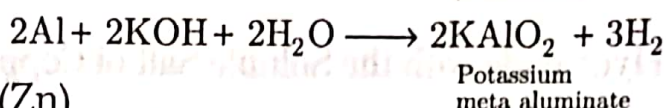
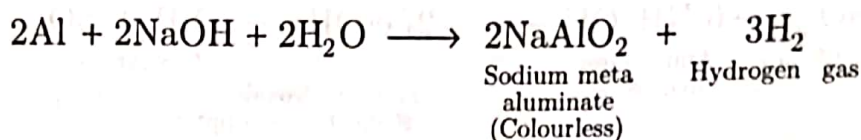


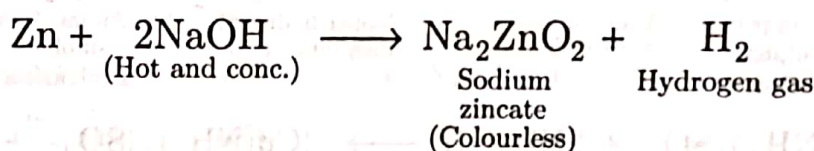
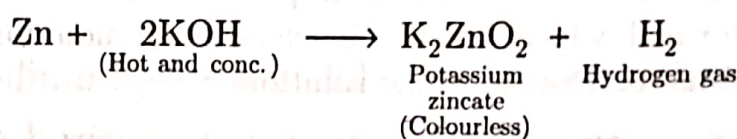
Action of Alkalis (NaOH, KOH) on Certain Metals

Certain metals like Al, Zn and Pb react with hot concentrated caustic alkali (NaOH, KOH) to give the corresponding soluble salt and liberate hydrogen gas.

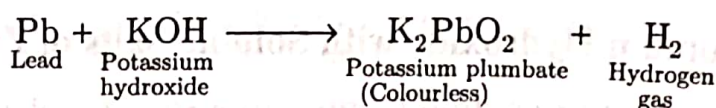
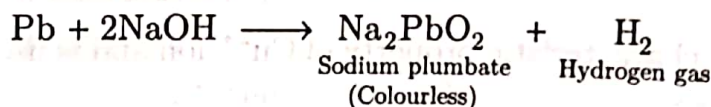
1. Aluminium Metal (Al)



2. Zinc Metal (Zn)



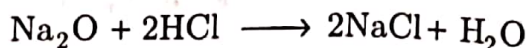
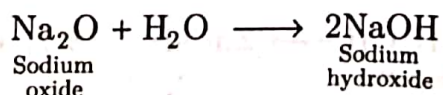
3. Lead Metal (Pb)



Action of Alkalis on Metal Oxides and Hydroxides

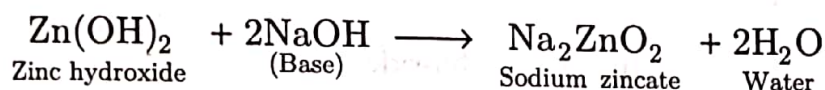
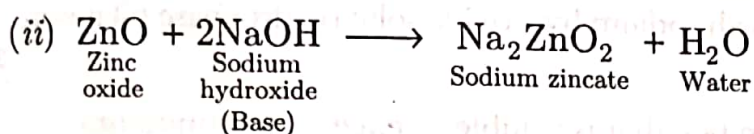
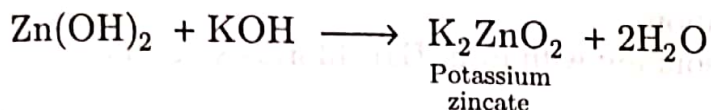
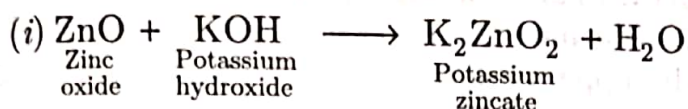
Most of the metal oxides are basic in nature and dissolve in water to give hydroxides or alkalis. These metal oxides and hydroxides neutralise acids but do not react with bases.

e.g.

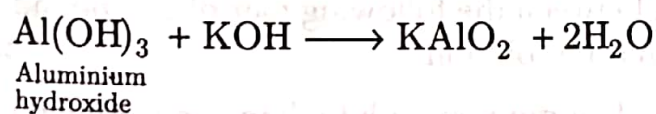
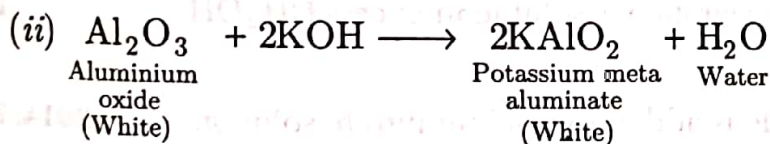
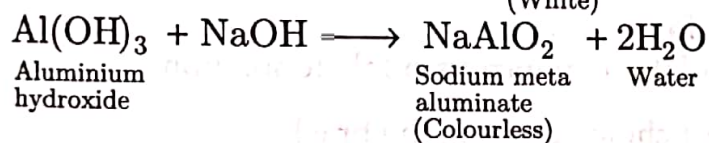
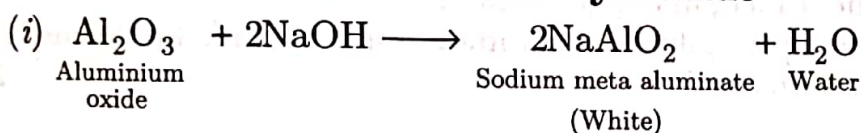


Oxides and hydroxides of few metals like Zn, Pb and Al, i.e. ZnO, PbO, Al₂O₃ and Zn(OH)₂, Pb(OH)₂, Al(OH)₃ are **amphoteric** in nature, i.e. **they react with acids as well as alkalis to give salt and water.** e.g. ZnO (zinc oxide) and Zn(OH)₂ (zinc hydroxide) react with both acid as well as conc. bases/alkalis (NaOH and KOH) to give salt and water.

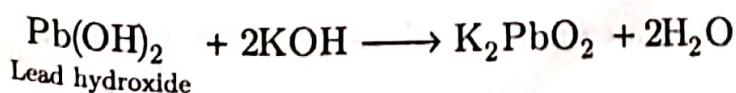
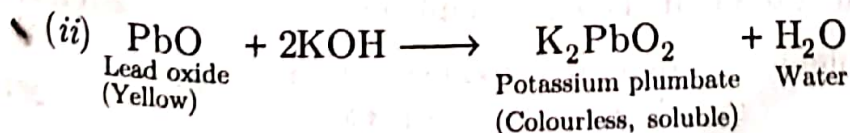
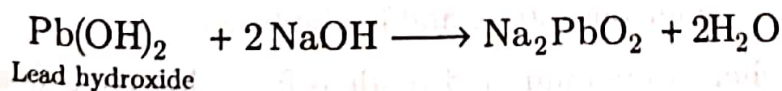
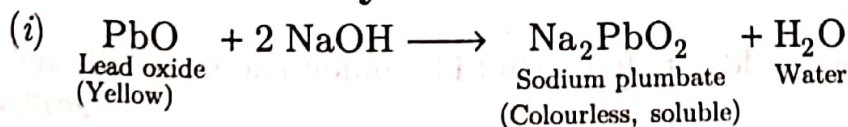
1. Zinc Oxide/Zinc Hydroxide



2. Aluminium Oxide/Aluminium Hydroxide



3. Lead Oxide/Lead Hydroxide



Previous Years' Examination Questions

1 Marks Questions

1. The salt solution which does not react with ammonium hydroxide is
(a) calcium nitrate (b) zinc nitrate
(c) lead nitrate (d) copper nitrate 2018
2. Write a balanced chemical equation.
Reaction of sodium hydroxide solution with iron (III) chloride solution. 2018
3. State one relevant observation for
'Lead nitrate solution is treated with sodium hydroxide solution dropwise till it is in excess.' 2018
4. A chloride which forms a precipitate that is soluble in excess of ammonium hydroxide, is
(a) calcium chloride (b) ferrous chloride
(c) ferric chloride (d) copper chloride 2017
5. Identify the substance underlined, in the given case.
'Cation that does not form a precipitate with ammonium hydroxide but forms precipitate with sodium hydroxide.' 2017
6. State one relevant observation for
'Action of sodium hydroxide solution on ferrous sulphate solution.' 2017
7. Fill in the blank with the correct choice given in the bracket.
..... ($\text{AgCl}/\text{PbCl}_2$), a white precipitate is soluble in excess NH_4OH . 2016
8. State your observation.
When excess sodium hydroxide is added to calcium nitrate solution. 2014, 2013
9. Give a chemical test to distinguish between the following pair of compound.
Calcium nitrate solution and zinc nitrate solution. 2013, 2006
10. Name the gas evolved on reaction of aluminium with boiling concentrated caustic alkali solution. Write the equation. 2012, 2004
11. State one observation.
Sodium hydroxide solution is added to ferric chloride solution at first a little and then in excess. 2012, 2000
12. State one chemical test between ferrous nitrate and lead nitrate. 2012
13. What would you observe when ammonium hydroxide is first added in a small quantity and then in excess to a solution of copper sulphate? 2011, 2003
14. Hydroxide of this metal is soluble in sodium hydroxide solution.
(a) Magnesium (b) Lead (c) Silver (d) Copper 2011
15. Write balanced chemical equation zinc oxide dissolves in sodium hydroxide. 2011, 2010