

Mid-Term Review (rev. 01/11)

Name: Key

1-5. Determine the number of significant digits in each of the following numbers:

- |        |          |
|--------|----------|
| 0.202  | <u>3</u> |
| 10.663 | <u>5</u> |
| 19.00  | <u>4</u> |
| 19.100 | <u>5</u> |
| 4005   | <u>4</u> |

6. Write the nuclear equation showing the alpha decay of Sm.  ${}_{62}^{150}\text{Sm} \rightarrow {}_2^4\alpha + {}_{60}^{146}\text{Nd}$

7. Write the nuclear equation showing the beta decay of Po.  ${}_{84}^{209}\text{Po} \rightarrow {}_{-1}^0\beta + {}_{85}^{209}\text{At}$

8. Write the electron configuration for Zr.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^2$

9. Write the abbreviated electron configuration for Zr.  $[\text{Kr}] 5s^2 4d^2$

10. You are working in the lab and want to smell the liquid in your beaker. What is the safest way to smell the liquid?  
waft

11. Which element has a lower ionization energy Zn or Se ? Zn

12. Which element has a higher electron affinity Si or Cl ? Cl

13. Which element has a higher atomic radius Ti or Co ? Ti

14. Which element has a higher ionization energy Mg or Ba ? Mg

15. Which element has a lower electron affinity O or Te ? Te

16. Which element has a lower atomic radius C or Ge ? C

17. Circle the smallest of the following numbers?

- $3.25 \times 10^4$     $6.88 \times 10^2$     $5.34 \times 10^3$

18. What is the wavelength of radiation emitted if the frequency is  $2 \times 10^{15}$  Hz ?

$$3.0 \times 10^8 \text{ m/s} = \lambda (2 \times 10^{15} \text{ Hz})$$

$$\lambda = 2.15 \times 10^{-7} \text{ m}$$

$$c = \lambda \nu$$

19. What is the frequency if the wavelength of radiation emitted is  $5.2 \times 10^{-10}$  m?

$$c = \lambda \nu$$

$$3.0 \times 10^8 \text{ m/s} = (5.2 \times 10^{-10} \text{ m}) \nu$$

$$\nu = 5.8 \times 10^{17} \text{ Hz}$$