

<b>Points Awarded</b>	<b>75.42</b>
<b>Points Missed</b>	<b>24.58</b>
<b>Percentage</b>	<b>75.4%</b>



1.

Thermogenin (Uncoupling Protein 1) is found in the mitochondria of brown fat in mammals and is important for hibernation because it increases heat generation. As a mitochondrial uncoupler, it acts by allowing hydrogen ions ( $H^+$ ) to move back across the inner membrane into the matrix. This results in a decrease in:

- A) water production.
- B) NADH oxidation.
- C) FADH<sub>2</sub> oxidation.
- D) ATP synthesis.

**Points Earned:** 2.5/2.5

**Correct Answer(s):** D



2.

You are walking along the beach in Cape May, New Jersey, and you step on something very soft. The next thing you know, you feel extreme pain in your foot and it begins to turn red; you have been stung by nematocysts! This means that you stepped on a:

- A) sponge (Porifera).
- B) mollusk.
- C) echinoderm.
- D) cnidarian.

**Points Earned:** 2.5/2.5

**Correct Answer(s):** D



3.

Arthropods have a chitinous exoskeleton. Which of these statements describes a clear advantage of that exoskeleton?

- A) It provides protection for the arthropod's body.
- B) It prevents gas exchange across a large surface area.

- C) It cannot grow so must be shed as the arthropod matures.
- D) All of the above are clear advantages of the arthropod exoskeleton.

**Points Earned:** 2.5/2.5

**Correct Answer(s):** A



4.

This plant grows in the Arctic tundra. Referring to the absorption spectrum shown, which photosynthetic pigment is this plant most likely to be primarily using for photosynthesis?

- A) Chlorophyll A
- B) Chlorophyll B
- C) Carotene
- D) All three pigments are being used equally.

**Points Earned:** 2.5/2.5

**Correct Answer(s):** C



5.

You have discovered a new species of arthropod living in the ocean and are now determining which group it belongs to. It has multiple jointed appendages that show specialization for different functions; all of these appendages are branched (biramous). Based upon this, you decide that this animal is a new species of:

- A) chelicerate.
- B) mollusk.
- C) insect.
- D) crustacean.

**Points Earned:** 2.5/2.5

**Correct Answer(s):** D



6.

During cellular respiration, electrons lose energy as they are transferred from glucose TO:

- A) the electron transport chain TO NADH TO oxygen
- B) NADH TO the electron transport chain TO oxygen
- C) glycolysis TO Krebs Cycle TO ATP TO NADH
- D) ATP TO oxygen

**Points Earned:** 2.5/2.5

**Correct Answer(s):** B



7.

In the process of cellular respiration, a molecule of glucose is an example of \_\_\_\_\_ energy, and the production of ATP as hydrogen ions flow from the inter-membrane space into the mitochondrial matrix is an example of \_\_\_\_\_ energy.

- A) kinetic / kinetic
- B) potential / potential
- C) potential / kinetic
- D) kinetic / potential

**Points Earned:** 2.5/2.5

**Correct Answer(s):** C

