positional information.
4. **Swarm Intelligence**:
   * The swarm operates using principles of swarm intelligence, where simple rules followed by individual drones lead to complex collective behavior. This allows the swarm to perform tasks like area coverage, target search, and information sharing efficiently.
5. **Real-time Adaptation**:
   * The swarm can adapt to dynamic changes in the environment, such as moving targets or new obstacles, by continuously sharing information and updating their plans accordingly.