



Sri Sainath Nagar, Tirupati – 517 102

Holiday Homework (30-09-2018 to 07-10-2018)

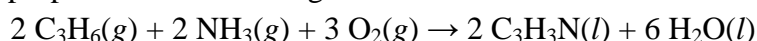
Classes: XI A, XI B, XI C

Subject: CHEMISTRY

1. Write the general electronic configurations of *s*-, *p*-, *d*-, and *f*-block elements.
2. Silicon tetrachloride is used in the electronics industry to make elemental silicon for computer chips. Silicon tetrachloride is prepared from silicon dioxide, graphite carbon, and chlorine gas:
$$\text{SiO}_2(s) + 2 \text{C}(s) + 2 \text{Cl}_2(g) \rightarrow \text{SiCl}_4(l) + 2 \text{CO}(g)$$

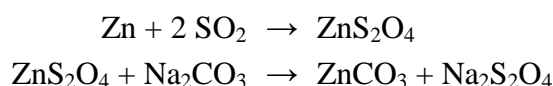
If the reaction goes in 90% yield, calculate the mass of silicon tetrachloride that can be obtained from 15 kg of silica, 8 kg of graphite carbon, and 28.4 kg of chlorine.

3. Acrylonitrile is an important building block for synthetic fibres and plastics. The compound is synthesized from propene in the following reaction:

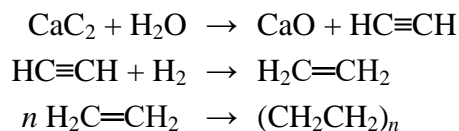


How many kilograms of acrylonitrile can be prepared from 1.68×10^3 kg of propene, 8.5×10^2 kg of ammonia and 1.60×10^3 kg of oxygen?

4. Commercial sodium “hydrosulphite” is 90.1% pure $\text{Na}_2\text{S}_2\text{O}_4$. How much of the commercial product could be made by using 100 metric tons of zinc with a sufficient supply of the other reactants? The reactions are:



5. Polyethylene can be produced from calcium carbide according to the following sequence of reactions:



Calculate the mass of polyethylene which can be produced from 20.0 kg of CaC_2 .

6. Hydrogen is generated by the action of steam on hot magnesium. Calculate the mass of magnesium that will be required to produce just sufficient hydrogen to combine with all the oxygen that can be obtained by the complete decomposition of 24.5 grams of potassium chlorate.
7. When 50 g of a sample of sulphur was burnt in air 4% of sample was left over. Calculate the volume of air required at STP containing 21% oxygen by volume.