

### 3 Block Diagrams

Create a block diagram of a *Personal Solar Torch* which has the following parts:

1. A solar panel.
2. A battery.
3. An LED and “current driver”.
4. An “energy harvester” to collect energy from the solar cell and charge the battery.
5. A voltage regulator to ensure a steady DC voltage to supply the electronic components.
6. A microcontroller to act as the “brains” of the device.
7. A human-machine interface (HMI) which allows the user to turn the light on/off and dim the light to any intensity.
8. An accelerometer to measure the orientation of the device.
9. Circuitry to monitor the solar cell voltage, battery voltage and temperature.
10. Non-volatile memory in order to store “samples” of the above quantities.
11. A USB port so the microcontroller can get power from, and communicate with, a PC when it is plugged in.

**Think about why blocks need to be connected to each other.**

**Specify the type of connection between blocks (e.g. is it energy flow or signal flow).**