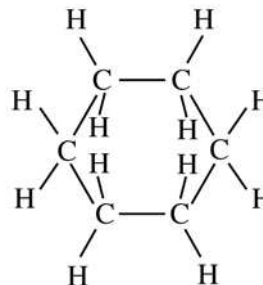
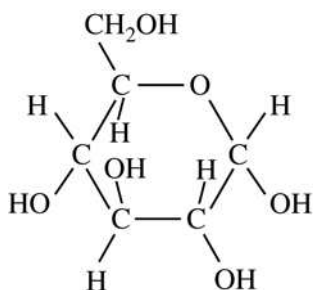


## 2006 AP<sup>®</sup> CHEMISTRY FREE-RESPONSE QUESTIONS

6. Answer each of the following in terms of principles of molecular behavior and chemical concepts.

(a) The structures for glucose,  $C_6H_{12}O_6$ , and cyclohexane,  $C_6H_{12}$ , are shown below.

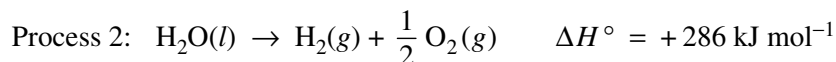


Identify the type(s) of intermolecular attractive forces in

- (i) pure glucose
- (ii) pure cyclohexane

(b) Glucose is soluble in water but cyclohexane is not soluble in water. Explain.

(c) Consider the two processes represented below.



- (i) For each of the two processes, identify the type(s) of intermolecular or intramolecular attractive forces that must be overcome for the process to occur.
- (ii) Indicate whether you agree or disagree with the statement in the box below. Support your answer with a short explanation.

When water boils,  $H_2O$  molecules break apart to form hydrogen molecules and oxygen molecules.