Basic concepts of organic chemistry

Specification reference	Checklist questions	
4.1.1 a	Can you apply IUPAC rules of nomenclature for systematically naming organic compounds?	☐
4.1.1 b i	Can you interpret and use the term *general formula* (the simplest algebraic formula of a member of a homologous series)?	☐
4.1.1 b ii	Can you interpret and use the term *structural formula* (the minimal detail that shows the arrangement of atoms in a molecule)?	☐
4.1.1 b iii	Can you interpret and use the term *displayed formula* (the relative positioning of atoms and the bonds between them)?	☐
4.1.1 b iv	Can you interpret and use the term *skeletal formula* (the simplified organic formula, shown by removing hydrogen atoms from alkyl chains, leaving just a carbon skeleton and associated functional groups)?	☐
4.1.1 c i	Can you interpret and use the term *homologous series* (a series of organic compounds having the same functional group but with each successive member differing by CH_2)?	☐
4.1.1 c ii	Can you interpret and use the term *functional group* (a group of atoms responsible for the characteristic reactions of a compound)?	☐
4.1.1 c iii	Can you interpret and use the term *alkyl group* (formula C_nH_{2n+1})?	☐
4.1.1 c iv	Can you interpret and use the term *aliphatic* (a compound containing carbon and hydrogen joined together in straight chains, branched chains or non-aromatic rings)?	☐
4.1.1 c v	Can you interpret and use the term *alicyclic* (an aliphatic compound arranged in non-aromatic rings with or without side chains)?	☐

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Specification reference	Checklist questions	
4.1.1 c vi	Can you interpret and use the term *aromatic* (a compound containing a benzene ring)?	☐
4.1.1 c vii	Can you interpret and use the term *saturated* (single carbon–carbon bonds only) and *unsaturated* (the presence of multiple carbon–carbon bonds, including C=C, C≡C and aromatic rings)?	☐
4.1.1 d	Can you use the general formula of a homologous series to predict the formula of any member of the series?	☐
4.1.1 e	Can you explain the term *structural isomers* (compounds with the same molecular formula but different structural formulae) and determine possible structural formulae of an organic molecule, given its molecular formula?	☐
4.1.1 f i	Can you describe homolytic fission (in terms of each bonding atom receiving one electron from the bonded pair, forming two radicals)?	☐
4.1.1 f ii	Can you describe heterolytic fission (in terms of one bonding atom receiving both electrons from the bonded pair)?	☐
4.1.1 g	Can you describe the term *radical* (a species with an unpaired electron) and use of ‘dots’ to represent species that are radicals in mechanisms?	☐
4.1.1 h	Can you explain a ‘curly arrow’ described as the movement of an electron pair, showing either heterolytic fission or formation of a covalent bond?	☐
4.1.1 i	Can you describe reaction mechanisms, using diagrams, to show clearly the movement of an electron pair with ‘curly arrows’ and relevant dipoles?	☐