

Aims: To help students develop:

- ❖ a good understanding of C1
- ❖ strong mathematical thinking skills
- ❖ a clear overview of C1

Philosophy: The approach encourages learning through **understanding** and shows how **information** is **linked** via **processes**, this simultaneously reduces the number of disassociated facts that need to be memorised – and so we will use fewer formulae than the textbook.

The approach includes:

- ❖ understanding & applying first principles to derive and **relate simple formulae**.
- ❖ 'question type' grouping & identification of appropriate '**strategies**' of solution.
- ❖ fuller and more accurate use of **mathematical language**.
- ❖ interpreting information **graphically**.

The understanding of information graphically is key to linking concepts, and this is particularly true of C1. Therefore students will be expected to solve problems using sketch graphs wherever appropriate. For example, solving of quadratic inequalities.

Contents: ❖ 'The Student's Guide' ❖ 'The Teacher's Guide'

'The Student's Guide' is designed to support student's understanding of the course and to help them revise.

It contains 4 main sections: ❖ **You must be able to do this** ❖ **Notes** ❖ **Revision Worksheets** ❖ **Final revision tests**

You must be able to do this: this one page section outlines the specification in straightforward language giving appropriate examples from the specification. This helps students know what is needed.

Notes: These are 1-2 pages per topic to give the student reminders of the *key facts and summary notes* required for each topic. They include:

- ❖ *Key summary notes* of each topic to support a student's understanding and revision of P1.
- ❖ '*Try this now*' section to keep students active.
- ❖ *Strategies* of tackling different problems to support learning.
- ❖ *Discussion points* which further support understanding.

Revision Worksheets: ❖ *Revision Worksheets by chapter* to help students revise effectively. Most importantly they test the fundamental principles on which the topic is based and as such are not simply a series of questions. These sheets have been designed to encourage students to learn appropriate formulae and relate linked formulae. Also the questions have been carefully chosen to best test/illustrate the understanding of each concept within a topic and are carefully graded to help students identify specific problems.

Final revision tests: ❖ *Final Revision tests* to check that the students have a basic understanding of **EVERY** aspect of the specification; these cross-reference to the notes and text to aid follow-up revision.

'The Teacher's Guide' explains different teaching and learning strategies. It includes:

- ❖ Teaching considerations.
- ❖ Key examples – chosen examples that best demonstrate the mathematics and parallel solutions showing different ways of solving the same problem.
- ❖ Worksheets – there are three different types of worksheets; topic starters (attunes students to the topic), conceptual (improves understanding of a key concept), rigour (focuses on a single 'process', particularly beneficial for weaker students!).

The Teacher's Guide is **NOT** intended to be **PRESCRIPTIVE**. It should be used for;

- ◆ **REFERENCE** ◆ **REMINDERS OF KEY TEACHING IDEAS** ◆ **KEY EXAMPLES**
- ◆ **To give more detailed information about the ideas in the Student's Guide**
- ◆ **INFORMING YOUR TEACHING, ACTING AS A GUIDE TO WHAT MIGHT BE INCLUDED**

As such the Teacher's Guide does NOT give every example that you will use, or re-describe every teaching idea, or dictate your teaching. Where the exercises from the text fit in to the notes this has been indicated and where appropriate a more detailed suggested teaching order has been outlined.

The resource has been produced to allow easy cross-referencing to the Heinemann text (0-435-51097-5)

Of course the Guides are designed to be used with or without this text but if you are using these texts the extra few Book comments and referencing to the texts will be an added bonus.

Preamble:-

Stuck ☹!! or just the beginning of the challenge ☺? In this approach we will want the student to develop their mathematical 'thinking' skills. Too frequently students apply this formula and that, and when they become 'stuck' they have no 'thinking' skills to become unstuck. If students develop a more holistic view to mathematics, through 'thinking' about mathematics, then they will no longer see becoming 'stuck' as an impossible obstacle but just as a challenge to their thinking processes. Becoming stuck is inevitable and is really where the true challenge and enjoyment of mathematics begins. Students who learn to think mathematically know this. Weak students who do not develop their thinking skills often quickly become out of their depth, with no method to overcome their problems; only if they are encouraged to think can they begin to understand the thought processes required to tackle AS topics. For better students it is this thinking ability which takes the average C grade upwards to grade A. It is because examinations in mathematics go beyond simply applying formulae to obvious cases that the student must begin to think.

How to use the Student's Guide

'The Student's Guide' could be used in three basic ways;

- ❖ During the topic, where the teacher then refers to them whilst teaching - this is the ideal so that the notes become something they recognise and because they give helpful summary information about both topic and text. They have been designed so they can be used in this way.
- ❖ At the end of each module as a review of the chapter or end of the course where the teacher discusses the notes and relates the notes to their teaching. As such that can prompt discussion and also leave students with something to take away.
- ❖ At the end of course or module as student 'stand alone' revision notes - they can be very usefully used in this way, as they re-look at the key aspects of the whole module/course! Ideally the teacher will discuss the notes, as they are not intended to just be read by the student.

The Student's Guide says to the student in the first few pages that, 'The notes section is NOT intended to read from start to finish in one sitting. DO however refer to these notes chapter by chapter or section by section. They will remind you of key ideas, formulae and strategies – ask your teacher or fellow student if they are unclear to you, or seek clarification from the text. DO discuss the notes with your teacher or other students. Do refer to them whilst doing the revision worksheets/tests to help you. The revision worksheets/tests should help you prepare for an internal test and for the examination. If you are preparing for the examination these worksheets are perfect for starting your revision chapter by chapter. Once you are confident on each topic do the final revision tests, recapping sections appropriately. You will then be well prepared to start **examination question practice, a MUST** for all revision programmes. Effectively, the tests allow you a bridge between revising a topic and practising examination level questions.

The Student's Guide therefore gives structure to the student, giving them questions to do and bringing weaker students to a level where practicing examination questions then becomes more profitable.

Is the Teacher's Guide independent of the Student's Guide? NO!

'The Teacher's Guide' and 'The Student's Guide' combine together interlocking the same objectives. If the teacher is following some of the key ideas within the Teacher's Guide then as the student uses their guide or begins to use the revision tests, the link between what they have been taught will be more apparent. In fact the notes, the chapter tests, the final tests, the Teacher's Notes and worksheets are all designed to combine together reinforcing the same concepts and approach. It is therefore clearly useful if the teacher also has a copy of the Student's Guide.