# 1.2.1 Interrupts

**1.** Interrupts can be generated by devices connected to the processor during the Fetch-Execute cycle.

**a)** Describe what an interrupt is.

**[1 mark]**

- **A signal/request sent to the processor (from a hardware device or program)**

**b)** Describe the role of interrupts.

**[2 marks]**

- **Allows the currently executing process to be suspended**
- **So that a piece of software or hardware that needs processor attention can be serviced // so that an urgent error condition can be serviced**

**c)** Explain why the volatile environment (the contents of registers) must be saved before an interrupt is serviced.

**[2 marks]**

- **So that the currently running process can be returned to**
- **As the current register values will be overwritten by the routine that handles the interrupt**

**2.** Describe what happens in the CPU when it receives an interrupt.

**[5 marks]**

- **If the interrupt is of a lower or equal priority to the current process then the current process continues**
- **If the interrupt is of a higher priority the CPU finishes its current FDE cycle**
- **The contents of the CPU's registers are copied/pushed to a stack in memory**
- **The location of the interrupt service routine is loaded into the program counter**
- **When the ISR is complete, the previous contents are popped from the stack and loaded back into the register**