



CHEMICAL REACTIVITY

CHEMISTRY

LEVEL 2

Strategy Guide

This standard is one of the shorter ones in level 2 chemistry and if you did level 1 acids and bases you already are going to be familiar with a third of the content here. A lot of the questions in this paper are very similar from year to year and with only a few key pieces of knowledge we can go pretty far.

OVERVIEW OF THE STANDARD

- Rates of reaction (collision theory)
- Equilibrium principles
- Acids and bases

STRUCTURE OF THE EXAM

Warning: this section is to help you focus your time/study. Our analysis is based off previous year's exams and is no substitute for understanding the concepts. NCEA can change the exam format without much notice, so the best strategy is to be prepared for anything!

There are generally three questions with 1 question based broadly around each of the three main topics. They may mix and match with some concepts, but generally they keep them separate.

CONCEPTS AND SKILLS TO FOCUS ON

Although every aspect of the exam is equally important, here are some key concepts to focus your study on:

How changing conditions affects the rate of a reaction:

If you discuss how changing concentrations, adding a catalyst, changing surface area and changing temperature will affect the rate of a given reaction then you are good to go! When reading a question a good question to ask yourself is "what are they changing?" If you can pick that then you are generally well on the way to getting the question right.

How to calculate things other than pH:

Most students are comfortable with calculating pH when given the concentration of H_3O^+ but where they trip up is being asked to calculate things other than pH such as the concentration of OH^- ions or pOH, or having to calculate pH when given the concentration of a strong base. What is important to realise is that you can convert through all of these with no additional information. Using K_w we can calculate the OH^- concentration given an H_3O^+ concentration for example.



How changing conditions affects an equilibrium system:

Much like reaction rates, if you are on board with how changing concentrations, changing pressure, changing temperature and adding a catalyst affect the position of an equilibrium then this section should go pretty well. They particularly likely to ask about changing temperature and, using a bit of information such as a colour change or a change in the value of K_c , you will probably be asked to determine whether a reaction is exothermic or endothermic. Again asking yourself “what is changing?” and “what will the system do in response to that change?” Is a good way of kick-starting your answer.

COMMON MISTAKES:

From the NCEA gods themselves:

Round your numbers properly!

In chemistry we always round to 3 significant figures (3.s.f) no matter what so make sure you are comfortable with this process. Also be careful to never round until you have your final answer because if we round too early it may affect what we get out at the end.

Using the words “left” and “right” instead of “products” and “reactants”:

When we disturb an equilibrium one reaction will become favoured until we reach equilibrium again. Instead of saying “the reaction moves to the left” we should say something like “the reaction becomes reactants favoured” even saying “the reverse reaction becomes favoured” is a fine statement.

Know your strong and weak acids and what that means:


You are expected to know that HCl , H_2SO_4 and HNO_3 are strong acids and that NaOH and KOH are strong bases. Therefore anything else is either a weak acid or weak base. Strong acids and bases fully dissociate in water where as weak acids and bases only partially dissociate. This means that if we are writing a reaction with a strong species we use a full arrow, but if it's a weak species we use a two way arrow.

Know what causes a solution to be conductive:

For a solution to be conductive it must have free moving charged particles which in this standard is mostly dissolved ions. Strong acids, bases and salts dissolve fully and create a lot of ions in solution where as weak acids and weak bases only partially dissociate and create only a few ions and so won't be as conductive.

OVERALL STUDY AND EXAM STRATEGY:

A decent grade is definitely achievable for this paper with a bit of hustle and grind. The key is to not rote learn, but try to understand the concepts. Pay careful attention to the wording of your explanations, and use the NCEA exemplars and marking schedules, as well as our walkthrough guides to get the M/E level wording.



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