

1. (a) Interrupts serve the purpose of signaling the occurrence of an ~~event~~ event. These temporarily halt CPU's current activities and transfer control to interrupt service routine.

The purpose of interrupts is to handle events (b) which require immediate attention like I/O operation or hardware errors.

(b) Interrupts and traps differ in their origin and ~~by~~ purpose. Interrupts are initiated externally (by hardware or other processes) but traps are initiated ~~by~~ internally by an error or a user request or unusual conditions.



(c) Yes, traps can be generated intentionally by a user program.

(d) Intentional traps are used for error handling, debugging, to invoke system services.

2. (a) The CPU establishes a memory buffer for data transfer with the I/O device, sharing the buffer's address and transfer size.

(b) Upon completing the data transfer, the I/O device interrupts the CPU.



(C) DMA transfers can interfere with execution of user program as it requires the program to be blocked until the transfer of data is complete. As both the I/O device and CPU use the same memory bus, it can direct interference with CPU memory access may occur.