Introduction to Organic Chemistry

-> Functional group - it is the part of the molecule that largely dictates how it reacts -> Alcohel - OH -> Carboxylic - OH -> Ketone - -C--> Aldengde - - C-M -> Alkene - C=C' -> Alkane - C-C 2-0 -> Ester -× can be C12 Bry I, -> Halogenoalkanes - C-X -> Skeletal formulae 1. CH3 CH2 CH3 → methylgroup 2. CH3 CM (CH3) CH2 CH3 dung 3. (M2 CM (OH) CH2 CM3 4. CH3 CH2 COOM 5. (N2 = CM CM3 =

= Structural Isomerism - Structural icomers are molecules with the same molecular formula but different structural formula. -> Three types - CHAIN ISOMERISM -> FUNCTIONAL GROUP ISOMERISM -> POSITION ISOMERISM - Chain isomerism H И-С-С-С-И-З СЦИЮ-З Butane H Miff H-C-H H Structural Formula H-C-C-C-H J CLH10 J 2 me CLH10 - 2 methyl propane -> Functional Group Isomers CH3COOM -> C2H402 -> Ethanoic acid H-C Same molecular formula diff functional groups DE H H-C-O-CHH -> HCO2 CH3 -> C2H402-> Ester Ĥ -> Aldeholde and ketone are functional group isomers.

-> Position Isomerism H-C-C-C-O-M -> C3H80 -> Propanal Propan-1-01 H H H diff Same Position rolecular H O-H H of Force. Formular H-C-C-C-H-J C3 M80 -> # Propan-2-01 H H H => Stereoisomerism -> Steroisomers are isomers with the some structural formula but different fully displayed formula due to different arrangements of atoms in space. -> Two Types -> Geometric isomerism - Optical isomerism -> Geometric Isomerism -s only valid for alkenes - it occurs due to restricted rotation about the CEC band. But-2-ene Сиз си= Сисиз Example : H = C = C $C H_{3} = C H_{3}$ (2) cis-but-2-ene (E) trans-but-2-ene Cis means some groups on some sides trans means some groups on different sides \rightarrow there has to be 2 different groups present on carbon. $\begin{bmatrix} M \\ C = C \\ H \end{bmatrix}$ if two same are present cis-trans isomerism is NA M, C = C, CM_3 it should be

- Optical Isomerism -> A chiral centre is an asymmetric carbon atom bonded to four different groups. D- AB -> Chirality results in non-superimposable mirror images -> These mirror images are called optical isomorg. D-С-В Е B-C-D mirror line и он- С*--- сизсиз Д Carbon СИ3СИ2 (СИЗСИ2 => Breaking of bonds Heterolytic Fission Homolytic Fission when a bond breaks such that when a bond breaks such that both the bonded electrons are taken one electron is retained by both by one species, while the other is defend species that were bonded together A free radical is formed. A species This results in the formation of positive with an unpaired electron and negative ions.

> Carbocations and their stability > Primary Terhary Secondary CNB CH2 CH2 cm - C+ CH3 CH CM3 CUZ when the carbocation when the carbo cation is attached to 2 other is attached to only 3 other carbon atoms it is one other carbon atom carbon atoms then Torhary. then it is primary. it is secondary least stable most stable more stable => Types of organic reactions =) Types of organic reactants 1. Electrophiles - Electron deficient 1. Addition 2. Nucleophiles - Electron rich 2. Substitution 3. Elimination 4. Hydrolysis 5. Oxidation 6. Reduction