93. A mixture of N_2 and H_2 is caused to react in a closed container to form NH_3. The reaction ceases before either reactant has been totally consumed. At this stage, 2.0 moles each of N_2, H_2 and NH_3 are present. The moles of N_2 and H_2 present originally were, respectively,
(a) 4 and 4 moles
(b) 3 and 5 moles
(c) 3 and 4 moles
(d) 4 and 5 moles

94. An ore contains 2.296% of the mineral argentite, Ag_2S, by mass. How many grams of this ore would have to be processed in order to obtain 1.00 g of pure solid silver? (Ag = 108)
(a) 1.148 g   (b) 0.026 g
(c) 50 g   (d) 2.296 g

95. A power company burns approximately 500 tons of coal per day to produce electricity. If the sulphur content of the coal is 1.5%, by mass, how many tons SO_2 are dumped into the atmosphere, every day?
(a) 15.0
(b) 7.5
(c) 30.0
(d) 18.75

Limiting Reagent Based

96. An amount of 1.0×10^{-3} moles of Ag^+ and 1.0×10^{-3} moles of CrO_4^{2-} reacts together to form solid Ag_2CrO_4. What is the amount of Ag_2CrO_4 formed? (Ag = 108, Cr = 52)
(a) 0.332 g   (b) 0.166 g
(c) 332 g   (d) 166 g

97. An amount of 0.3 mole of $SrCl_2$ is mixed with 0.2 mole of K_3PO_4. The maximum moles of KCl which may form is
(a) 0.6   (b) 0.5
(c) 0.3   (d) 0.1

98. Large quantities of ammonia are burned in the presence of a platinum catalyst to give nitric oxide, as the first step in the preparation of nitric acid.

$NH_3(g) + O_2(g) \xrightarrow{Pt} NO(g) + H_2O(g)$
(Unbalanced)

Suppose a vessel contains 0.12 moles NH_3 and 0.14 moles O_2. How many moles of NO may be obtained?
(a) 0.120   (b) 0.112
(c) 0.140   (d) 0.070

99. Equal masses of iron and sulphur are heated together to form FeS. What fraction of the original mass of excess reactant is left unreacted? (Fe = 56, S = 32)
(a) 0.22   (b) 0.43
(c) 0.86   (d) 0.57

100. Hydrogen cyanide, HCN, is prepared from ammonia, air and natural gas (CH_4) by the following process.

$2NH_3(g) + 3O_2(g) + 2CH_4(g) \xrightarrow{Pt} 2HCN(g) + 6H_2O(g)$

If a reaction vessel contains 11.5 g NH_3, 10.0 g O_2, and 10.5 g CH_4, what is the maximum mass, in grams, of hydrogen cyanide that could be made, assuming the reaction goes to completion?
(a) 18.26 g   (b) 5.625 g
(c) 17.72 g   (d) 16.875 g