**Smart Textiles Quiz**

Please answer the following questions to the best of your ability.

**Your name**

**1. How do we know that a textile is ‘smart’?**

* Because it lights up.
* Because it reacts to an external stimulus. [correct answer]
* Because it is breathable.

Feedback for incorrect answers

* *Smart textiles can sense a change in their surroundings and respond to this. It could be a change in temperature or light or moisture levels for example. The response might be to release stored heat or moisture.*

**2. All wearable tech is smart.**

* True
* False [correct answer]

Feedback for incorrect answers

* *Wearable tech can work simply by having an electronic circuit embedded in the textile product. However, when conductive fibres are used to create truly conductive fabric then a response may be triggered by heat or an electrical current.*

**3. Why are tights and stockings a good use of microencapsulation?**

* Because they keep your legs warm.
* Because they can support torn muscles and tendons after an injury.
* Because they cover a large surface area of the skin. [correct answer]

Feedback for incorrect answers

* *Tights and stockings can have microcapsules anchored into the fabric which contain anti-bacterials, insecticides, moisturisers or medicines. As the fabric is rubbed, the microcapsules release their contents in a controlled manner into the skin.*

**4. Which of the following fabrics is based on the transpiration systems of plants?**

* Nomex
* Outlast®
* Stomatex® [correct answer]
* Gore-Tex®
* Microban
* Fastskin

Feedback for incorrect answers

* *Stomatex® is known as breathable neoprene - it has thousands of tiny chambers and pores within the fabric. These open up to efficiently evacuate sweat from the body when the user gets hot. They close when the user's temperature falls. This mimics a plant's system for evaporation of water from its leaves, so it is a good example of biomimicry.*

**5. Outlast® fabric controls the moisture content of the skin.**

* True
* False [correct answer]

Feedback for incorrect answers

* *Outlast® fabric works BEFORE moisture in the form of sweat sets in. As a phase changing, smart fabric it senses the change in body temperature and if it starts to get hot, Outlast® can store the heat and release it when the body starts to cool.*

**6. What is special about fabric that incorporates Nitinol fibres?**

* It expands upon heating.
* It shrinks upon heating. [correct answer]
* It expands in UV light.
* It shrinks in UV light.

Feedback for incorrect answers

* *Nitinol is a shape memory alloy that responds to temperature and shrinks in reaction to heat.*

**7. Liquid Crystals can be found in photochromic textiles.**

* True
* False [correct answer]

Feedback for incorrect answers

* *Liquid crystals can be embedded in an aqueous solution and applied to the surface of fabrics, often by screen printing, and respond to changes in temperature. They are thermochromic.*

**8. What happens to Leuco dyes when they come into contact with heat?**

* They disappear [correct answer]
* They reappear
* It can explode

Feedback for incorrect answers

* *They disappear. On heating, the solvent within them changes from solid to liquid so they cannot be seen and so only the non-leuco colour remains.*

**9. Why might photochromic textiles feature in children's garments?**

* Colour change to warn of dangers of strong sunlight [correct answer]
* Heat sensitive to warn of temperature changes
* Acts as camouflage

Feedback for incorrect answers

* *Colour change to warn of dangers of strong sunlight*