

Puspa Shrestha

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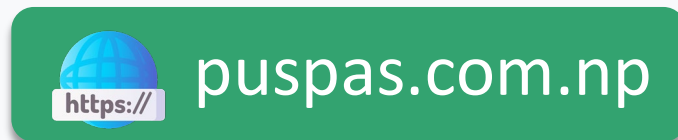


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EXPERIMENT NO. 8

NAME OF EXPERIMENT: TO PREPARE AMMONIA GAS AND STUDY ITS PROPERTIES

APPARATUS REQUIRED

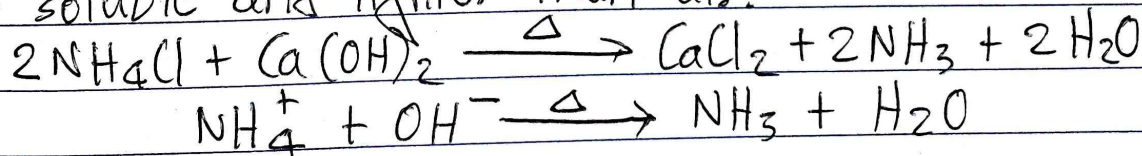
1. Round bottom flask
2. Delivery tube
3. Cork
4. Gas jar
5. Stand

CHEMICALS REQUIRED

1. Ammonium chloride
2. Slaked lime
3. Conc. HCl
4. Mercurous nitrate
5. Copper sulphate
6. Ferric chloride
7. Phenolphthalein
8. Nessler's reagent

THEORY

Ammonia gas is prepared by heating mixture of ammonium chloride and slaked lime. The gas is collected by downward displacement of air since it is water soluble and lighter than air.

PROCESS

A glass tube was taken and it was bent at right angle. A clean round bottom flask was taken. To this flask, the mixture of ammonium chloride

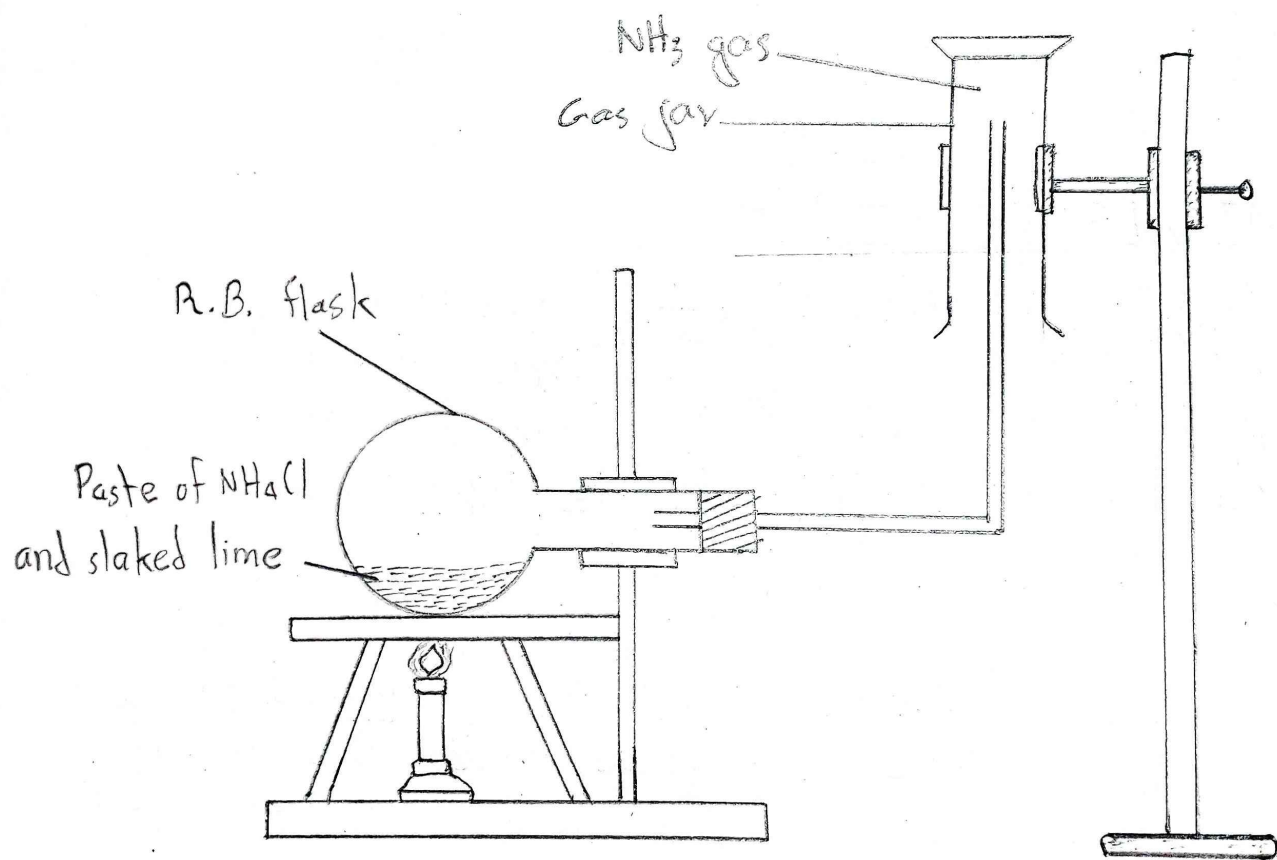


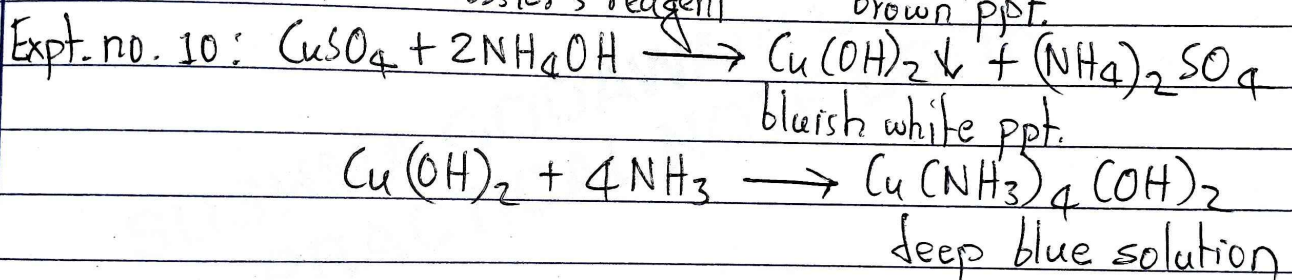
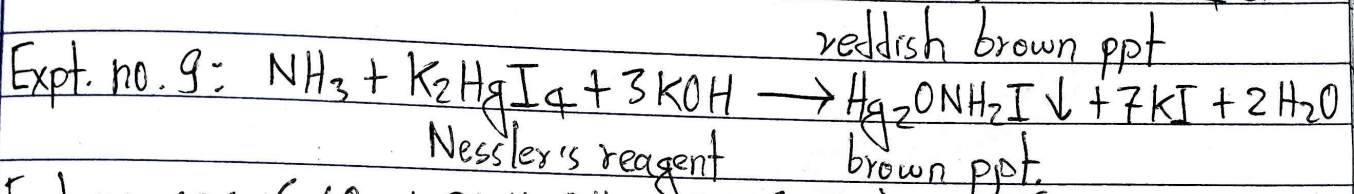
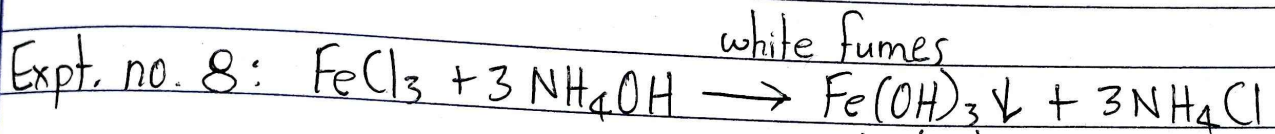
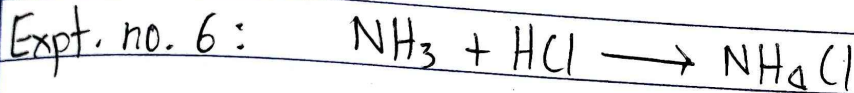
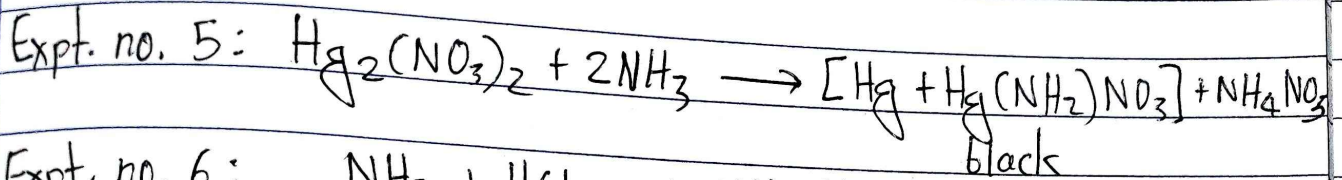
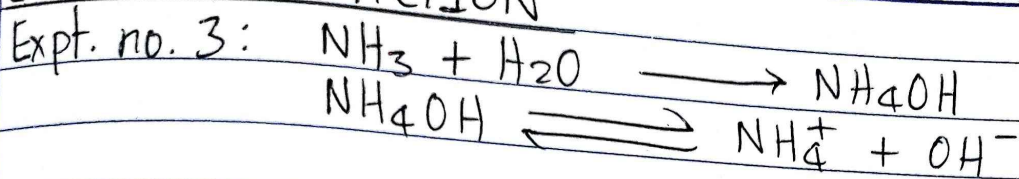
fig. Laboratory preparation of ammonia gas

and slaked lime was put in 1:2 ratio by weight. A few drops of water was added to make the mixture into paste. The apparatus was fitted as shown in figure and it was made airtight. Then the mixture was heated and the ammonia gas was collected by downward displacement of air. Its properties was studied by performing following experiments.

OBSERVATIONS

Experiment	Observation	Inference
1. The colour and odour of the gas in the gas jar was noted.	1. The gas was colourless having pungent smell.	1. It was colourless with pungent smell.
2. A lighted match stick was introduced into the inverted jar of ammonia gas.	2. The stick was extinguished and the gas did not burn.	2. It is neither combustible nor supporter of combustion.
3. A moist red litmus was introduced into the jar of ammonia.	3. The red litmus was turned to blue.	3. The gas is alkaline.
4. A jar of ammonia gas was inverted over water in a trough.	4. Water was rushed up into the jar.	4. The gas is highly soluble in water.
5. A piece of filter paper was dipped in mercurous nitrate solution and placed	5. The mercurous nitrate paper was turned to black.	5. Formation of a mixture of black metallic mercury and mercuric

near the mouth of the jar of ammonia.		amino salt.
6. A tip of glass rod was dipped in conc. HCl and brought near the mouth of the gas jar.	6. Dense white fumes were produced around the rod.	6. Formation of ammonium chloride.
7. The gas was passed through water containing a drop of phenolphthalein in a test tube.	7. The solution was turned into pink.	7. Ammonia solution is alkaline.
8. The gas was passed through $FeCl_3$ solution.	8. A reddish brown ppt. was formed.	8. Formation of ferric hydroxide.
9. The gas was passed through Nessler's reagent.	9. A brown ppt. was formed.	9. Formation of Million's base.
10. The gas was passed through $CuSO_4$ solution.	10. A bluish white ppt. was formed that dissolved when the gas was passed continuously till giving deep blue solution.	10. Formation of copper hydroxide at first which dissolves to give deep blue cuprammonium sulphate.

CONCERNED REACTIONRESULT

Ammonia gas was prepared by heating the mixture of ammonium chloride and slaked lime and its properties were studied.

PRECAUTIONS

1. While fitting the apparatus round bottom flask should be inclined slightly.
2. More water should not be used for making paste.
3. All the glasswares should be handled with care.
4. The cork should be fitted tightly to the round bottom.

flask.

5. The edge of the delivery tube should be cut smoothly and it should not be dipped into the reaction mixture.