SALTERS ADVANCED CHEMISTRY

"CHECK YOUR NOTES" : THE ATMOSPHERE (1)

Print the list below and **tick the box supplied when you have covered the topic in your notes**. Most of the points are covered in the ***Chemical Ideas***, with supporting information in the ***Storyline*** or ***Activities***. However, if the main source of information is the ***Storyline*** or an ***Activity***, this is indicated.

1	The gases present in the atmosphere, including some major pollutants, understand values for composition by volume measured in percentage concentration and in parts per million (ppm) (**Storyline A1**).	☐
2	The idea that rotational, vibrational and electronic energies are quantised.	☐
3	The qualitative changes in rotational, vibrational and electronic energy of molecules caused by the absorption of radiation of appropriate frequency.	☐
4	The relationship between frequency and energy of electromagnetic radiation.	☐
5	The structure and reactivity of ozone and the way it is formed and destroyed in the stratosphere; how ozone acts as a sunscreen (**Storyline A3; Activity A3.1**),	☐
6	The factors that affect the rate of a chemical reaction and the use of collision theory to explain the effects.	☐
7	The meaning of the terms: *enthalpy profile* and *activation enthalpy*.	☐
8	The use of the concept of activation enthalpy to explain the qualitative effect of temperature changes on rate of reaction.	☐
9	The role of catalysts in providing alternative routes of lower activation enthalpy, homogeneous catalysis in terms of the formation of intermediates.	☐
10	The difference between homolytic and heterolytic fission of a covalent bond.	☐
11	The formation, nature and reactivity of radicals; the mechanism of a radical chain-reaction involving initiation, propagation and termination.	☐
12	The reaction of alkanes with halogens (**Activities A3.2** and **A3.3**).	☐
13	The nature and names of halogenoalkanes.	☐
14	The meaning of the terms: *hydrolysis, substitution, nucleophile* and *carbocation*.	☐

SALTERS ADVANCED CHEMISTRY

"CHECK YOUR NOTES" : THE ATMOSPHERE (2)

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15	Outline of the preparation of a halogenoalkane from an alcohol, and the principal stages in the purification of an organic liquid product (**Activity A4.2**).	☐
16	The characteristic properties of halogenoalkanes, comparing fluoro-, chloro-, bromo- and iodo-compounds; boiling points, formation of radicals by interaction with ultraviolet radiation (**Storyline A3**), and nucleophilic substitution with water, hydroxide ions and ammonia.	☐
17	The mechanism of nucleophilic substitution in halogenoalkanes.	☐
18	The use of relative electronegativity values to predict bond polarity in a covalent bond; the relationship between reactivity of halogenoalkanes and bond enthalpy and bond polarity,	☐
19	The nature and uses of chlorofluorocarbons (CFCs) (**Storyline A4**) and the relative advantages and disadvantages of replacement compounds (**Activity A4.3**).	☐
20	The chemical basis of the depletion of ozone in the stratosphere due to halogenoalkanes, involving the formation of halogen atoms and the catalytic role of these atoms in ozone destruction (**Storyline A3**).	☐
21	The relationship between the 'greenhouse effect' in the troposphere and the absorption characteristics of atmospheric gases (**Storyline A6** and **A7**, **Activity A6**).	☐
22	A comparison of the different approaches to the control of global warming through the control of carbon dioxide emissions (**Storyline A9**; **Activity A9**).	☐
23	The meaning of the term: *dynamic equilibrium*.	☐
24	The physical and chemical changes occurring when carbon dioxide dissolves in water, and the associated equilibria.	☐
25	The use of Le Chatelier's Principle to explain and predict the effects on the position of equilibrium of changes in concentration, temperature and pressure.	☐