**Q0**) What are the possible state transitions of a process?

The process can be in any one of the following three possible states.

1) Running (actually using the CPU at that time and running).

2) Ready (runnable; temporarily stopped to allow another process run).

3) Blocked (unable to run until some external event happens).

**Q1**) What are the differences between a thread and a process?

A process is a program in execution.

A thread is a sequence of program's instructions that can be executed by a single CPU.

**Q2**) What is a race condition?

A race condition is an undesirable situation that occurs when a device or system attempts to perform two or more operations at the same time, but because of the nature of the device or system, the operations must be done in the proper sequence to be done correctly.

**Q3**) Five jobs are waiting to be run. Their expected run times are 9, 6, 3, 5, and *X*. In what order should they be run to minimize average response time? Given X = 10 and X = 1

To minimize run times, we must put the smallest time first.

When X = 10; The order would be: 3,5,6,9,10

When X = 1; The order would be: 1,3,5,6,9.

**Q4**) Five batch jobs *A* through *E*, arrive at a computer center at almost the same time. They have estimated running times of 10, 6, 2, 4, and 8 minutes. Their (externally determined) priorities are 3, 5, 2, 1, and 4, respectively, with 5 being the highest priority. For each of the following scheduling algorithms, determine the mean process turnaround time.

(a) Round robin (RR=4).

(b) Priority scheduling.

(c) First-come, first-served (run in order 10, 6, 2, 4, 8).

(d) Shortest job first.

For (a), assume that the system is multiprogrammed, and that each job gets its fair share of the CPU. For (b) through (d) assume that only one job at a time runs, until it finishes. All jobs are completely CPU bound.

**Q5)** What is the difference between preemption and non-preemption in the context of process scheduling.

Text

Description automatically generated with low confidence