Chemistry Level 1 Mid-Year Exam
Review Homework
Answer Key

1. 0.15 hrs

2. 5.00×10^{-2} cm or 5.00E-2 cm

3. a. 1,2,1,2 DR b. 2,2,3 Decomp c. 2,21,14,14 Combust

4. 4.17×10^{-19} J or 4.17E-19 J

5. a. Carbon dioxide – C is central atom with two double bonds to outside O atoms. No lone pairs on central atoms

   b. Sulfur hexafluoride – S is central atoms, no lone pair on central atom. 6 single bonds

   c. Nitrate ion – Resonance structure : N is central atom 2 single bond and one double bond and no lone pair on central atom

6. 888g CO_2

7. 1.69×10^3 g $Na_1(HCO_3)_{1\,(s)}$

8. a. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^1 3d^1 3d^1 3d^1 3d^1$
   b. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3ds^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p_x^1\ 6p_y^1 6p_z^0$
   c. $1s^2 2s^2 2p^6\ 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1 4d^2 4d^2 4d^2 4d^2 4d^2$

9. a. Copper (II) carbonate
   b. $Sn_1(CO_3)_2$
   c. Aluminum sulfite
   d. Tetrasulfur hexaphosphide

10. a. Products: $Ba_1(SO_4)_{1(s)}$ and $K_1(C_2H_3O_2)_{1\,(aq)}$ (Rxn occurs)
    Coefficients 1,1,1,2 (assume products are order above)
    $1\ Ba^{2+} + 1\ SO_4^{2-} \rightarrow 1\ Ba_1(SO_4)_{1\,(s)}$

    b. Products: $Ca_1(NO_3)_{2\,(aq)}$ and $Al_{(s)}$ (Rxn occurs)
    Coefficients 3,2,3,2 (assume products are order above)
    $3Ca_{(s)} + 2\ Al^{3+} \rightarrow 3Ca^{2+} + 2\ Al_{(s)}$