

Introduction to Chemistry  
Quiz 9c

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

Oxidation Reduction  
Radioactivity

*Show work for credit*

1. Provide the oxidation number for phosphorous in the phosphate anion ( $\text{PO}_4^{3-}$ )
2. Provide oxidation number for oxygen in oxygen gas ( $\text{O}_2$ )
3. Provide the expected oxidation number for an ion of gallium (symbol is Ga)
4. Indicate which reactants is oxidized and which is reduced in the burning of natural gas (methane –  $\text{CH}_4$ ) in oxygen gas. The balanced chemical reaction is provided.  
$$\text{CH}_4(\text{g}) + 2 \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2 \text{H}_2\text{O}$$

$\text{CH}_4(\text{g})$  is \_\_\_\_\_

$\text{O}_2(\text{g})$  is \_\_\_\_\_
5. Which one best describes how nuclear radiation would be expected to cause harm and death from exposure?
  - a) Nuclear reactions change the isotopic composition of the body's chemicals through nuclear chemistry
  - b) Ionizing radiation from nuclear reactions causes chemical reactions in the body
  - c) Beta particles penetrate to the bone eventually causing bone cancer
  - d) Alpha particles hit the skin causing skin cancer
  - e) Gamma rays penetrate through the body taking parts of the body with them
6. How could the risk of harm in Question #5 be reduced?

Fold quiz with your work inside, then write your name on the outside.