Name Period Date

**Colligative Properties**

**Part A – Calculations**

1. Indicate how many particles are formed when the following solutes dissolve.

|  |  |  |  |
| --- | --- | --- | --- |
| solute | **# of particles** | solute | **# of particles** |
| sucrose (C12H22O11) |  | magnesium chloride (MgCl2) |  |
| sodium sulfate (Na2SO4) |  | methanol (CH3OH) |  |

1. When 5.0 g of CaCl2 dissolves in 50.0 g of water, what is the boiling point of the solution? Kb (water) = 0.512 °C·kg/mol.

|  |  |
| --- | --- |
| given | work |
|  |  |
|
|
| **answer:** | |

1. Mr. Shull’s feet are aching at the end of a long day. At home, he dissolves 26.0 g of Epsom salt, MgSO4, in 1.5 kg of water kfwater = 1.86°C·kg/mol. What is the freezing point of this solution?

|  |  |
| --- | --- |
| given | work |
|  |  |
|
|
| **answer:** | |

**Part B – Applications** (Answer the following questions on the back of this paper.)

1. Salt is often used to remove ice from roads and sidewalks. Explain how this process works in terms of colligative properties.