#1: What are “real-time systems”?

Computer systems that are capable of executing (managing) processes with some execution deadlines (i.e., they should/must be executed within some particular time frames).

#2: What is “hard real-time” system? What is “soft real-time system”?

**Hard real-time systems**: processes must meet their time deadlines (i.e., no room for error).

**Soft real-time systems**: processes should meet their time deadlines (i.e., “best effort” real-time systems)

#3: What is “determinism”?

**Determinism**: the time needed an OS after it accepts a new process (or task) but before the IS actually start running it (them).

#4: What is “responsiveness”?

**Responsiveness**: the time OS needs to complete a process (or a task) after it starts running.

#5: What make “determinism” hard to guarantee (mention at least two)?

#6: What make “responsiveness” hard to guarantee (mention at least two)?

#7: In many real-time process scheduling algorithms, determinism and responsiveness are in a trade-off relationship. Describe how they are in a trade-off relationship.

(a) If we guarantee the determinism for ① high-priority processes, we can not guarantee the responsiveness for ② low-priority processes.

(b) If we guarantee the responsiveness for ③ low-priority processes, we can not guarantee the determinism for ④ high-priority processes.

Either “high-priority” or “low-priority”

#8: What is “static real-time scheduling algorithms”?

**Static**: process schedules have to be fixed before the processes can start running (schedules can not be changed).
#9: What is “dynamic real-time scheduling algorithms”?

process schedules can be changed any time.