

MiniQuiz 2

Chem 111, Section 2 (Martin, 10:10am)

Fall 1998

- 1a. (2 points) In the compound H_2AsO_4 , what is the oxidation number of As?
(a) +4 (b) +5 (c!) +6 (d) +8 (e) +7
- 2a. (2 points) Which one of the following is an oxidation-reduction reaction? Note that none is a balanced reaction, but you should *not* need to balance them.
- (a) $\text{Fe}(+3)(\text{OH})_3 + \text{HNO}_3 \rightarrow \text{Fe}(+3)(\text{NO}_3)_3 + \text{H}_2\text{O}$
(b!) $\text{Fe}(+2)\text{C}(+4)\text{O}_3 + \text{HNO}_3 \rightarrow \text{Fe}(+3)(\text{NO}_3)_3 + \text{C}(+4)\text{O}_2 + \text{H}_2\text{O}$
(c) $\text{Fe}(+2)\text{Cl}_2 + (\text{NH}_4)_2\text{S} \rightarrow \text{Fe}(+2)\text{S} + \text{NH}_4\text{Cl}$
(d) $\text{Fe}(+2)(\text{OH})_2 + \text{Na}_2\text{CO}_3 \rightarrow \text{Fe}(+2)\text{CO}_3 + \text{NaOH}$
(e) none of the above is an oxidation-reduction reaction

For each statement below (1 point each), indicate whether the statement is most likely true (A) or most likely false (B). These are "ball park" questions - you do not need a calculator. Pay attention to wording.

- 3a. In order to vaporize 1 g of H_2O , we need about 4.2 Joules of energy.
(a) True (b!) False
- 4a. One mole of water vapor (steam) has a higher potential energy than one mole of water solid (ice).
(a!) True (b) False
- 5a. If heat is added to a system at constant pressure, the process is endothermic.
(a!) True (b) False
- 6a. If work is done on a system, the system's energy decreases.
(a) True (b!) False
- 7a. Units for specific heat can be expressed both as $\text{J} / (\text{g K})$ and as $\text{kg m}^2 / \text{s}^2$.
(a) True (b!) False
- 8a. To heat the water in a bathtub from 10°C to 30°C would require about 1000 calories.
(a) True (b!) False
- 9a. **Extra credit. Think carefully!** A car traveling at 60 miles per hour has more potential energy than a baseball traveling at 61 miles per hour.
(a) True (b!) False

Place the number **1** in column **K** of your OpScan sheet. This is essential!