

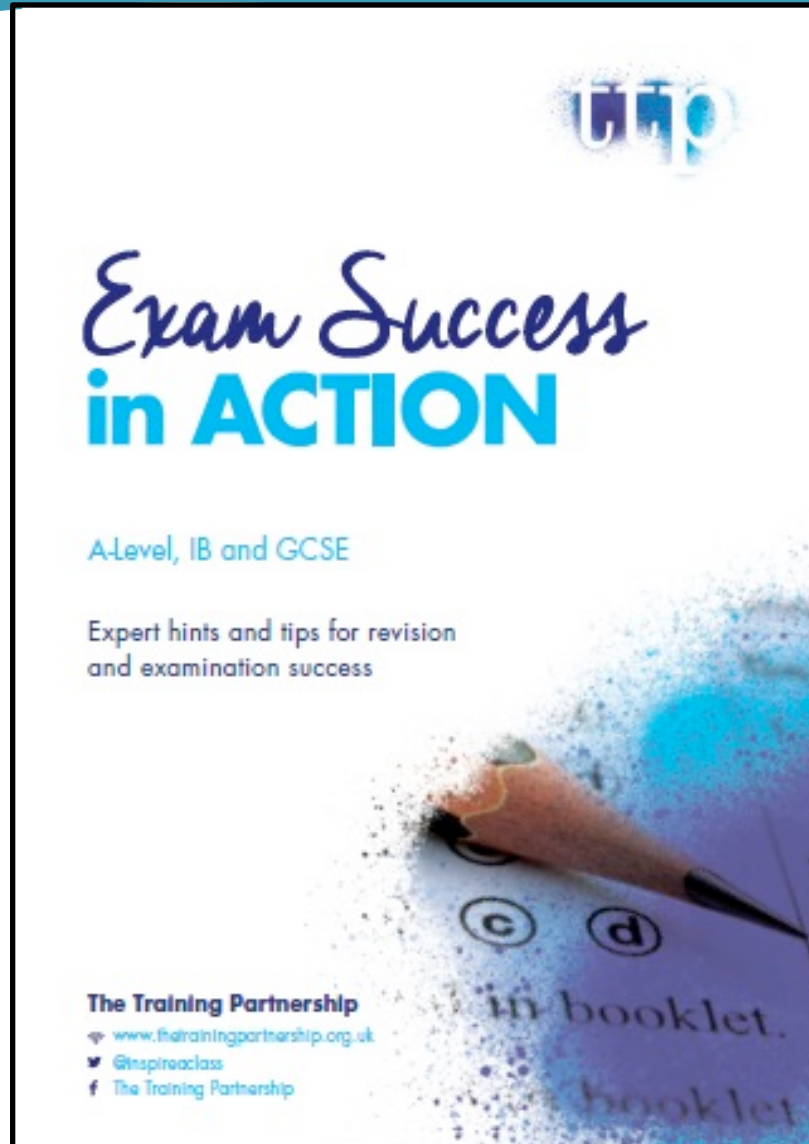
# **A-level Chemistry Exam Hints & Tips**

**Chemistry in Action - Wednesday 28<sup>th</sup> February 2018**

**Dr Peter Hoare, Outreach Officer, SAgE Faculty**



Available in your delegate packs.....



# A-level Chemistry Examinations

## Mark allocation

- 1 mark = 1 scoring point

## LEARN the content!

- 35% marks across the papers are for factual recall ! ☹️

The crucial piece of advice *re.* examinations technique:

- R Read
- T The
- F **FULL**
- Q Question! 😊

# RTFQ – Example #1

## Question:

....calculate the  $A_r$  from the supplied data –  
give your answer to 1 d.p.

## Candidate's answer:

85.297

- doesn't score the mark (answer not given to 1 d.p.) ☹️

# RTFQ – Example #2

## Question:

Name a reagent which could be used to convert ethanol to ethene?

## Candidate's answer:

c  $\text{H}_2\text{SO}_4$

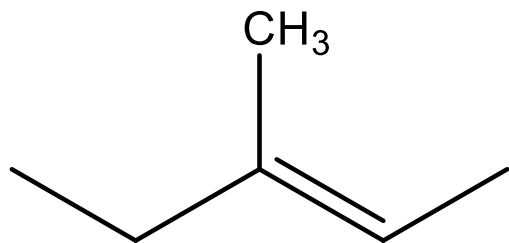
- doesn't score the mark (answer isn't a **name**) ☹️

# RTFQ – Example #3

## Question:

Draw the skeletal formula of 3-methylpent-2-ene?

## Candidate's answer:



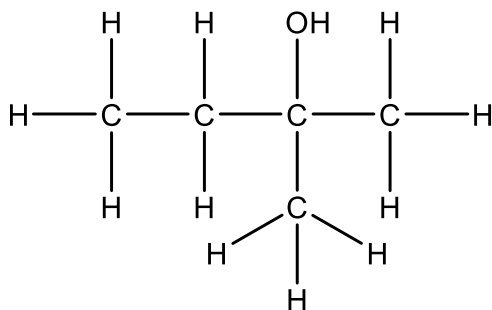
- doesn't score the mark ("CH<sub>3</sub>" not a skeletal representation)

# RTFQ – Example #4

## Question:

Draw the displayed formula of 2-methylbutan-2-ol?

## Candidate's answer:



- doesn't score the mark (“OH” not a displayed representation
  - **ALL** bonds **MUST** be shown)

# General Points



# Some obvious points.....

- Write clearly and legibly – use your bestest handwriting! - if the examiner can't read it or there is any ambiguity – can't award the mark(s).
- DON'T overwrite letters – cross out and rewrite above/below the original answer.
- DON'T waffle and/or write down everything you can think of which might be vaguely relevant.....  
(**contradiction** or the **list principle** will apply).
- Comparison questions – MUST refer to BOTH things in your answer to potentially score all the marks.
- Avoid using the word “**it**” in answers.

# Speling & Grammer?

- Generally, minor spelling errors are overlooked, e.g. cromium, clorine, flourine (☹), sulfur (☺), pottasium, zink, phosphorous, etc. (*you have a PT in the Exam....!*)
- BUT
- IUPAC names MUST be completely correct; e.g. 2-methlypropane, but-2-ol, pent-3-one - **all incorrect!**

# IUPAC naming – Example

## Question:

Name this molecule,  $\text{CFCl}_3$ ?

## Candidate's answer:

fluorotrichloromethane

- doesn't score the mark (trichlorofluoromethane is correct answer)

IUPAC Rule – “if more than one prefix, list in **alphabetical** order *ignoring multipliers*”

# Name or Formula?

- RTFQ! - generally can give either unless question specifies one or the other?
- If you have a choice I suggest always go for the **name**
- As already stated – minor spelling errors overlooked;
- **Incorrect formulae always penalised – wrong chemistry!**
- e.g. phosphoric acid – OK 😊
- **but  $\text{H}_2\text{PO}_4$  – NOT OK (incorrect formula)**

# Terminology?

- Chemistry is a science and like all of them has a specific vocabulary of technical terminology you need to use correctly!
- Atom, molecule, ion – know what these terms mean and use them correctly!
- If you're not sure, “species” is a catch all term that may not score you a mark but shouldn't lose you one!

# Terminology – Example

## Question:

Explain why sodium chloride has a high melting point?

## Candidate's answer:

The *molecules* of sodium chloride.....

- zero marks for the Q (Chemical Error (CE) – sodium chloride is NOT molecular!) ☹️

# Reagents?

- a reagent is a whole chemical you can have in a bottle (or other container)

**Reagents:** NaOH, H<sub>2</sub>O, H<sub>2</sub>SO<sub>4</sub>, KCN, NH<sub>3</sub>, etc

**NOT reagents:** OH<sup>-</sup>, H<sup>+</sup>, CN<sup>-</sup>, etc (these are *species*)

# Observations

- Something you can SEE:  
e.g. colour change;  
gas produced;  
precipitate (ppt) forms or dissolves;  
**NOT** exothermic or endothermic.
- Terminology:  
e.g. effervescence **not** “fizzes”;  
colourless **not** “clear”;  
no observable change OR no visible change  
**not** “no observation”.



# Quantitative Chemistry

aka “Sums” ☹️

# Quantitative chemistry

- ALWAYS show your working! ☹️
- Where possible – check if your answer is sensible?
- Balancing an equation – check if it is? ☹️

# Quoting numerical answers.....

**dec. pl. OR sig. figs?**

**e.g. 1 1.2345 ?**

**e.g. 2 12.345 ?**

**e.g. 3 123.45 ?**

***The default is minimum 3 sig. figs. (unless the question specifies something different)***

Quoting numerical answers.....

**Don't forget your.....**

**UNITS !!!!!!! ☺**

# Learning Resources - Crystallography

Uses **FREE** online viewer of real X-ray xtallography 3D structures:  
**CSD Access Structures**

**Peer-produced:** Nuffield Bursary yr12 summer students & 4<sup>th</sup> year MChem project students.

**Trialled worldwide!**

Results

CCDC #	Refcode
<input checked="" type="checkbox"/>	243822
<input checked="" type="checkbox"/>	ABABEL

ABABEL : 4-Chloro-3-phenylquinolin-2(1H)-one  
Space Group: P21/c, Cell: a 11.1366(12)Å b 6.9872(7)Å c 15.3869(16)Å,  $\alpha$  90°  $\beta$  93.736(2)°  $\gamma$  90°

3D viewer

Chemical diagram

Download +

Style: Ball and Stick, Labels: No Labels, Packing: None, Measure: None

00:28 17/06/2016

Theory and work sheets on range of topics for AS/A2 chemistry, including; organic functional groups, E/Z and optical isomerism, structure of benzene, VSEPR, TM complex shapes, reaction mechanisms, intermolecular forces, *etc.*  
Access via website: <http://tiny.cc/ccdcLR>

# Learning Resources – Proteins/Biomolecules

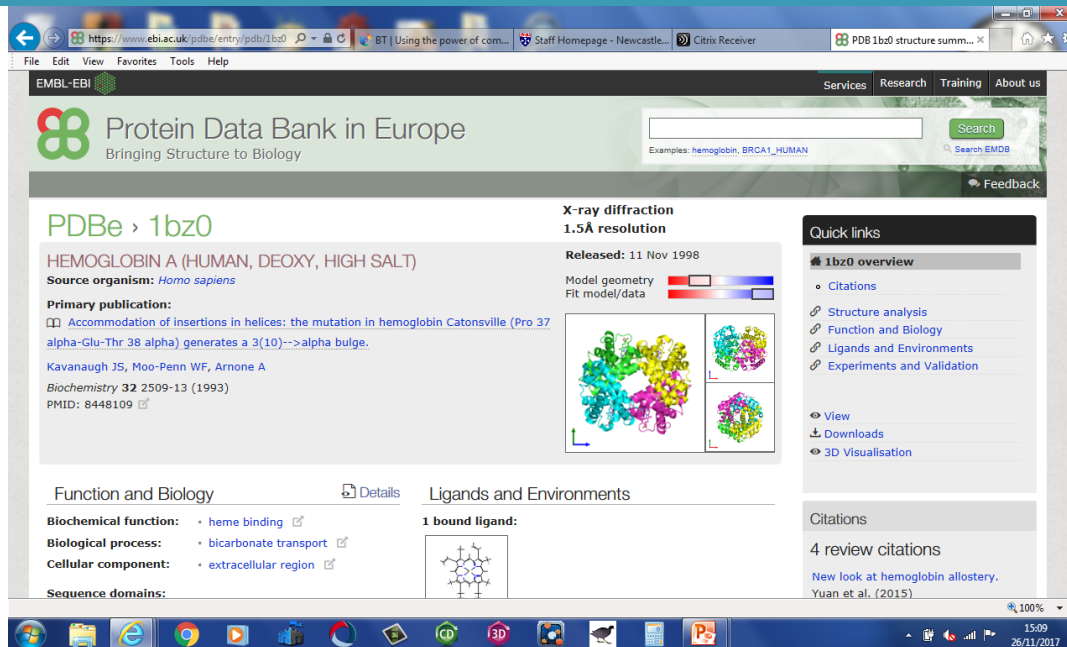
Uses **FREE** online viewer of 3D protein structures via the PDBe website: [www.pdbe.org](http://www.pdbe.org)

Peer-produced: stage 4 MChem project student & Nuffield Research Placement students.

Trialled/trialling in schools.

Activities for post-16 study on a range of topics for **chemistry** & **biology** including; basic protein structure, intermolecular forces, esp. H-bonding, ligand-protein interactions & links to drug design. Also **3D modelling** with TangleProtein™ & MSOE Amino-Acids kits.

Access via website: <http://tiny.cc/proteinLR>



The screenshot shows the Protein Data Bank (PDB) website interface. The main heading is "Protein Data Bank in Europe" with the tagline "Bringing Structure to Biology". The search bar contains "PDB 1b20 structure summ...". The main content area displays the entry for "HEMOGLOBIN A (HUMAN, DEOXY, HIGH SALT)" with a resolution of 1.5Å. It includes a 3D structure visualization of the protein, a "Quick links" section with options like "Citations", "Structure analysis", and "Function and Biology", and a "Citations" section showing "4 review citations". The bottom of the page shows a Windows taskbar with various application icons and the system clock displaying "15:09 26/11/2017".

# AS & A2 Revision Workshops

**AS/year 12 content workshop**

**A2/year 13 content workshop**

Most workshops 10.00am - 4.00pm;  
held at various venues across England:

**Newcastle, London, Nottingham, Salford,  
West Midlands, Bideford, Bristol (A2 only)**



Workshops lead by Dr Peter Hoare – 29 years A-level teaching experience & 24 years marking experience for a major UK Exam Board.

Workshops interactive with electronic voting handsets “zappers” used to answer exam-style questions which cover key points/misconceptions.

Content covers **ALL** main UK chemistry specifications – *i.e.* AQA, OCR, Edexcel, WJEC & CCEA.

**Bookings online: <http://tiny.cc/chemrw18>**

# Contact

Dr. Peter Hoare, Outreach Officer

- [peter.hoare@ncl.ac.uk](mailto:peter.hoare@ncl.ac.uk)
- Twitter: [@PHoare1963](https://twitter.com/PHoare1963) OR [@ChemOutreachNCL](https://twitter.com/ChemOutreachNCL)
- Revision Workshops: <http://tiny.cc/chemrw18>

## Thank you for listening!