

2.1.1. Introduction

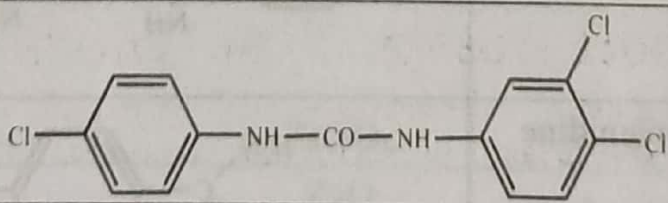
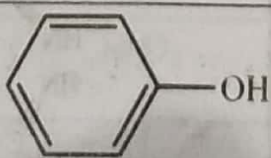
Antiseptics are applied on living tissues or skin because their antimicrobial activity helps in reducing the risk of infection, sepsis, or putrefaction. Antiseptics are different from antibiotics and disinfectants because antibiotics get transported by the lymphatic system and destroy the bacteria within the body and disinfectants kill the microbes on non-living articles. Some antiseptics are bactericidal (i.e., can destroy microbes) while others are bacteriostatic (i.e., can prevent their growth).

Disinfectants are agents which can act as a germicide and destroy microbial life. In hospitals and healthcare settings, antiseptics and disinfectants are commonly used for applying topically or on hard surfaces. These products contain many active chemical agents (biocides) such as alcohols, phenols, iodine, and chlorine. Biocides show broad spectrum antimicrobial activity but their mode of action is not as clear as that of antibiotics.

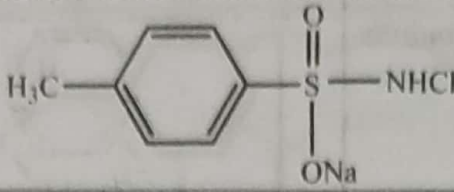
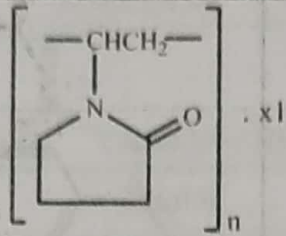
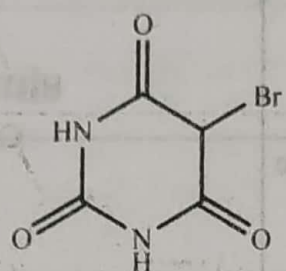
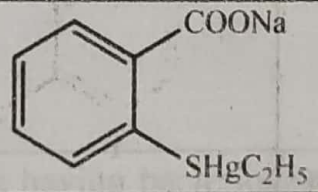
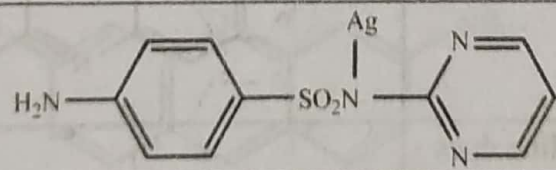
2.1.2. Classification

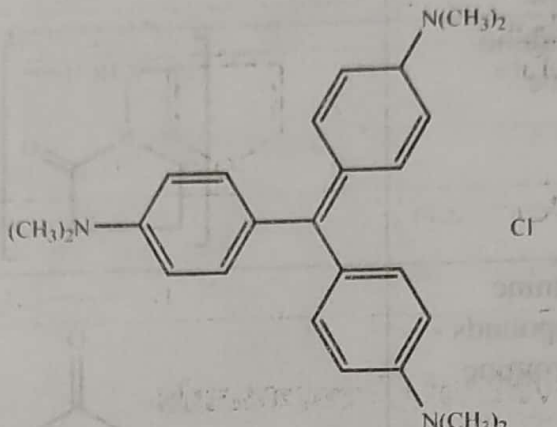
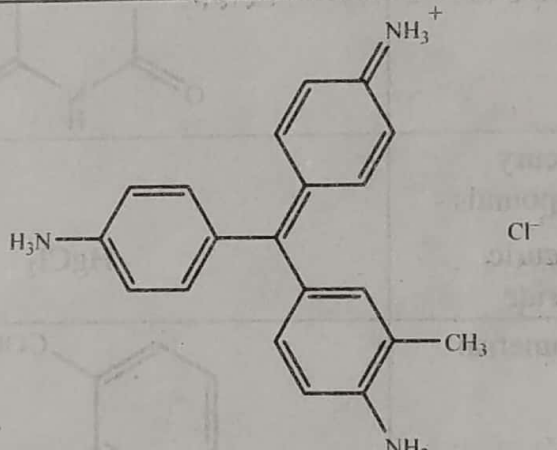
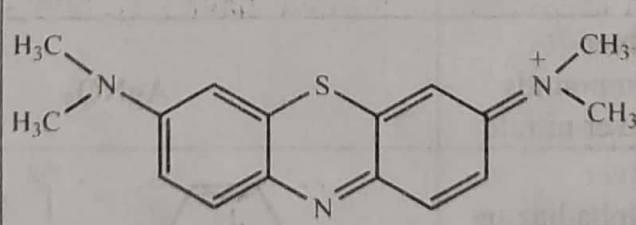
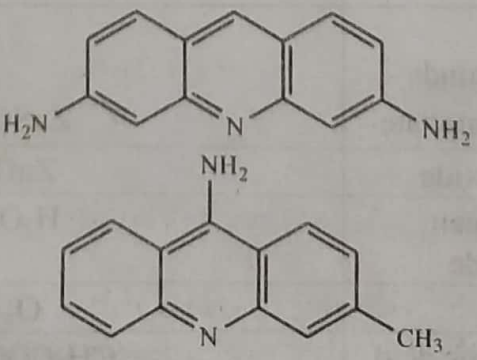
Antiseptics and disinfectants are classified as in the table 2.1:

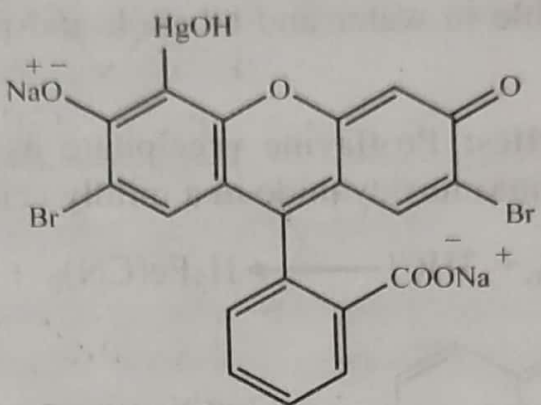
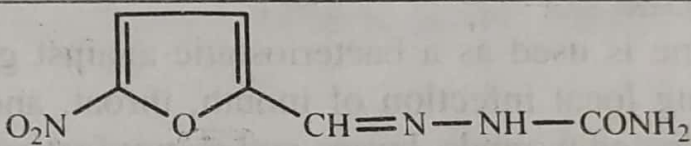
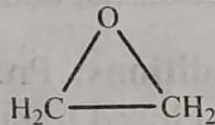
Table 2.1: Some Examples of Antiseptics and Disinfectants Along with their Applications

Classes	Names	Structures	Applications
Alcohols	Ethanol	$\text{CH}_3\text{—CH}_2\text{OH}$	Antisepsis, Disinfection, Preservation
	Isopropanol	$\begin{array}{c} \text{CH}_3 \\ \diagdown \\ \text{CHOH} \\ \diagup \\ \text{CH}_3 \end{array}$	
Aldehydes	Gluteraldehyde	$\text{CHOCH}_2\text{CH}_2\text{CH}_2\text{CHO}$	Disinfection , Preservation, Sterilisation
	Formaldehyde	HCHO	
Anilides	Triclocarbon		Antisepsis
Phenols	Phenol		Antisepsis, Disinfection, Preservation

	Thymol		
	<i>o</i> , <i>p</i> , and <i>m</i> -Cresol		
	Resorcinol		
	Chloroxylenol		
Bisphenols	Triclosan		Antisepsis, Antiplaque, Deodorants, Preservation
	Hexachlorophene		
Biguanides	Chlorhexidine		Antisepsis, Antiplaque, Disinfection, Preservation
Amidines	Propamidine		Antisepsis, Preservation

Halogen Releasing Agents	Chlorine compounds - Hypochlorous acid	HOCl	Antisepsis, Disinfection, Cleansing
	Choramine		
	Iodine compounds - Iodine	I ₂	
	Povidone iodine		
	Bromine compounds - Dibromine		
Heavy Metals	Mercury compounds - Mercuric chloride	HgCl ₂	Antisepsis, Preservation, Disinfection
	Thiomersal		
	Silver compounds - Silver nitrate	AgNO ₃	
	Silver sulphadiazine		
	Zinc compounds - Zinc sulphate	ZnSO ₄	
	Zinc oxide	ZnO	
Peroxygens	Hydrogen peroxide	H ₂ O ₂	Disinfection, Sterilisation
	Ozone	O ₃	
	Peracetic acid	CH ₃ COOOH	

Quaternary Ammonium Compounds	Cetrimide	$\left[\begin{array}{c} \text{H}_3\text{C} \quad \text{CH}_3 \\ \diagdown \quad \diagup \\ \text{N} \\ \diagup \quad \diagdown \\ \text{H}_3\text{C} \quad \text{C}_n\text{H}_{2n+1} \end{array} \right]^+ \text{Br}^-$	Antisepsis, Preservation, Disinfection, Cleansing
	Benzalkonium chloride	$\left[\begin{array}{c} \text{C}_6\text{H}_5 - \text{CH}_2 - \text{N}^+ \begin{array}{l} \diagup \text{CH}_3 \\ \diagdown \text{C}_n\text{H}_{2n+1} \end{array} \\ \diagup \text{H}_3\text{C} \end{array} \right]^+ \text{Cl}^-$	
Dyes	Triphenylmethane dyes - Gentian violet		Disinfection
	Basic Fuchsin		
	Thiazine dyes - Methylene blue		
	Acridine dyes - Proflavin		

	Xanthine dyes - Mercurochrome		
Acids	Boric acid	H_3BO_3	Preservation
	Acetic acid	CH_3COOH	
Furan Derivatives	Nitrofurantoin		Antisepsis
Oxides	Ethylene oxide		Sterilisation, Disinfection