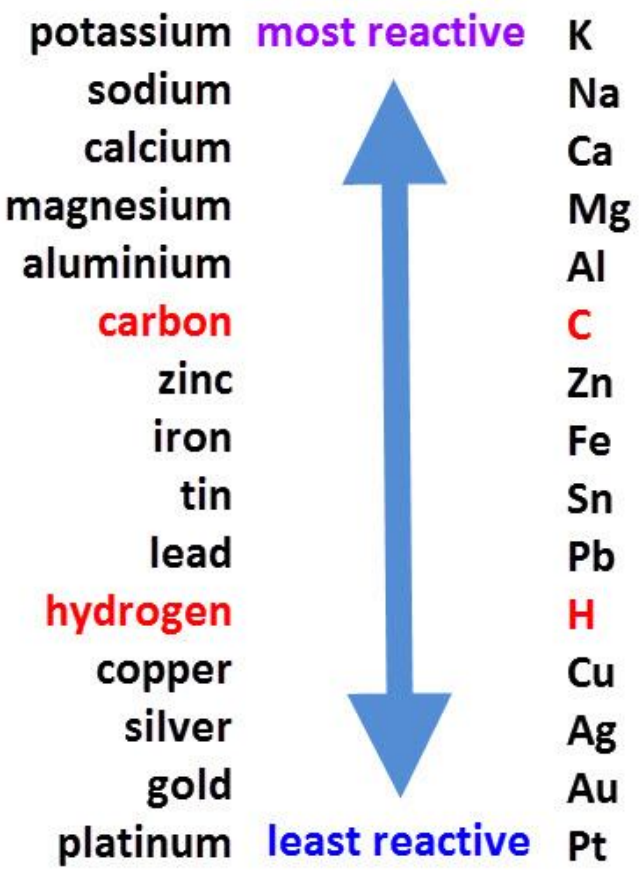
CASE STUDY QUESTION 47

Read the following and answer any four questions from (i) to (v)

On the basis of reactivity of different metals with oxygen, water and acids as well as displacement reactions, the metals have been arranged in the decreasing order of their reactivities. This arrangement is known as activity series or reactivity series of metals.

The basis of reactivity is the tendency of metals to lose electrons. If a metal can lose electrons easily to form positive ions, it will react readily with other substances. Therefore, it will be a reactive metal. On the other hand, if a meal loses electrons less rapidly to form a positive ion, it will react slowly with other substances. Therefore, such a metal will be less reactive.



(i) Which of the following metals is less reactive than hydrogen?
(a) Copper (b) Zinc (c) Magnesium (d) Lead

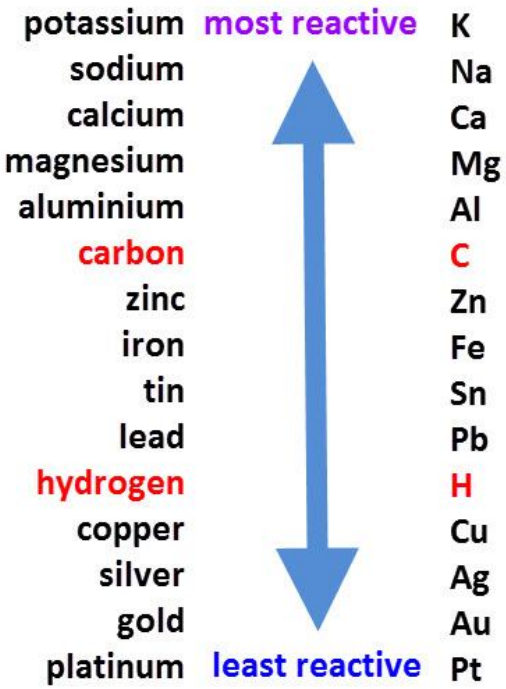
Copper is placed below hydrogen in activity series therefore, it is less reactive than hydrogen.

Ans: (a) Copper

(ii) Which of the following metals is more reactive than hydrogen?
(a) Mercury (b) Platinum (c) Iron (d) Gold

Iron is placed above hydrogen in activity series, therefore it is more reactive than hydrogen.

Ans: (c) Iron



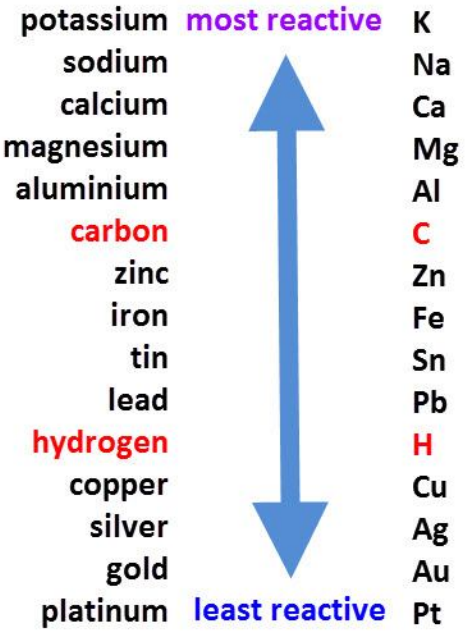
(iii) Which of the following metals reacts vigorously with oxygen?
(a) Zinc (b) Magnesium (c) Sodium (d) Copper

Sodium metal react vigorously with oxygen (O_2) and water (H_2O). A lot of heat generates during the reaction therefore sodium always stored in kerosene.

Ans: (c) Sodium

(iv) Which of the following represents the correct order of reactivity for the given metals?
(a) Na > Mg > Al > Cu (b) Mg > Na > Al > Cu
(c) Na > Mg > Cu > Al (d) Mg > Al > Na > Cu

Ans: (a) Na > Mg > Al > Cu



(v) Hydrogen gas is not evolved when a metal reacts with nitric acid. It is because HNO_3 is a strong oxidising agent. It oxidises the H_2 produced to water and itself gets reduced to any of the nitrogen oxides (N_2O, NO, NO_2). But _____ and _____ react with very dilute HNO_3 to evolve H_2 gas.

(a) Pb, Cu (b) Na, K (c) Mg, Mn (d) Al, Zn

Ans: (c) Mg, Mn