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# Loading and running instructions

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**IMPORTANT:** The programs in this suite are large, using all the available memory space and any peripherals must be disconnected.

Normal disc drives and printers need not be disconnected but, with disc drives fitted, you must inform the computer you are using tapes and re-page each tape by keying in the following BEFORE any loading instructions:

\* TAPE **RETURN**

## Loading the programs

To load and run a program type:

PAGE = &E00 **RETURN**

Then type CHAIN followed by the program name inside inverted commas. For example, to load and run "Electrolysis":

CHAIN "ELECT" **RETURN**

The computer will then display the word "Searching"; when it has found the program, it will display "Loading", the program name and a series of numbers.

Loading from tape is slow but it can be made easier if the counter numbers are marked in this booklet – a space is provided.

Some programs have a number of different parts, each of which is loaded individually. When the loading is complete, the program will begin automatically.

Both sides of Tapes 1 and 2 contain a number of programs which can be accessed sequentially as on the introductory tape provided with your computer. Alternatively you may access each program out of sequence by 'loading' it by name.

When starting at the beginning of each side of both tapes, use the program name "CHEMISTRY":

CHAIN "CHEMISTRY" **RETURN**

If the program name appears without the "loading" message or messages like Header? Data? Block? appear, rewind the tape a short way, alter the volume of your cassette player and try again.

Further running instructions are given in this booklet, and the programs contain information on how to use them. If you experience loading problems, consult your manual. However, the following general instructions will help:

The **ESCAPE** key does not function during the programs.

Pressing **BREAK** will stop all programs, but you must re-load in order to run them again.

Pressing the **SPACE** bar reduces the waiting time in programs containing built-in delays.

There are two types of user input required for the execution of these programs. If you are requested to 'ENTER' a response you must press the **RETURN** key after your entry. You can change your mind before pressing the **RETURN** by using the **DELETE** key. If you are requested to 'PRESS' a key, do not use the **RETURN** key. The program continues when you have pressed a key so you cannot change your mind.

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# How to use the programs in a revision scheme

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The programs on these cassette tapes have been devised to make your revision more approachable and enjoyable. Organisation is the key to making the most of your revision time. For each subject follow these simple rules.

- 1 Know your syllabus. A quick reference to the relevant syllabus analysis table to be found at the front of Letts Study Aids *Revise* series is advised.
- 2 Devise a timetable, as soon as the Mocks are over, which will allow you to go through the syllabus at least twice (more for problem areas).
- 3 For each topic, read all your available material – class notes and textbooks. Make summary notes as you go, then test yourself. Keyfacts *Multiple Choice* or Letts Study Aids *Objective Questions* will give invaluable practice and help. Finally, run the relevant computer program which will both test your knowledge and give you another perspective.
- 4 Just before the examination, use all your summary notes to jog your memory and the whole subject program suite to reinforce your understanding.

Success in chemistry lies partly in a knowledge of basic facts but also in the level of understanding of the underlying principles. This suite of programs has been designed to encourage you to test your knowledge and to develop your deductive faculty. You may be wrong sometimes but will gain in confidence as you become more practised. Be selective in your choice of subject area. Don't try to cram too much into a single session.

Most programs have a 'help' facility. Do not over-use it – use only when you cannot arrive at correct responses by your own efforts. In some cases the computer automatically helps you after 2 or 3 wrong attempts. In other cases you must request help by pressing a key (usually 'X' or '?' as indicated on screen).

When entering chemical names use terminology of the form 'iron (III) chloride' and *not* 'ferric chloride'. The use of the function keys for formulae is explained in this booklet for relevant programs.

## The Programs (*Program loading names in brackets*)

### Tape 1

#### Side A

Atomic structure & bonding  
("ATOM")  
Periodic table ("PERTAB")  
Formulae & equations  
("FORMRUL")

### Tape 2

#### Side A

Apparatus 1 ("APPRUL")  
Apparatus 2 ("AP2RUL")

#### Side B

Chemical deductions ("DEDUCE")  
Electrolysis ("ELECT")

#### Side B

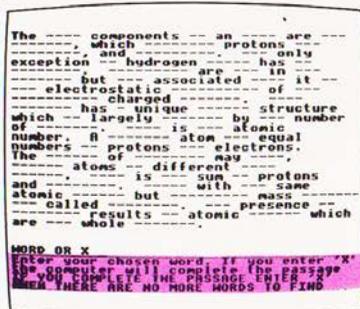
Acids bases & salts ("ABS")  
Organic chemistry 1  
("ORGCHEM")  
Organic chemistry 2 ("ORG")

# The Programs

## 1 Atomic structure and bonding ("ATOM")

### Counter number:

This program is designed to develop your understanding of the atomic structure of elements and the relationships between atomic structure and different types of chemical bonds. This is achieved by the gradual completion of descriptive paragraphs about: atomic structure; ionic and metallic bonds; covalent and dative bonds; valency. You may select one of five levels of difficulty. The easiest requires you to



whereas in the hardest you are given no words to help you. If you find any of the paragraphs too difficult you may use a built-in help facility. By entering 'X' you instruct the computer to complete the passage for you.

## 2 Periodic table ("PERTAB")

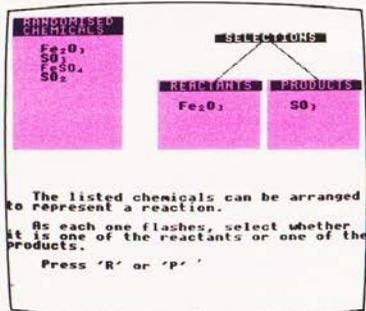
### Counter number:

This program enables you to test your knowledge of the location in the periodic table of the more familiar elements. Alternatively you may select options which require you to apply your understanding of the electronic configuration of atoms. You may select how many elements you wish to predict and also choose between options of different levels of difficulty. The less difficult option is confined to those elements with which you should be familiar whereas the more difficult option extends your understanding to less familiar elements. You will need to know the sequence in which electrons are added to successive elements for both main group and transition elements.

## 3 Formulae and equations ("FORMRUL")

### Counter number:

Chemistry is primarily concerned with the interaction of materials. Reactions are normally represented by balanced equations in which the reactants and products are represented by chemical formulae. You may select between completing equations in which both sides are incomplete or organising a selection of chemicals to produce a valid balanced equation. Both selections have built-in help facilities. The entry of correct formulae requires the correct use of upper and lower case letters. Additionally you will need to use subscript numbers. These have been located on the programmable function keys of the same number. It is suggested that you set your keyboard for



lower case letters and use the 'SHIFT' key for capitals as with a typewriter. For example for  $\text{Na}_2\text{SO}_4$  use keys as follows:

**SHIFT N a f2 SHIFT S SHIFT O f4**

#### 4 Chemical deductions ("DEDUCE")

*Counter number:*

This will test your overall knowledge of chemistry. The computer selects a chemical substance randomly from a databank. For each substance you will be provided with five clues, one at a time, from which you are asked to identify the selected substance. Some clues are numerical. For these you will need a calculator and a table of atomic masses. At any stage, you may enter your answer. If it is incorrect, the next clue will automatically appear. When each substance has been identified, or revealed by the computer, you will be asked for its chemical formula. Use the keyboard and function keys as demonstrated in the previous program. A help facility is provided.

#### 5 Electrolysis ("ELECT")

*Counter number:*

A random combination of electrolytes, molten or in dilute aqueous solution, is selected by the computer. You are required to identify the ions present, to which electrode they migrate and to identify the preferred ion reaction at each electrode. Finally you are requested to compile the ionic equation for each electrode reaction. Only inert electrode systems are considered.

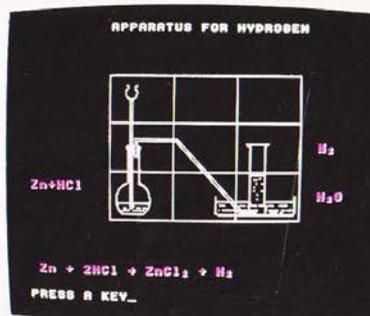
You will need to use subscript and superscript numerals for chemical formulae and ions. The function keys are programmed for this and on-screen information tells you which keys to use. A help facility is provided for the construction of ionic equations.

#### 6 Apparatus 1 ("APPRUL")

*Counter number:*

This is a jigsaw program. You have a choice from thirteen different gases and must construct the apparatus which is used for the laboratory preparation. The screen is divided into 25 boxes, each box containing a piece of the jigsaw. The correct apparatus must be constructed in the central nine boxes, using the full width of these. The jigsaw pieces are moved by 'swapping' boxes.

This is done by identifying the letters for the boxes to be swapped. For example **P M** will swap the contents of box P and box M. You may discard the contents of a box with the '/' key. For example **/ B** will empty box B. Once a piece of jigsaw has been discarded it cannot be recalled. When the picture is correct, extraneous pieces of picture are removed by the computer and you are requested to enter both the labels and the equation. Help is available on request in all stages of the program with the '?' key. Use the function keys for subscripts as demonstrated previously.



## 7 Apparatus 2 ("AP2RUL")

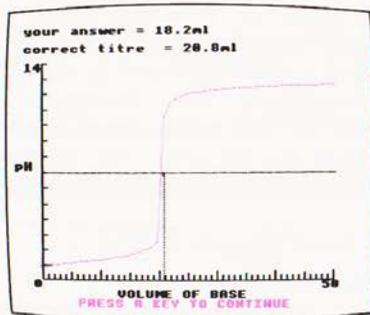
*Counter number:*

A random selection of laboratory apparatus for the preparation of gases produces one of the completed pictures from the previous program but containing at least one error in the picture. As each incorrect part of apparatus is identified it will be removed from the screen, leaving a blank box. When you have identified all errors, the picture will be redrawn correctly. The correct picture will contain at least one labelling error, each of which must be identified one at a time.

## 8 Acids bases and salts ("ABS")

*Counter number:*

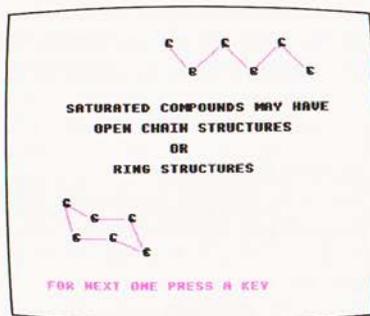
This program is in three parts. In the first you are required to complete descriptive passages about acids, bases, salts, and pH. In the second part you are asked to comment on the proposed reactions, represented by equations. All are related to the various methods of preparing salts and their properties. The third part demonstrates how pH changes in acid-base titrations and identifies the pH end-point. You may enter your own data and compare your result with that calculated by the computer.



## 9 Organic chemistry 1 ("ORGCHEM")

*Counter number:*

This consists of four descriptive passages about the structure of organic molecules. You are required to complete them, with different levels of difficulty as in some previous programs. When each passage is completed, diagrams are produced which illustrate the substance of the passage.



## 10 Organic chemistry 2 ("ORG")

*Counter number:*

The program requires you to identify isomers, homologues and compounds with similar reactivity from a selection of twelve formulae displayed on screen. This tests your powers of observation rather than any detailed knowledge of the properties of organic molecules. If you press '?' the computer will solve the problem for you.





# Study aids to use with your program

## ● For essential information on which to base your revision

Letts Study Aids:	<i>Revise Chemistry</i>	G R McDuell BSc
Letts Keyfacts:	<i>Chemistry Passbook</i>	C W Lapham MSc
Letts Keyfacts:	<i>Chemistry Passcards</i>	G R McDuell BSc
Letts Keyfacts:	<i>Chemistry Course Companion</i>	G R McDuell BSc

## ● For practising examination questions

Letts Study Aids:	<i>Objective Questions Chemistry</i>	G R McDuell BSc
Letts Keyfacts:	<i>Multiple Choice Chemistry</i>	C W Lapham MSc
Letts Keyfacts:	<i>Model Answers Chemistry</i>	C W Lapham MSc

## ● For quick reference

Letts Keyfacts:	<i>Reference Library Chemistry</i>	K Ahmad MA
Letts Keyfacts:	<i>Dictionary of Chemistry</i>	J Daintith BSc, PhD