

Data Sheet for Chemistry B (Salters)

(version 2.2)

GCE Advanced Level and Advanced Subsidiary

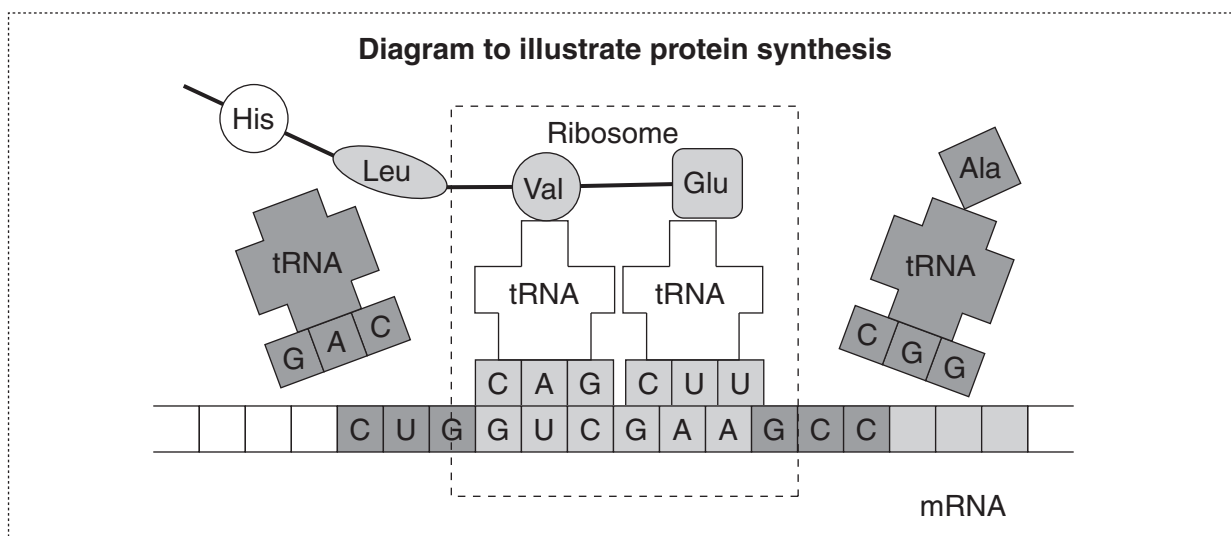
Chemistry B (Salters) (H035, H435)

Chemistry units F331–F336

The information in this sheet is for the use of candidates following Chemistry B (Salters) (H035/H435). Copies of this sheet may be used for teaching.


Instructions to Exams Officer/Invigilator

- A copy of this Data Sheet will be included as an insert with each question paper. This should be given up to the Invigilator at the end of the examination.
- **Do not send this Data Sheet for marking; it should be retained in the centre or destroyed.**

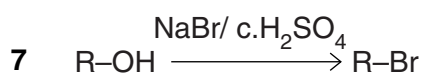
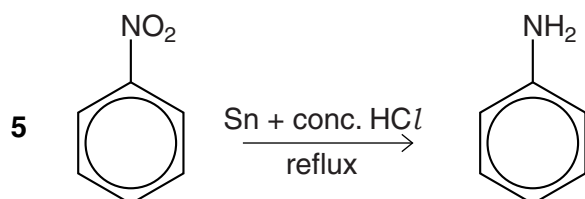
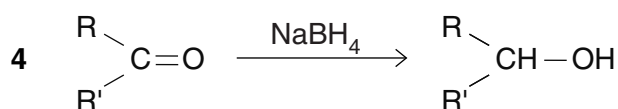
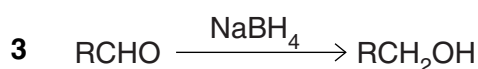
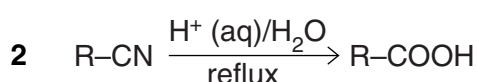
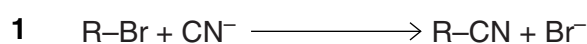


ADAPTED FROM SALTERS' ADVANCED CHEMISTRY: CHEMICAL STORYLINES BY GEORGE BURTON. REPRINTED BY PERMISSION OF HARCOURT EDUCATION

Characteristic infrared absorption in organic molecules

bond	location	wavenumber/cm ⁻¹	intensity
C—H	alkanes	2850–2950	M–S
	alkenes, arenes	3000–3100	M–S
	alkynes	ca. 3300	S
			M medium S strong * hydrogen bonded
C=C	alkenes	1620–1680	M
	arenes	several peaks in range 1450–1650	variable
C≡C	alkynes	2100–2260	M
C=O	aldehydes	1720–1740	S
	ketones	1705–1725	S
	carboxylic acids	1700–1725	S
	esters	1735–1750	S
	amides	1630–1700	M
C—O	alcohols, ethers, esters	1050–1300	S
C≡N	nitriles	2200–2260	M
C—F	fluoroalkanes	1000–1400	S
	chloroalkanes	600–800	S
	bromoalkanes	500–600	S
O—H	alcohols, phenols	3600–3640	S
	*alcohols, phenols	3200–3600	S (broad)
	*carboxylic acids	2500–3200	M (broad)
N—H	primary amines	3300–3500	M–S
	amides	ca. 3500	M

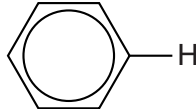
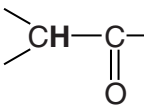
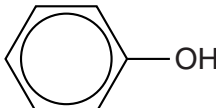
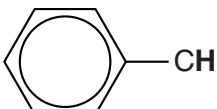
Some useful organic reactions



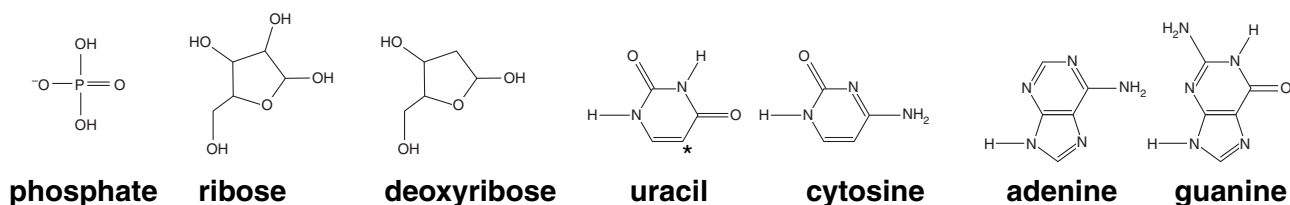
Chemical shifts for some types of protons (¹H) in NMR spectra

Chemical shifts are for hydrogen (¹H) relative to TMS (tetramethylsilane).

They are typical values and can vary slightly depending on the solvent, concentration and substituents.

type of proton	chemical shift, δ /ppm	type of proton	chemical shift, δ /ppm
$\text{CH}_3\text{—C}$	0.7–1.6		6.4–8.2
$\begin{array}{c} \text{C—CH}_2\text{—C} \\ \\ \text{C—CH—C} \\ \\ \text{C} \end{array}$	1.4–2.3	—C—CHO	9.4–10.0
 carbonyls esters amides acids	2.0–2.7	—C—OH	0.5–4.5*
—CH—N amines amides	2.3–2.9		4.5–10.0*
	2.3–3.0	—C—NH	1.0–5.0*
—O—CH alcohols esters ethers	3.3–4.8	—CO—NH	5.0–12.0*
—CH—Cl or Br	3.0–4.2	—CO—OH	9.0–15.0*
—CH=CH—	4.5–6.0	*these signals are <i>very</i> variable (sometimes outside these limits) and often broad.	

Monomers of DNA and RNA



(thymine has a CH_3 at position *)

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

© OCR 2014

GCE Chemistry B (Salters)

