Mass crucible (g)	11.12
Mass of titanium (g)	8.82
Mass of crucible and product (g)	22.998

What is the empirical formula of titanium sulfide? (Ar Ti = 47.867 $gmol^{-1}$)

A. TiS C. Ti_2S_2

B. Ti_2S D. TiS_2

10. What volume of water in cm^3 should be added to 10.0 cm^3 of Na0H 6.0 M to produce a solution Of Na0H 0.3 M?

A. 10 C. 200

B. 190 D. 500

11. Which of the following statements is **NOT** true about 2 L of 0.1 M $Ca_3(PO_4)_2$ solution?

A. This solution contains 0.2 mol of $Ca_3(PO_4)_2$

B. This solution contains 0.8 mol of oxygen atoms

C. 2 L of this solution produces 0.6mole of calcium ions

D. 500mL of this solution contains 6.02x 10 ^{22} phosphorus atoms

12. The density of 95% by mass of sulphuric acid, H_2SO_4 is 1.84 g mL^{-1}. Calculate the molarity of H_2SO_4 solution.

A. 15.50 M C. 1.80 M

B. 10.23 M D. 17.82 M

13. Density solution of 0.03 mol of NaCl in 100.0 g of water is 1.02 g/mL. Calculate the mole fraction.

A. 0.0003 C. 0.0027

B. 0.0058 D. 0.0540

14. Rubbing alcohol is commonly used as an antiseptic for small cuts. It is sold as 70% (v/v) solution of isopropyl alcohol in water. What volume of isopropyl alcohol is used to make 500 mL of rubbing alcohol?

A. 357 mL. C. 400 mL

B. 350 mL D. 385 mL

15. Adipic acid, $H_2C_6H_8O_4$, is produced by a reaction between cyclohexane and excess oxygen. The equation for the reaction is:

$2C_6H_{12}(l) + 5O_2(g) \rightarrow 2H_2C_6H_8O_4(l) + 2H2O(l)$

If 45.0 g of cyclohexane is used, calculate the theoretical yield of the adipic acid.

A. 73.8 g C. 75.8 g

B. 83.7 g D. 78.3g

16. A 72.0 g vanadium pentoxide, V_2O_5, reacts with excess aluminium, Al at high temperature to produce vanadium metal, and aluminium oxide, Al_2O_3. Calculate the mass vanadium produced. [Ar V: 51]

A. 4.04 g C. 44.0 g

B. 40.4 g D. 4.40 g

17. In an experiment, 1.46 g of magnesium is added into 160.00 mL 0f 0.50 mol L^{-1} hydrochloric acid. The reaction involved is:

$Mg(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2(g)$

Determine the limiting reactant.

A. Mg(s) C. $MgCl_2$ (aq)

B. HCl (aq) D. $H_2(g)$