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Organic Amina and Amides Leaf Answers 1. 2. a) 3-chloro-1-methyl-pentamine b) 2-methyl-cyclopentylamine c) 2-cyclohexyl-1-methyl-propylamine d) dimethyl-(3-methyl-pentyl)-Amin e) pentan-2,3-diamin f) 3-amino-4-methyl-hexanal g) 4-iodo-pentanamide h) butandiamid is also called succinamide Training Goals to determine the overall structure of amin. Identify a functional group for amines. Identify a structural feature that classifies amines as primary, secondary or tertiary. Use nomenclature systems to name amines. Aminas are classified according to the number of carbon atoms directly associated with the nitrogen atom. Primary (1) amin has one alkyl (or aril) group on a nitrogen atom, secondary (2) amin has two, and tertiary (3) amine has three (figure) (PageIndex{1}). Figure (PageIndex{1}): The structure of amines compared to water, alcohol and ether For the classification of alcohols, we look at the number of carbon atoms associated with the carbon atom carrying the OH group, not the oxygen atom itself. Thus, although isopropylamine is similar to isopropyl alcohol, the former is the main amine, while the second is secondary alcohol. The common names of simple aliphatic amines consist of an alphabetical list of alkyl groups attached to a nitrogen atom and then a suffix-amin. (System names are often used by some chemists.) The amino acid group (NH₂) is named as a subsite in more complex amines, such as those that include other functional groups or in which alkyl groups cannot simply be named. Example (PageIndex{1}) Name and classify each link. CH₃CH₂CH₂NH₂ CH₃CH₂NHCH₂CH₃ CH₃CH₂CH₂CH₂CH₃ Solution There is only one group of alkyl attached to the nitrogen atom, so the amin is primary. A group of three carbon atoms (the sawing group) attaches to the NH₂ group through the final carbon atom, so the name is propylamine. There are two methyl groups and one ethyl group on the nitrogen atom. Compound ethildimetamine, tertiary amine. Two ethyl groups are attached to the nitrogen atom; Amin is secondary, so the compound is diethylamine. Nitrogen atom has a methyl group and propyl group, so the compound methylpropylamin, a secondary amine. Exercise ((PageIndex{1}) Name and classify each connection. Example (PageIndex{2}) Draw a structure for each compound and classify. isopropylmethylamine dipropylamine Solution Title indicates that there are isopropyl groups (in red) and two methyl groups (in green) attached to a nitrogen atom; amin is tertiary. (The third link on the nitrogen atom goes to the hydrogen atom.) CH₃CH₂CH₂NHCH₂CH₂CH₃ Exercise ((PageIndex{2}) Draw a structure for each and categorize. ethylisopropylamine diethylpropylamin Basic amin, in which the nitrogen atom attached directly to the benzene ring has a special name-anilin. Aryl Aminas are named as derivatives of anilin. An example (PageIndex{3}) name this connection. Solution Benzene ring with amino acid (NH₂) group aniline. The compound is named as a derivative of anilin: 3-bromaaniline or m-bromaaniline. Exercise ((PageIndex{3}) Name this connection. Example (PageIndex{4}{4}) Draw a structure for p-ethylarilin and categorize. Solution Connection is a derivative of anilin. Example : (PageIndex{5}) Draw a structure for 2-amino-3-methylpentan(5). amine-3-ethyl-1-chlorokheptan. Ammonium ions (NH₄), in which one or more hydrogen atoms are replaced by alkyl groups, are called in the same way as for simple amines. Alkil groups are called substints, and the parent species is considered nh₄ ion. For example, CH₃NH₃ is a ion of methylammonia. Ion, formed from anilin (C₆H₅NH₃) is called anylin ion. An example (PageIndex{6}) Name each ion. CH₃NH₃ (CH₃)₂NH₂ (CH₃)₃NH (CH₃)₄N Ions Solution have one, two, three and four methyl (CH₃) groups attached to a nitrogen atom. Their names are: methylammonium ion dimethylammonium ion trimethylammonium ion tetramethylmonium ion Exercise (PageIndex{6})) The name of each ion. CH₃CH₂NH₃ (CH₃CH₂)₃NH (CH₃CH₂CH₂)₂NH₂ (CH₃CH₂CH₂CH₂)₄N' Amin is a derivative of ammonia in which one, two or all three hydrogen atoms are replaced by hydrocarbon groups. The functional group of amin is as follows: Amina is classified as primary, secondary or tertiary in terms of the number of hydrocarbon groups attached to a nitrogen atom. Aminas are called, naming alkyl groups attached to a nitrogen atom

