

**THIRUVANANTHAPURAM EDUCATIONAL DISTRICT  
CHEMISTRY X  
CHAPTER 4 MODULE 3**

**CW12 X EM**

**ANSWER KEY**

**1. There are two stages:**

- a. Conversion of the concentrated ore into its oxide**
- b. Reduction of the oxide**

**2. Calcination**

**It is the process of heating the concentrated ore in the absence of air at a temperature below its melting point.**

**3. Roasting**

**Copper sulphide (Cu<sub>2</sub>S)**

**Zinc blende (ZnS)**

**4. Reduction.**

**5. Electricity, Carbon, Carbon monoxide.**

**6. Carbon and Carbon monoxide etc. are used as reducing agent to extract less reactive metals from their ore. Electricity is used as reducing agent to extract highly reactive metals from their ore.**

**7. A. Refining of metals with low boiling point**

**B. Distillation**

**C. Zinc, Cadmium, Mercury**

**D. Electrolytic refining**

**8. Anode- Impure copper, Cathode- Pure copper Electrolyte- Copper sulphate solution with H<sub>2</sub>SO<sub>4</sub>**

**At anode  $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$**

**At cathode  $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$**

**Anode mud- The impurities present in the impure copper rod, settle down at the bottom of the container.**