CSSE 332 -- Operating Systems

Interrupts and Traps

Name: ______________________________

Question 1. (5 points) Why are timer interrupts important from an operating system's perspective?

Question 2. (5 points) What are the steps taken by the processor when an exception or an interrupt occurs?

Question 3. (5 points) In the case of a segmentation fault, register __________ is used to store the address of the instruction executing when the fault occurred. The cause of the exception is stored in the __________ register and the violating address is stored in the __________ register. When the fault is detected, the hardware will jump to the kernel at the address stored in the __________ register.

Question 4. (5 points) Consider a process `P` with the following code snippet

```c
int x, rc;

y = x + 2;
rc = fork();
/* ... */
```

`fork()` is a system call that will issue the `ecall` instruction, causing a trap into the kernel. How does the kernel ensure that the state of `P` before the call to `fork` is the same as the one after `fork` returns.