**Q5: Describe the differences among short-term, medium-term, and long- term scheduling.**

In an operating system, scheduling is the process of determining which process or thread should be executed by the CPU at any given time. Scheduling can be divided into three main categories: short-term, medium-term, and long-term scheduling. Here are the differences among these three types of scheduling:

1. Short-term scheduling: Short-term scheduling, also known as CPU scheduling, is responsible for selecting which process or thread should be executed by the CPU next. Short-term scheduling is performed frequently, often several times per second, and is based on the priority of the process, the amount of CPU time it has already consumed, and other factors. The goal of short-term scheduling is to maximize CPU utilization and minimize the waiting time of processes in the ready queue.

2. Medium-term scheduling: Medium-term scheduling is responsible for temporarily removing processes from memory and storing them on disk to free up memory for other processes. This is necessary when there are more processes in memory than the system can handle, or when a process is consuming too much memory. Medium-term scheduling is typically performed less frequently than short-term scheduling and is based on the amount of memory available and the memory requirements of the processes.

3. Long-term scheduling: Long-term scheduling, also known as job scheduling, is responsible for selecting which processes should be admitted into the system and allocated resources. Long-term scheduling is performed when a new process is created or when a process is terminated, and is based on factors such as the available resources, the priority of the process, and the system load. The goal of long-term scheduling is to maximize the overall system throughput and minimize the turnaround time of processes.

In summary, short-term scheduling is responsible for selecting which process or thread should be executed next, medium-term scheduling is responsible for temporarily removing processes from memory, and long-term scheduling is responsible for selecting which processes should be admitted into the system and allocated resources. Each type of scheduling serves a different purpose and is designed to optimize a different aspect of system performance.