Chemistry - 12th Class Chemistry Chapter 3 Short Questions Preparation

Q1. What happens when borax is heated with NH_4Cl?

Ans 1: WHen borax is heated when ammonium chloride boron nitridride is produced,

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Q2. Why liquid silicones are preferred over organic lubricant?

Ans 1: The outstanding physical attribute of silicone oil is its very small change in viscosity with changing temperature,compared with the behavior of other oils of similar viscosity.If the temperature is dropped from 100^oC to 0^oC the viscosity of petroleum oil may increase about one hundred folds,whereas,that of silicons oils will increase less than four folds,in the presence of air or oxygen at temperature as high as 300^oC silicon oils remain free from acid formation,oxidation and similar phenomenon,which frequently limit the usefulness of petroleum products and other synthetic organic liquids.

Q3. Give the formula and use of Talc soap stone?

Ans 1: **Formula of soap stone**: $Mg_3H_2(SiO_3)_4$

Ans 2: **Use of soap stone:**It is physically greasy to touch.Therefore it is used in making cosmetics.It is also used in making household articles.

Q4. How borax is commercially prepared?Give two methods of preparation.

Ans 1: i) Borax is prepared by treating a hot solution of boric acid with proper amount of soda ash:
$4H_3BO_3 + Na_2CO_3 \text{--------} > Na_2B_4O_7 + 6H_2O + CO_2$

Ans 2: ii) Borax is almost exclusively obtained from calcium borate.Finely powderedcolemanite is boiled with Na_2CO_3solution.When $CaCO_3$precipitates out and a mixture of borax and sodium metaborate is formed.
$4Ca_2B_6O_{11} + 2Na_2CO_3 \text{-------} > 2CaCO_3 + Na_2B_4O_7 + 2NaBO_2$

Q5. Which elements and compounds can act as semiconductors?

Ans 1: **Elements**:Semiconductor include the elements germanium,selenium and silicons.

Ans 2: **Compounds:**Semiconductor include the compounds lead sulphide,silicon,carbide,cadmium sulphide,lead telluride,gallium arsenide and indium antimonide.

Q6. Write the formula of Borax and Chile Saltpeter.

Ans 1: Borax: $Na_2B_4.10H_2O$
Chile Saltpeter : $NanO_3$

Q7. Borate glazes are better than silicate glazes.Explain?

Ans 1: Boric acid is used in pottery as a glaze because glazes are more fusible than silicate glazes and possess a higher coefficient of expansion.

Q8. What is reaction of heat on orthoboricacid,H_3BO_3?

Ans 1: When orthoboric acid is heated strongly,it swells to frothy mass losing water molecules.It is first converted into metaboric acid then to tetra boric acid and finally to boric anhydride.

Ans 2: H_3BO_3----->HBO_2+ H_2O
HBO_2------->$H_2B_4O_7$+ H_2O
$H_2B_4O_7$---->$2B_2O_3$+ H_2O

Q9. What is the action of an aqueous solution of Borax on litmus.

Ans 1: Aqueous solution of borax is alkaline in nature due to hydrolysis.It will turn red litmus to blue.
$Na_2B_4O_7$+ $7H_2O$------>$2NaOH + 4H_3BO_3$
Borax Strong alkali Weak acid

Q10. Write the names and chemical formulas of four boric acids?

Ans 1: **Name Formulae**
i) Orthoboric acid H_3BO_3
ii) Metaboric acid HBO_2
iii) Tetraboric acid $H_2B_4O_7$
iv) Pyroboric acid $H_6B_4O_9$
