1.   Answer:
- *Blocked→Running*: Normally, when a process is unblocked, it is put into the Ready state. The dispatcher will choose a process from the Ready state to run.   However, if the CPU happens to be idle when a process is unblocked, the process could go directly from blocked to running.
- *Ready→Blocked*: A ready process is currently queueing for its CPU time, so it cannot do I/O or anything else that might block it. Typically, a ready process cannot be blocked until it has run.

2.   **Answer:**
a)   There are two independent concepts: whether a process is waiting on an event (blocked or not), and whether a process has been swapped out of main memory (suspended or not). To accommodate this 2×2 combination, we need two Ready states and two Blocked states.
b)
    i)   Yes, this can make room for another process that is not blocked, in particular, when the currently running process or a ready process that the OS would like to dispatch requires more main memory to maintain adequate performance.
    ii)   Yes, if this is the only way to free up a sufficiently large block of main memory or the OS may choose to suspend a lower-priority ready process rather than a higher-priority blocked process if it believes that the blocked process will be ready soon.
    iii)   Yes, if the process in the Ready/Suspend state has higher priority than any of the ready processes. Otherwise, there is swapping cost.

3.   **Answer:**
a)
- An interrupt is due to some sort of event that is external to and independent of the currently running process, such as the completion of an I/O operation.
- A trap relates to an error or exception condition generated within the currently running process, such as an illegal file access attempt.
b)
- A mode switch may occur without changing the state of the process that is currently in the Running state.
- A process switch involves taking the currently executing process out of the Running state in favor of another process. The process switch involves saving more state information.

Self-test
1.   C
2.   D
3.   A
4.   D
5.   D
6.   C & D