The 'GaoKao' High School chemistry curriculum - implications for transition to UK HE

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What is the 'GaoKao'?

The national college entrance exam is the mode of assessment for all 18-year olds in mainland China. 100% final-exam based:

Mandatory	Science electives	(some) Arts electives
Mandarin	Chemistry	History
English	Physics	Politics
Mathematics	Biology	Geography

The GaoKao is increasingly accepted as an entry point into UK HE generally (Sino-foreign joint institutes, or see: [1]).

High school progression

Years 1 & 2: Content focus		Year 3: Exam focus
All subjects mandatory	National standard Specialise in 'sciences' / 'arts'; Chem, Phys, Biol. all included	Chosen subjects only. No new taught content.
	New regional curriculum Choose *n* from a mixture of sciences & arts subjects	
Ages 15-16	Ages 16-17	Ages 17-18

'GaoKao' chemistry taught content

Mandatory content (forms most of exam content)

1: Features of chemistry & basic methods in research
2: Basic concepts and theories of chemistry
3: Common inorganic substances and their applications
4: Common organic substances and their applications
5: Fundamentals of practical chemistry

Elective content (one taught at schools' discretion)

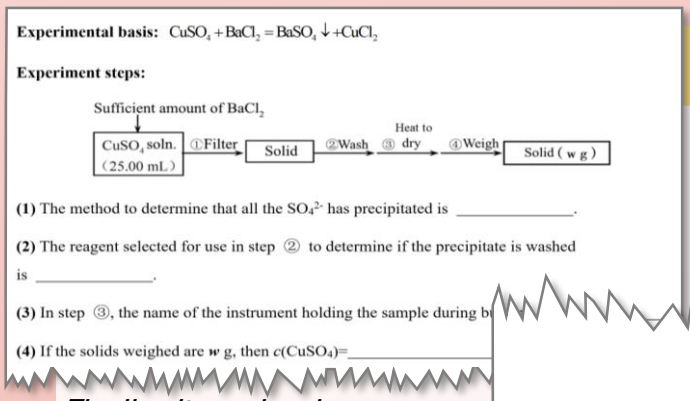
1: Chemistry and life
2: Chemistry and technology
3: Materials structure and properties
4: Fundamentals of organic chemistry

Practical content

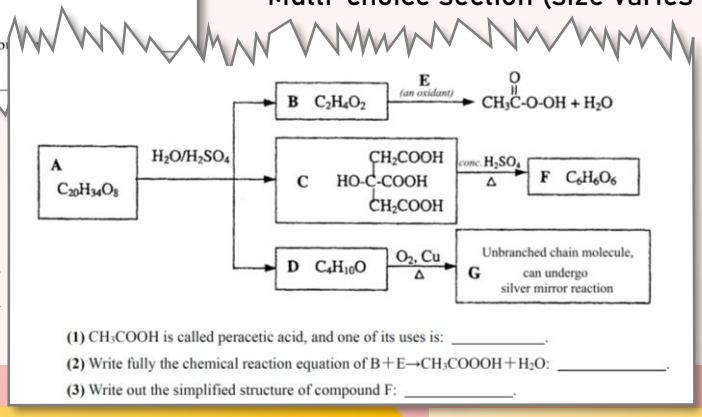
9 mandatory experiments
(Not assessed. Students may not actually carry it out themselves.)

e.g.) *"Factors influencing reaction rates"*

Plus 9 elective experiments
Conducted at schools' discretion



Tianjin city regional paper
A typical experimental method question



Shanghai city regional paper
The only organic chemistry question

Exam paper examples – distinguishing features

- Regional exam papers based on a national curriculum
- Working-out not marked; multi-choice or short answer only
- Multi-choice section (size varies regionally), then short answer section
- Questions on apparatus and experimental design are common
- Focus on algebra problem solving (e.g. for product masses from competing reactions)
- Students often reflect that the content of the papers are not regarded as important, rather the process is focussed on

Try the 'GaoKao' yourself!

Real translated* 2020 exam papers and more detailed curriculum documents are available at:

Translated national curriculum files[2] & 2020 exam papers:
https://tinyurl.com/y5syv465

**NB. translation done by us – these are not official translations!*

Reflections on impact for transition to HE

Observations on managing students' transition to UK chemistry HE:

- Strengths in physical and applied (e.g. industrial) chemistry;
- Highly motivated;
- Experienced in spectroscopic theory but not in its application;
- Unlikely to have encountered organic mechanisms relative to UK A-level[3]– will need (re)-introduction;
- Minimal (or varied) first-hand experience, low confidence with practical chemistry;
- Little/no experience in report writing as Gaokao is exam-focussed;
- Lack of experience writing long-form about chemistry in general, even in Mandarin;

[1] e.g.) https://qips.ucas.com/qip/china-gaokao [28/7/20]
[2] moe.gov.cn/jyb_xwfb/s5147/201902/t20190202_368837.html [28/7/20]
[3] D. Read & C. Harrison (2015) *Review of A-level chemistry content* Southampton, GB.