

Science

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(Chapter 3)(Metals and Non - Metals)

Class - 10

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Question 1:

Why is sodium kept immersed in kerosene oil?

Answer 1:

Metals such as potassium and sodium react so vigorously that they catch fire if kept in the open. Hence, to protect them and to prevent accidental fires, they are kept immersed in kerosene oil.

Question 2:

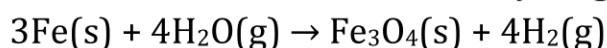
Write equations for the reactions of

(i) iron with steam

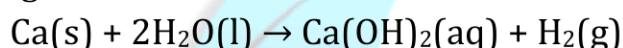
(ii) calcium and potassium with water

Answer 2:

(i) Iron react with steam to form the metal oxide and hydrogen.



(ii) The reaction of calcium with water is exothermic but the heat evolved is not sufficient for the hydrogen to catch fire.



Calcium starts floating because the bubbles of hydrogen gas formed stick to the surface of the metal.

Potassium react violently with cold water and its reaction is so violent and exothermic that the evolved hydrogen immediately catches fire.



Question 3:

Samples of four metals A, B, C and D were taken and added to the following solution one by one. The results obtained have been tabulated as follows.

Metal	Iron(II) sulphate	Copper(II) sulphate	Zinc sulphate	Silver nitrate
A	No reaction	Displacement		
B	Displacement		No reaction	
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Use the Table above to answer the following questions about metals A, B, C and D.

(i) Which is the most reactive metal?

(ii) What would you observe if B is added to a solution of Copper (II) sulphate?

(iii) Arrange the metals A, B, C and D in the order of decreasing reactivity.

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Answer 3:

(i) As per reactivity series, Iron is most reactive metal among Iron, Silver and Copper. Since B can displace Iron from its sulphate, so B is the most reactive metal.

(ii) As B is more reactive than Iron (As discussed in answer (i)), so it will displace Copper from its Copper Sulphate solution.

(iii) B is most reactive as discussed in part (i) and D is the least reactive metal as unable to displace any of the solutions. Copper is more reactive than Silver and metal A can displace Copper, so A is more reactive than C.

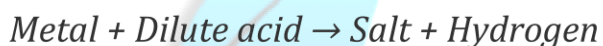
Hence, the order of decreasing reactivity is $B > A > C > D$.

Question 4:

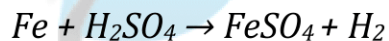
Which gas is produced when dilute hydrochloric acid is added to a reactive metal? Write the chemical reaction when iron reacts with dilute H_2SO_4 .

Answer 4:

When reactive metals react with dilute hydrochloric acids, gives a salt and hydrogen gas



Reaction between Iron and H_2SO_4 :



Question 5:

What would you observe when zinc is added to a solution of iron (II) sulphate? Write the chemical reaction that takes place.

Answer 5:

Zinc is more reactive than Iron. When Zn is added to Iron (II) Sulphate, Zinc displaces Iron from its solutions and Zinc sulphate is formed.

