- **Supervisor:** Dr. Jenan Abdulkarem Al-Najar
- **Branch:** Oil and Gas Refining Engineering

- **Groups No. :** R11
- **Students Name:** Rami Hassan Mohammed

Abbas Raad Qaib

- **Project Title:** Production of Hydrazine
  - **Specific Objective:**

1- Definition and Chemical Formula:

Hydrazine is an inorganic compound with the chemical formula:

$$N_2H_4$$

A simple pnictogen hydride, it is a colorless flammable liquid with an ammonia-like odor. Hydrazine (anhydrous or as the hydrate) has numerous commercial uses. The principal current use for hydrazine is as an intermediate in the production of agricultural chemicals such as maleic hydrazide. It is also used as an intermediate in the manufacture of chemical blowing agents which are used in the production of plastics such as vinyl flooring and automotive foam cushioning, as a corrosion inhibitor and water treatment agent, as a rocket propellant, and, to a lesser extent, as a reducing agent, in nuclear fuel reprocessing, as a polymerization catalyst, as a scavenger for gases, and several other uses. It has also been used as a medication for sickle cell disease and cancer. For most uses, hydrazine is produced as hydrazine hydrate in a formulation with water.

2- Other Names:

Diamine; Diazane; Tetrahydridodinitrogen (N—N)

3- Goal of Project:

To enable students to apply what they have studied, in the design of the project such as drawing the flow sheet diagram of the process, making the material and energy balance and design the equipment used in the process. Also study the environmental effect of the

materials in process and putting the suitable solutions to reduce their effects on the environment.

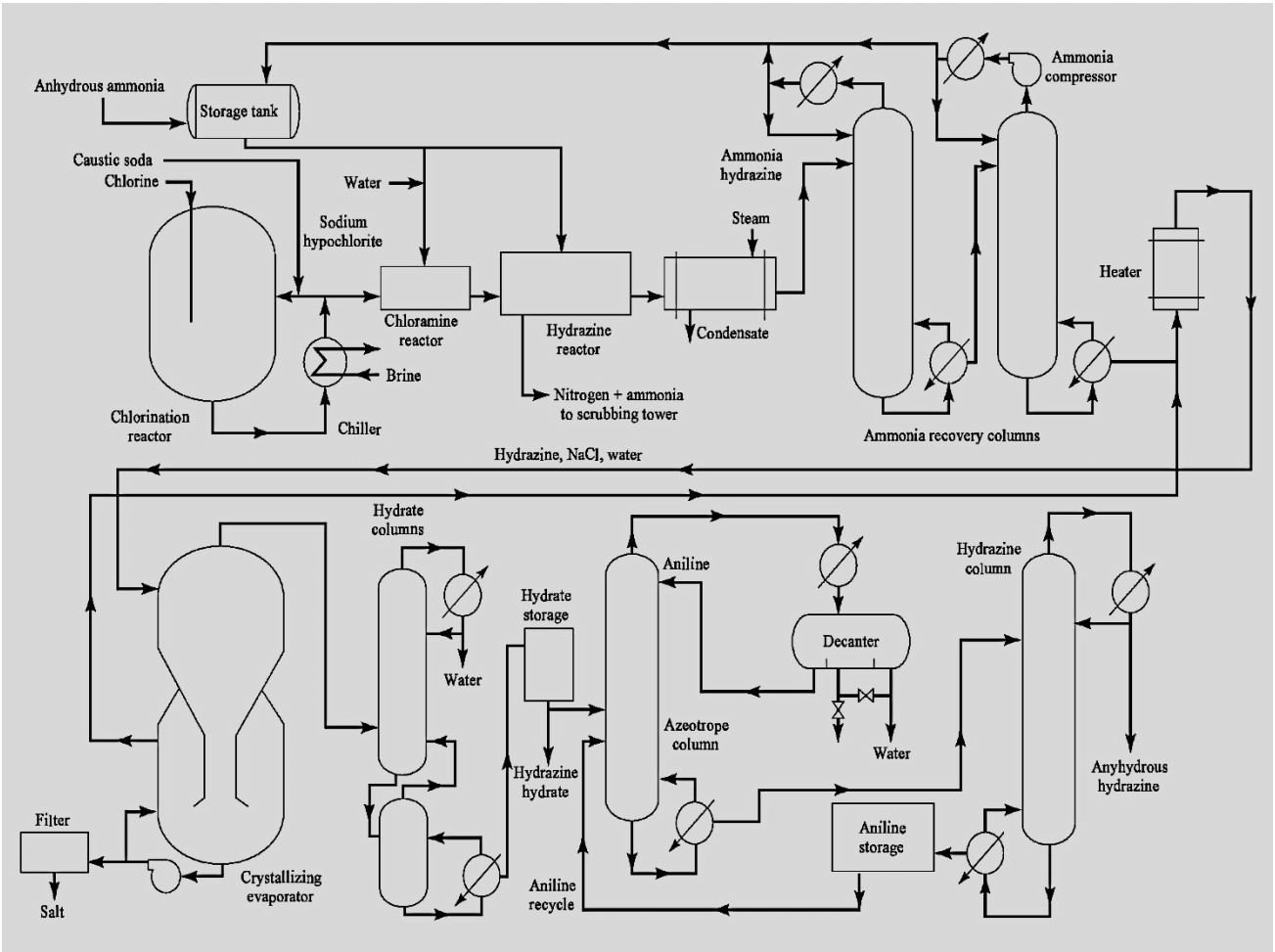
4- Production Methods:

The hydrate may be produced commercially by three methods:

- the Olin Raschig process
- Peroxide process.
- the Bayer ketazine process

The Olin Raschig process, the original commercial production process for hydrazine, involves oxidation of ammonia to chloramine with sodium hypochlorite, then further reaction of the chloramine with excess ammonia and sodium hydroxide to produce an aqueous solution of hydrazine with sodium chloride as a by-product. Fractional distillation of the product yields hydrazine hydrate solutions. Currently, most hydrazine is produced by the

5- Flow Sheet for Selected Production Method:



Olin Raschig process