

**Minimise Study Time**  
**Maximise Scores**



## Study Tip # 36: VCE Exam Advice – Unit 2 Chemistry

### Before the Exam

Success in Chemistry examinations relies on mastering a number of areas:

- Understanding the coursework.
- The ability to analyse and explain concepts.
- Accurate calculations.

#### Understanding the Coursework

- Read all outcomes from your course and understand what could be required from each. You must be able to correctly define terms/concepts as specified in the study design. Learn these and practice them when writing practical reports or doing revision.
- Chapter summaries are a good way to start revising. Also going back over text questions helps keep the various topics current in your mind. The more questions you do, the faster you will be in an exam and the better your result.
- Rote learn the necessary sections of the course as you progress through it. It is particularly important that you commit the following to memory since you will also rely on this knowledge in Year 12:
  1. Solubility rules
  2. The names and formulae of common cations and anions.
  3. Which elements are the most electronegative (F, O and N).
  4. Rules for balancing redox equations
  5. All reactions of acids found in your text book.
  6. Rules for naming organic compounds.
  7. Types of intermolecular bonding.
  8. Titration equipment and definitions.
- Create acronyms to help you remember the course content. One possible example for learning solubilities is “SPANNA”, which stands for **S**odium, **P**otassium, **A**mmونيا, **N**itrate and **A**cetate ions, which are all soluble ions.

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## Analysing and Explaining Concepts

For many years examiners have been commenting on how students struggle to apply their knowledge to new situations and to clearly and concisely explain chemistry concepts. It is extremely important that you practice short answer questions and focus on using key words and phrases. Pay careful attention to how your teacher answers worded questions and use the solutions to practice examination to do the same. The ability to analyse is a high order skill and as such you need to practice this as much as possible. Questions in text books are typically not sophisticated enough to develop these skills, so practicing on past examination papers will form an essential part of your examination preparation.

- Attempt as many past exam or revision papers as you can.
- Do them under timed conditions so you know what to expect in the actual exam.
- Try starting with a different section each time to see if your starting point makes a difference.
- Ideally you want to be practicing examination papers two to three weeks prior to the actual examination and you need to have thoroughly revised the course before you start so make sure you are organized.

## Calculations

- It is important that you do your calculations in an orderly and logical manner. It should be easy for someone else to follow your work. Get into the habit of doing this throughout the year rather than believing that you can do a good enough job of it on the day of the examination. Remember, examiners can't give you marks if they can't find them.
- Include units for all numerical answers. Look carefully at units in calculations. In the majority of responses, you will need to convert to SI units before using data in a formula.
- When working through a complicated stoichiometric problem, ensure that final answers for each section are given to the correct number of significant figures. Use standard form if required.
- Practice using the calculator you plan to use in the examination. You must be using your scientific calculator to perform calculations now, not for the first time in an exam.

## Areas to Focus on When Revising

### Equation Writing

- All equations must be balanced and all states of reactants/products shown.
- Ionic equations do not include spectator ions. Solid ionic substances must not be split into their component ions.
- Use a forward arrow for reactions that go to completion and a double arrow for those that don't.
- Do you know which ions are soluble/insoluble? Knowing the solubility rules will help you with predicting the products of chemical reactions that occur between ions in a solution.
- You WILL be required to predict and write chemical reactions in your Year 12 examination so make sure you learn this well NOW.

### Answering Questions Accurately

- Know what the question is asking for before attempting to answer it. For example, the amount of substance **does not** mean mass. Understand the difference between the following key words that are often used in Chemistry: Define, calculate, explain, list, state, identify, label, etc.
- Learn how and when to use all formulae. You may be asked to supply an empirical, molecular, structural or semi-structural formulae. In some cases, you may also be asked to show the shape of a molecule.

### Mole and Stoichiometry

- A major field of Chemistry is Analytical Chemistry which requires the interpretation and manipulation of data. To do this successfully, it is essential that you fully understand the concept of MOLE and can complete calculations involving mole, mass, volume and concentration. This will often involve the application of a mole ratio from a balanced equation so practice lots of these types of questions!

### Acids and Bases

- Do you know the difference between a strong acid and a concentrated acid?
- Can you write balanced equations showing the dihydrogen phosphate ion ( $H_2PO_4^-$ ) acting as a diprotic acid? As an amphiprotic substance?
- Make sure you can confidently and accurately convert between concentration units. You will rely on this skill in Year 12 and it is almost always tested on in the Year 12 examinations. E.g. Can you re-express a value stated in "mol/L" in "ppm"?
- Practice, practice, practice pH questions. This is another area that is typically not done well in Year 12 examinations so learn it now and learn it well!

### Redox Chemistry

- The Electrochemical Series is almost always written as reduction half equations. If necessary, to answer a redox question, put equations in order of **strongest oxidant** on the top left and **strongest reductant** on the bottom right. The predominant redox reaction occurs between the strongest oxidant and the strongest reductant, which in this case would be the highest species on the left and the lowest species on the right.
- Include all redox half equations that involve water when dealing with an aqueous solution; this is good practice for Units 3 and 4 also.
- When using the electrochemical series don't assume  $O_2$  is present unless actually stated.
- When writing overall redox equations, remember to balance the number of electrons in the oxidation and reduction equations before adding the half equations together.
- **ANOILRIGCAT** is a useful acronym for remembering reactions at the electrodes of a galvanic cell.
- Do you know the four ways to tell if a redox reaction has occurred?

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## Organic Chemistry

- Thoroughly learn the formulae and names of the different functional groups. You will be expanding on these areas next year so if you learn this section well in Year 11, then you will reduce your workload in Year 12!
- Intermolecular bonding is IMPORTANT! It has implications in many of the concepts taught in Chemistry. You are doing yourself a real favour if you learn this section THOROUGHLY in Year 11.
- Learn the rules for naming organic compounds so that you have a head start for next year.

## Understanding Experimental Procedures.

- In 2014, 2015 and 2016, the Year 12 exam included a short answer question dedicated to understanding experimental procedure. Therefore, make the most of your time in Year 11 to build up your skills in understanding practical work. Can you:
  - Explain the significance of the steps in an experiment?
  - Identify errors and their effect on the result?
  - Comment on the reliability and accuracy of your results?
  - Discuss the validity of the experiment (was it a fair test?)?
  - Manipulate data via calculations and drawing graphs?

## During the Exam

- Use the reading time to analyse the questions in Section B and begin the complex thought processes required to answer these questions adequately.
- Use the marks and the space provided for the answers as a guide to the amount of information required in a response. Generally a 2 mark question requires 2 points of information be given. Don't spend too long on a question, particularly if it is only worth 1 mark.
- Formulate an answer that clearly covers all parts of the question and uses the key terminology.
- You are more likely to be awarded full marks for a question when answers are clearly expressed and the information included is organised logically and addresses the question directly.
- Read each question thoroughly before putting pen to paper. It may help to underline key words in the question such as best option, glossary words, required data etc.
- Non-standard abbreviations should be avoided as they may be open to misinterpretation.
- Use legible handwriting and correct spelling. If an assessor cannot read an answer, the response cannot be awarded marks.
- Read the multi-choice questions carefully and answer appropriately before looking at the options available. Remember that 2 of the options are generally distracters, and are based on common mistakes and/or misconceptions.
- Remember – be consistent. In a calculation involving more than one stage, you will be awarded consequential marks if you correctly use a wrong answer from part (a) in part (b).

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- Show working in your calculations. Again you may still be awarded marks even if your final answer is wrong.
- **One Mark Questions.** Even though they are worth one mark, one-word answers are often unlikely to be awarded marks.
- **Name Questions.** If asked to name something, it is important that you do so. It is not necessary to elaborate, and if incorrect information is given in your elaboration, the mark cannot be awarded.
- **Using data.** These questions expect you to explain how the data is used to arrive at a conclusion. More successful answers specifically mention numbers from the data.
- **What is the difference?** These questions require you to state a specific feature of the first term mentioned and then a statement on how it is different from the second term. For example, how is titre different to aliquot.

Good luck with your exam preparations!

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**More subject specific advice will be issued to students at our “VCE Essentials – Final Exam Revision Lectures”.**

Good luck with your exam preparations!

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## VCE Exam Revision Lectures

### Revise. Extend. Maximise Examination Marks.

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- Receive great advice & instruction from **TOP** ranking teachers & **official VCE exam markers**.
- Save **100s of hours** in study time.
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**Dates:** Saturday 22nd September – Sunday 21st October 2018

**Venue:** The University of Melbourne

