

CBSE Class 12 Chemistry Chapter 6 General Principles and Processes of Isolation of Elements Worksheet – Set 2

Q1. Nitriding is the process of surface hardening of steel by treating it in atmosphere of-

- a.) NH_3
- b.) O_3
- c.) N_2
- d.) H_2S

Q2. Purification of aluminium, by electrolytic refining is known as-

- a.) Hoopé's process
- b.) Baeyer's process
- c.) Hall's process
- d.) Serpeck's process

Q3. Extraction of gold and silver involves leaching with CN^- ion. Silver is later recovered by-

- a.) distillation
- b.) zone refining
- c.) displacement with Zn
- d.) liquation

Q4. $2\text{CuFeS}_2 + \text{O}_2 \rightarrow \text{Cu}_2\text{S} + 2\text{FeS} + \text{SO}_2$

Which process of metallurgy of copper is represented by above equation?

- a.) Concentration
- b.) Roasting
- c.) Reduction
- d.) Purification

Q5. Identify the correct statement from the following:

- a.) Wrought iron is impure with 4% carbon.
- b.) Blister copper has blistered appearance due to evolution of CO_2 .
- c.) Vapour phase refining is carried out for nickel by Van Arkel method.
- d.) Pig iron can be moulded into a variety of shapes.

Q6. What is the role of flux in metallurgical processes?

Q7. Out of C and CO which is a better reducing agent for ZnO?

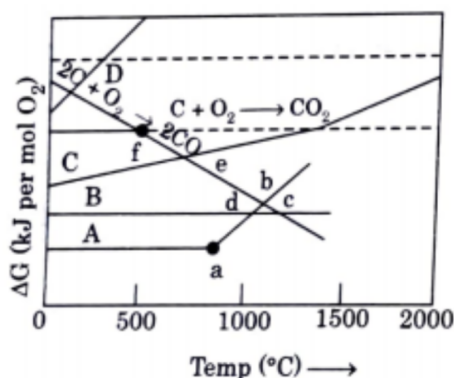
Q8. Mention the role of the following:

- SiO₂ in the metallurgy of Cu.
- CaCO₃ in the metallurgy of Fe.
- CO in the metallurgy of iron.
- I₂ in the purification of zirconium.

Q9. In general, which metals do you expect to occur in native state in nature? Give examples.

Q10. Define Calcination.

Q11. A part of Ellingham diagram for some metal oxides (based upon 1 mole of O₂) and carbon is shown.



In figure A,B,C and D represent curves for metal oxides and a,b,c,d ,e and f are temperatures. Answer the following :

- Will B oxide reduce metal oxide of A or C or both?
- Which metal can be reduced thermally?
- Will oxide of B be reduced by coke above temperature c or below temperature c?
- Will the formation of CO or CO₂ be preferred above temperature f?
- What does temperature 'a' represent?

Q12. Free energies of formation ($\Delta_f G$) of MgO and CO at 1273 K and 2273 K are given below-

$$\Delta_f G (\text{MgO(s)}) = -941 \text{ kJ/mol at } 1273 \text{ K}$$

$$\Delta_f G (\text{MeO(s)}) = -314 \text{ kJ/mol at } 2273 \text{ K}$$

$$\Delta_f G (\text{CO(g)}) = -439 \text{ kJ/mol at } 1273 \text{ K}$$

$$\Delta_f G (\text{CO(g)}) = -628 \text{ kJ/mol at } 2273 \text{ K}$$

On the basis of above data, predict the temperature at which carbon can be used as a reducing for agent MgO(s).

Q13. Explain the process of smelting.

Q14. Describe how the following changes are brought about?

- (i) Pig iron into steel
- (ii) Zinc oxide into metallic zinc
- (iii) Impure titanium into pure titanium

Q15. Why is it advantageous to roast a sulphide ore to the oxide before reduction?

Q16. The choice of a reducing agent in a particular case depends on thermodynamic factor. How far do you agree with this statement? Support your opinion with two examples.

Q17. Outline the principles of refining of metals by the following methods:

- (i) Zone refining
- (ii) Electrolytic refining
- (iii) Vapour phase refining

Q18. (a) How does iron occur? Discuss in detail the extraction of iron from haematite ore.
(b) What are steel alloys? Give examples.

Q19. (a) Write the chemical reaction taking place in the extraction of zinc from zinc blende.
(b) State the role of silica in the metallurgy of copper.
(c) How is copper extracted from low grade copper ores?
(d) How is "pig iron" different from "cast iron"?

Q20. Describe the principle behind each of the following processes-

- (i) Vapour phase refining of a metal.
- (ii) Electrolytic refining of a metal.
- (iii) Recovery of silver after its ore was leached with NaCN.