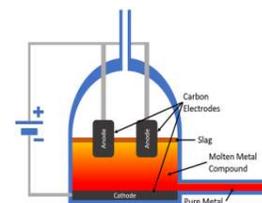


National Institute of Open Schooling
Senior Secondary Course : Chemistry
Lesson 16 : Occurrence and Extraction of Metals
Worksheet-16

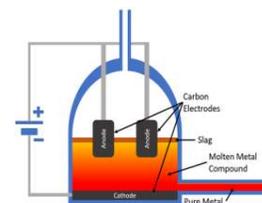


1. A washer woman, while washing a miner's overalls, noticed that sand and similar dirt fell to the bottom of the wash tub. What was peculiar, the copper bearing compounds that had come to the cloths from mines were caught in soap suds and so they come to the top. One of her client was chemistry teacher Mrs Geeta. The washer woman told her experience to Mrs Geeta who thought that the idea could be used for separating copper compounds from rocks and Earth materials on large scale. This way an invention was born.
 - (a) Which method was invented by above experience?
 - (b) What values were possessed by washer women?
 - (c) What was the effect of the above invention?

2. In roasting, the ore is heated in regular amount of air in a furnace at below the melting point of the metal. Metal sulphide gets converted into metal oxides and sulphur dioxide gas is formed which is an air pollutant. It also leads to the formation of the acid rain which is harmful for crops and building made up of marble.
 - (a) Where should we have industry using roasting process in metallurgy? Give reason.
 - (b) How can we use sulphur dioxide gas?
 - (c) What are the uses of sulphuric acid? How can it help in national economy?

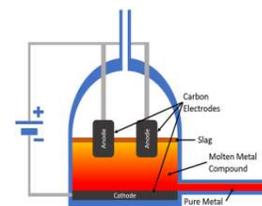
3. Gold occurs in free state in earth's crust. It is leached with dilute solution of potassium cyanide to form a soluble complex. Gold is smuggled in the form of this complex compound as it is liquid like lime water and can't be detected X-ray. Custom officers found it extra ordinary heavy liquid and sent into chemistry lab.
 - (a) How will chemistry find that it contains potassium dicyanoaurate (I)?
 - (b) Should potassium cyanide be readily available?
 - (c) How can you prevent smuggling of gold by this process? What values are not processed by smugglers?

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4. Magnesium is more electropositive than aluminium, therefore, it can reduce alumina thermodynamically but in India aluminium is being extracted by electrolytic reduction and not chemical reduction.
- (a) Under what conditions magnesium can reduce alumina?
- (b) Although thermodynamically feasible, in practice, magnesium metals is not used to reduce alumina. Explain.
5. Metals are very useful in our daily life. Aluminium powder is used in white paints. It is used as a reducing agent. Alloys containing aluminium are light, are very useful. Utensils of aluminium are more popular than utensils of brass. Metals like silver, gold, iron, copper, zinc are very useful in our daily life.
- (a) Which metal foils are used as wrappers for chocolates, medicines, chapatis, etc.?
- (b) Why are aluminium vessels preferred over copper and bronze vessels?
- (c) What values are possessed by people using aluminium instead of copper?
6. At a site, low grade copper ores are available and zinc and iron scraps are also available. Which of the two scraps would be more suitable for reducing the leached copper ore and why?
7. “The extraction of Ag by leaching with NaCN involves both oxidation and reduction”. Explain?
8. Explain the following
- i. Carbon reduction process is not applied for reducing aluminium oxide to aluminium.
 - ii Aqueous Solution chloride cannot be used for the isolation of sodium by electrolytic reduction method.
 - iii Thermite process is quite useful for repairing the broken parts of machine.

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Note : In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

- (i) Both assertion and reason are true and reason is the correct explanation of assertion.
- (ii) Both assertion and reason are true but reason is not the correct explanation of assertion.
- (iii) Assertion is true but reason is false.
- (iv) Assertion is false but reason is true.
- (v) Assertion and reason both are wrong.

9. **Assertion :** Nickel can be purified by Mond process.

Reason : $\text{Ni}(\text{CO})_4$ is a volatile compound which decomposes at 460K to give pure Ni.

10. **Assertion :** Zirconium can be purified by Van Arkel method.

Reason : ZrI_4 is volatile and decomposes at 1800K.