Give short answers to the following questions as they relate to this course.—-

a. Explain memory mapped I/O

Each IO device is accessed via a set of registers, which are mapped into the OS memory space. Thus any read/write action, treats the device controller registers as memory addresses.

b. What is the differences between full duplex and half duplex

Full duplex allows the transfer of information in both directions simultaneously, e.g., telephone call. Half duplex transfers information in one direction at a time.

c. Does a thread share its stack; get a new stack, or work on the existing stack?

Each thread is given its own piece of the process stack. Sharing of thread stack space is discouraged, but not prevented.

d. What is a “working set” and how is it advantageous to VM?

700, Set of active pages for a process. Indicates those pages which need to be in memory for the process to execute with minimal page faults.

e. Immediately after a “fork” what does the child’s stack contain?

601, Exact copy of the parent’s stack, i.e., the stack that existed before the fork.
f. For disks, What is the difference between “seek time” and “rotational latency?”

469, Seek time, is the time spent moving the disk heads (disk arm) to the correct track. Rotational latency, is the time waiting for the desired sector to rotate under the heads.

g. Cache organization induces a partition of a memory address $m$ into $t$, $s$, and $b$ bits. What are each of these?

488,
$m$ = memory address
$t$ = tag bits - bits that uniquely distinguish the memory address
$s$ = set index bits - determine which set the memory address will cache to
$b$ = block offset bits - which entry is the cache line is desired.

h. What 4 items identify a socket connection?

Client IP Address
Client Port Number
Server IP Address
Server Port Number

i. In function execution what specific purpose does register eax have?

Holds the return value.

j. What is spatial locality?

Access to a particular data item indicates that the next data item will be accessed next.