2.   Reinecke's Salt

(a)   Cr (Ar = 52.0) is 15.5% of total
        Therefore total $= \dfrac{100}{15.5} \times 52.0 = 335.5$

        For 5 $\dfrac{38.15}{100} \times 335.5 = 128$

                  $\dfrac{128}{32} = 4 = x$

        Therefore $NH_4[Cr(SCN)_4(NH_3)_y] = 335.5$
        Therefore $18 + 52 + 4 \times 58.1 + 17y = 335.5$
                    Therefore $17y = 33.5$
                    X = 4   y = 2   (1, 1)

(b) $+1 + Cr + 4 \times -1 + 2 \times 0 = 0$ (1)
        Therefore Cr = **+ 3**

(c)   Octahedral   (1)

(d)   Two octahedral structures, one with $2NH_3$ groups adjacent, one with them opposite

        Geometrical   **(1) for 2 shapes**
                                                              (1) for geometric
                                                              or cis/trans

                                                              Total 6