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Level: SL IB in Biology  
Subject: Biology  
Topic: IB SL Biology  
Type: Topic Question

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All International Baccalaureate IB Topic Questions SL Biology

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**BIOLOGY**

**SL - IB**

Key skills

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### Question 1.

Which of the following are **not** examples of hydrogen bonding?

- A. Base-pairing between two strands of DNA.
- B. The forces that hold water molecules together.
- C. The bond that joins one nucleotide to its neighbor in a strand of DNA.
- D. Interactions between water and the polar R groups of certain amino acids.

[1 mark]

### Question 2.

Water ( $H_2O$ ) is a polar molecule, whereas methane ( $CH_4$ ) is nonpolar. Which of the properties of methane is explained by methane's lack of polarity?

- A. Low molecular weight.
- B. Low boiling point.
- C. Flammability.
- D. Greenhouse gas effect.

[1 mark]

### Question 3.

Which of the following observations is **not** explained by water's high latent heat of vaporisation and specific heat capacity?

- A. Ice is less dense than liquid water, so it floats on water.
- B. Water exists in all three physical states (solid, liquid and gas) on Earth.
- C. A small volume of water can dissipate a lot of heat from an organism.
- D. A lot of heat energy is required to raise the temperature of water.

[1 mark]

**Question 4.**

Which row of the table lists the four common metabolites in **decreasing** order of solubility in water?

- A. oxygen → sodium chloride → cholesterol → hydrophobic amino acid
- B. sodium chloride → oxygen → hydrophobic amino acid → cholesterol
- C. hydrophobic amino acid → oxygen → sodium chloride → cholesterol
- D. sodium chloride → hydrophobic amino acid → oxygen → cholesterol

[1 mark]

**Question 5.**

Which of the following properties of water are a result of intermolecular forces?

- I. High surface tension.
- II. Good solvent.
- III. Cohesiveness.
- IV. High specific heat capacity.

- A. I and II
- B. I, II and III
- C. I, II and IV
- D. All

[1 mark]

**Question 6.**

Which of the following properties of water stops enzymes from being denatured during transpiration?

- I. Water retains a lot of heat.
- II. Water Forms hydrogen bonds with other polar and nonpolar molecules.
- III. A lot of heat is required to evaporate water.
- IV. Water is cohesive.

- A. I only
- B. I and II
- C. II, III and IV
- D. III only

[1 mark]

**Question 7.**

Which of the following properties of water is primarily responsible for its high boiling point compared to other molecules of similar size?

- A. Water's polarity
- B. Water's ability to form hydrogen bonds
- C. Water's low density
- D. Water's ability to dissolve many substances

[1 mark]

**Question 8.**

How does water's high specific heat capacity contribute to its role in regulating temperature in organisms?

- A. It allows for rapid changes in temperature.
- B. It maintains stable internal temperatures by absorbing and releasing heat slowly.
- C. It increases the rate of metabolic reactions.
- D. It decreases the solubility of solutes in the body.

[1 mark]

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**Question 9.**

What is the significance of water's cohesion property in plant life?

- A. It aids in the process of transpiration.
- B. It helps in the breakdown of plant cell walls.
- C. It increases the density of plant tissues.
- D. It prevents the formation of water droplets on leaves.

[1 mark]

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**Question 10.**

Which feature of water molecules contributes to their ability to dissolve a wide range of substances?

- A. Water's hydrogen bonding capability
- B. Water's low viscosity
- C. Water's high density
- D. Water's non-polar nature

[1 mark]

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**Question 11.**

Why is water known as a universal solvent?

- A. It can dissolve both ionic and polar substances.
- B. It has a high boiling point.
- C. It is less dense than air.
- D. It forms a solid at room temperature.

**[1 mark]**

