



# A GUIDE TO A/L SUCCESS

SCIENCE STREAM

FIND YOUR EXAM RESULTS HERE

G.C.E./A/L EXAMINATION

SELECT THE YEAR

INDEX

XXXXXXXXXX

SUBMIT

RESET





# A GUIDE TO A/L SUCCESS

- SCIENCE STREAM -

.....  
*To Mother Royal and our dearest parents*

- RCPC 2019/20

Copyright © 2020 by Royal College Prefects' Council

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the publisher.

This edition was published in 2020 by  
**Royal College Prefects' Council**  
Royal College,  
Rajakeeya Mawatha,  
Colombo 07.

council@royalcollege.lk

Designed and typeset by *Lorem Ipsum*

**First Edition**  
**Printed in Colombo, Sri Lanka**  
**ISBN978-955-1471-11-8**

# CONTENTS

---

Message from the Principal of Royal College	iv
Message from the Master in Charge of Prefects	vi
Why and How this Publication was Made	viii
<b>Guidelines</b>	<b>01</b>
1. Past Papers and Marking Schemes Come First	02
2. Do past A/L papers from at least 2000 onwards	03
3. Repeat past A/L papers at least 3 times,	04
4. Prioritize MCQs over Structured Essays and Essays	05
5. Complete your syllabi as early as possible.	06
6. Study past A/L Reviews; use other textbooks selectively	07
7. Sleep 6-8 hours	09
8. Don't attend too many tuition classes; focus more on self-study	10
<b>Articles</b>	<b>11</b>
1. From an interview with Professor S.R.D.Rosa	12
2. Understanding the Nature of A/Ls - Dr. M.N.Kaumal	19
3. My experience with A/L students, Subjects and Exams- Mrs. Thamara Kumarihamy	27
<b>Case studies</b>	<b>33</b>
1. Wise Words from an Island 3rd- Thevindu Wijesekara	34
2. Work Smart, Not Hard- Minul Doluweera	40
3. From Zero to Hero.....in 8 months- Kaushitha Silva	50
Acknowledgements	60

## MESSAGE FROM THE PRINCIPAL

---

I am very pleased to pen down a message in a book, which I believe is the first of its kind. Every student's school academic career builds up to A/Ls. In such a competitive exam, achieving success requires something extraordinary. Those who have succeeded, they have learnt not only of books, but also of men. They have gone beyond the subject content in their books and have sought advice from those who had walked these paths before them. Learning from the mistakes of others is better than having to learn from trial and error, especially for an exam like A/Ls, since there is hardly any time to make mistakes and recover too. If you are at a loss at how to succeed, what you need to do is to study what helped your seniors succeed and imitate it appropriately. This is the main reason why this book is of value.

Hearing what the seniormost professors, lecturers and teachers can share about A/Ls is the cherry on the cake. Having all this information at your fingertips is an opportunity that no other student in the island could enjoy.

The Royal College fraternity owes a sincere thanks to all the resource persons, who contributed articles, shared

## MESSAGE FROM THE PRINCIPAL

their thoughts and experiences and took time off their busy schedules to support this project in any way possible.

My heartfelt gratitude goes to Mr. T.D.C.P.Amaratunga, the Master in Charge of Prefects and Mrs. M.M.T.U.Kumarihamy, Assistant Principal of the A/L Science Section for guiding the Senior Prefects in making this valuable publication, one that I am sure will be cherished by all Royalists in the years to come.

The Academic Committee headed by Minul Doluweera, Deputy Head Prefect of Academics of the Prefects' Council 2019/20 has done a wonderful job of researching and compiling the results of their survey, coordinating with multiple individuals, and bringing all these together into one publication that is worthy of becoming the handbook of A/L students.

It is now up to our dear Royalists to make the most out of this book, which is truly “A Guide to A/L Success”

*Floreat!*

B.A.Abeyrathna  
*Principal*  
*Royal College*

## MESSAGE FROM THE MASTER IN CHARGE OF PREFECTS

---

“The General Certificate of Education Advanced Level Examination or G. C. E. A/L Examination is the most competitive examination in Sri Lanka” should be the most agreed statement by all who have done this examination, without any doubt. The contents in this book have addressed it precisely and comprehensively and have provided clear-cut guidance for all who will sit for this examination in the future. Therefore, I consider this opportunity that I got to pen down a few words as a message to this precious book as a great honour.

These days, there are many sources to gain knowledge of any subject. There are free tutorials available on many websites and if you wish you can arrange one on one discussions on some of these websites. But the insight of this book will clearly guide you step by step to achieve your target. I know many students who were not successful in the exam despite having a good knowledge of the subject. Some of them were good at time management too. But, not all of them possessed the most important element, that is, the presentation skill. This is the main area that you should focus on when preparing yourselves,

MESSAGE FROM THE MASTER  
IN CHARGE OF PREFECTS

especially for the A/L examination. You should know what is to be written to get marks and what is not to be written to save your time in your answers because every minute is valued at the exam.

Members of the Academics Committee of the Prefects' Council 2019/20 have come forward by identifying this burning issue faced by A/L students and have taken a great effort to publish this book, for the first time in the school's history. The contents of this book are efficaciously lined up in order to benefit all A/L candidates who wish to make their dream a reality.

My sincere appreciation should go to the Island 30th, Colombo District 14th in the Bio-science stream Minul Doluweera, Deputy Head Prefect of Academics for initiating this project whilst thanking all who contributed by providing their valuable words to make this a great success.

T.D.C.P.Amaratunga  
*Assistant Principal*  
*Prefects and Stewards/Clubs and Societies*



## WHY AND HOW THIS PUBLICATION WAS MADE

---

### **Why was this publication made?**

GCE A/Ls is perhaps the most important and most competitive exam any Sri Lankan could sit for. It can radically change the course of one's life. Therefore, almost every student works harder for A/Ls than they have ever worked before. This is especially true in the Science stream. But what separates the student who gets 3As and enters the Engineering or Medical Faculty from the student who barely passes and has to spend millions of their parents' savings on their higher education? Everyone works hard. Everyone has to work hard, but only the successful ones work cleverly, with a plan and strategy.

This is the role of this publication. It will be your handbook for A/Ls. It will tell you the fundamental dos and don'ts that you have to follow when building your strategy, setting a winning plan, and making smart decisions. You would definitely know of countless seniors who were talented, hard workers, but without the proper guidance ended up with less than desirable results. This publication hopes to solve that. Each year we hope to collect more data and update these guidelines to give the most accurate advice to each generation of Royalists.

This is targeted at,

1. Increasing the percentage of 3A recipients and university entrants from Royal College
2. Increasing the pass percentage of Royal College
3. Making a general improvement in the overall results of Royal College

Of course, if anyone else seeks to benefit from this book, we would encourage that as well.

### **How was this publication made?**

This book consists of 3 sections:

1. Eight guidelines formed based on responses to a survey conducted on past Royalists. These were further improved and approved by professionals in the field of A/Ls
2. Three articles authored by leading professionals who are/were highly involved in A/Ls
3. Three case studies of accomplished students with extremely instructive success stories

The above information sources are highly credible and reliable and offer sound advice to the intelligent student. However, keep in mind that there are exceptions to every rule; the same shoe won't fit everyone. It is up to you to apply the advice given here appropriately. One thing is certain; you will have a much smoother and more successful A/L journey if you follow the advice given in "A Guide to A/L Success"

# GUIDELINES

---

The following guidelines are based on responses to a survey conducted on Royalists who sat for A/L s in the past 5 years. Please note that from the 313 students who participated, 111 (35.7%) were 3A recipients.

*“Numbers don’t lie”*

Furthermore, these guidelines were approved by the professionals who contributed articles to this publication, and many more esteemed professionals of the same calibre, who discussed their thoughts and experiences to improve on the results of the research

## i. PAST PAPERS AND MARKING SCHEMES COME FIRST

The most remarkable result we observed was the overwhelming importance given by 3A students to past A/L papers. In fact, 91% of them gave a 3/3 level of importance to practising past A/L papers compared to 27% for past term test papers and 21% for model papers and tutes. Therefore we should prioritize past A/L papers over other practice material.

Why? A/Ls is a standardized exam. The same types of questions are repeated year after year. According to a recognized A/L review of the 2009 physics paper, only 11 out of the 60 MCQs had new concepts that hadn't been covered previously in past papers. Someone who had studied past papers thoroughly should have had little trouble getting at least 49 marks for the MCQ paper. This is true for every subject almost every year.

It is well known that term test papers and model papers have different styles of questioning compared to A/L papers. This helps us to approach questions creatively and face new questions well, but it prepares us for a different ball game. We shouldn't practice for the T20 World Cup by playing Test matches.

Keep in mind that every time we choose to do a term test paper or model paper, we use 3 hours that could have been spent doing a past A/L paper. The results of the sur-

vey suggests that you should do past A/L papers first and once they have been mastered, move on to additional material such as term test papers and model papers.

An important exception to this rule is in Biology. Since the new syllabus implemented from 2019 onwards introduces many new subject areas that may not be adequately covered in past A/L papers, it is very important to study those specific areas with recent past term test papers and model papers.

Many professors and teachers, especially those who have been involved in paper marking and paper setting very strongly emphasized on the importance of studying past paper marking schemes. Students have lost many marks in the Structured Essay and Essay, despite knowing the subject content simply because they were unable to present the answer as per the marking scheme. Going through past schemes can help you identify important rules to be followed when answering questions. This will be further elaborated in the articles and case studies.

## ii. DO PAST A/L PAPERS FROM AT LEAST 2000 ONWARDS

In every subject, a majority of the 3A students have done past papers from 2000 onwards. The contrast is seen clearly when we noticed that most <3Cs students have

started from 2010 onwards only.

But impressively, when students have committed to doing past papers before 2000, going as far back as 1980, their results have improved exponentially. For example, the percentage of physics 'A's almost doubled, where only 37% of students who have done past papers from 2000 have succeeded in getting an A, but 67% of students who did papers before 2000 have 'A's. Similarly in Chemistry, from those who have done past papers in the 1980s and 1990s, a staggering 89% have got either an A(67%) or a B(22%). When considering Biology, however, since the syllabus before 2000 was vastly different from what we have now, most students haven't attempted to do papers before that and hence we can't recommend it. Mathematics too didn't show as conclusive results, but we believe the same principle is applicable nevertheless. Please note that this book was first published in 2020. You may adjust this particular guideline according to the year in which you sit for A/Ls.

### iii. REPEAT PAST A/L PAPERS AT LEAST 3 TIMES

You may have heard of students who can tell the correct answers even before he finishes reading the questions. This speed and accuracy come with repetitive practice. It is the key to effective understanding, long term memory, and accurate implementation. To absorb everything

from a practice question and to ensure getting the right answer when a similar question reappears, the same question must be studied over and over and over again.

This is why most 3A students seem to have repeated the same past papers 2-4 times while <3C students have done them only once. But 2-4 times is the minimum. The more the merrier. In fact, those who have repeated the same past papers up to 7 times or more have astonishingly greater results. For example in chemistry, from the students who repeated past A/L papers 2-4 times, 53% got As. But this increases to 83% among those who did 5-7 times. From those who repeated more than 7 times, 100% of them got either an A(80%) or a B(20%).

#### iv. PRIORITIZE MCQS OVER STRUCTURED ESSAYS AND ESSAYS

Each paper (except maths) consists of the MCQ, Structured essay, and Essay parts. From these, the MCQ paper makes a much bigger impact on your final result than the other two. Why? Because the 400 marks in the structured essay and 600 marks in the essay ultimately carries only 20 and 30 marks respectively to the final result. This means that each mark is actually worth only 0.05 marks, On the other hand, each MCQ carries 1 full mark. That means if you get 1 MCQ wrong, you need to get 20 marks

from the essay and structured essay to compensate for that.

Since the MCQ makes such a large impact it must be prioritized much more than the other two in terms of how much time and attention you devote to it. A very clear majority of 3A students gave the highest priority to practising and mastering MCQs. But this does not mean that the 2nd paper can be neglected of course.

#### v. COMPLETE YOUR SYLLABI AS EARLY AS POSSIBLE.

Most 3A students have completed syllabi in April-July of the A/L year. But we noticed something very interesting when analyzing the results of those who finished syllabi before April. There is a steady improvement in results the earlier they complete the syllabus. This peaks when students complete syllabi in or before December of the year before A/Ls. These are the percentages of As obtained by such students.

- Maths 78% (7 out of 9 students)
- Bio- 100% (9 out of 9 students)
- Physics- 63%
- Chem 73%

We understand that not many students would be practically able to finish syllabi that soon, and you should only accelerate if you can understand at such a fast



speed. But the excellent results we see here are definitely a reason to target completing your syllabi by around December of the previous year, somehow, by school, tuition, or even working on your own with the resource book. If you can achieve it, your chances of getting an A increases tremendously as you can see for yourself.

Why? Because if you can finish the syllabus by December, you barely have anything new to learn. You only need to remember and polish what you have already learned, and you have 8 months to do that! During this time, while doing past papers and other questions you'd notice areas that you are weak in. You have 8 months to go through that lesson again and clarify any and all doubts. If you notice that you make careless mistakes, you have 8 months to figure out what they are and how to resolve them. And simply knowing that you have plenty of time to cover all your bases increases your confidence and helps combat stress as well. It means you won't be taken by surprise in the exam

## vi. STUDY PAST A/L REVIEWS; USE OTHER TEXTBOOKS SELECTIVELY

Many students refer to local and international textbooks and reference books in addition to their note and the resource book released by the Ministry of Education. Firstly we have to ask ourselves how time efficient it is to read 2000 page textbooks such as Campbell Biology

## GUIDELINES

top to bottom, especially since a large amount of that information is not directly relevant to A/Ls. Yes, it may be useful to have extra knowledge on the subject, but considering that we already have so much work to do and so little time to do it, always think twice before diving into these books. It is wiser to stick to your note and only use other books to clarify any doubts, not to read from beginning to end. Of course, if you have plenty of time to spare it might be helpful having gone through such textbooks as well

However, the exception to this rule is past A/L paper reviews, where experts in the subject descriptively analyze questions in A/L papers. They were highly recommended by 3A students. The most popular of those were the A/L Reviews for Physics released by Professor S.R.D.Rosa, which covers all the questions from 1994 to date. It covers not only the subject knowledge needed to get the answers but also trains the readers in the art of answering the paper, especially MCQs. The mindset built here and tactics implemented can be directly transferred even to other subjects.

The best part about any A/L review book is that, unlike many other textbooks and supplementary books, they only contain information that is relevant for A/Ls, and don't use our time burdening us with additional and somewhat unnecessary information.

## vii.. SLEEP 6-8 HOURS

Good sleep is the most underappreciated practice among A/L students. We have met many people in our society who think that A/L students should sleep for as little as 3, 4 hours, and study the rest of the day. But they underestimate the contribution of sleep to performing well in the exam, in terms of cognitive development, memory retention, problem-solving, etc. Give enough time for your mind to rest and prepare itself for the next day.

Most 3A students slept 6-7 hours. However multiple studies performed around the world suggest that the ideal amount is 8 hours, sometimes even more. A quick Google search will show just how counterproductive cutting down on sleep can be, with references to many pieces of research. Though you think you are increasing the quantity of time to study, you are drastically decreasing the quality. Studies have also linked a lack of sleep to stress and depression among students, which is a very real problem faced by A/L students.

viii. DON'T ATTEND TOO MANY TUITION CLASSES; FOCUS MORE ON SELF-STUDY

72% of 3A students have attended only 1 tuition class per subject, while almost everyone in the rest has not attended more than 2. Many are misled to believe that attending as many tuition classes as possible is the easiest way to learn and remember, but they are greatly mistaken. It is much better to learn the subject material from either school or a single tuition class and save time to work on your own. Self-work is the most important knowledge and practice source and it can't be substituted by school or tuition. Neither of them can drag you to an A, and having multiple tuition teachers will drag you back rather than forward. You have to invest your time in yourself without spending all of it listening to someone teaching the same thing you've already learned elsewhere. Every three hours you spend at an extra unnecessary tuition class is wasting three hours during which you could work alone.

# ARTICLES

---

The following articles have been authored by a prominent professor, senior lecturer, and senior teacher of Royal College. Each of them has decades of experience in A/L paper setting, paper marking, preparing the syllabus, and teaching tens of thousands of A/L students throughout their professional careers. Learn from the experts.

*“We don’t have to waste our time learning how to make pastry when we can use grandma’s recipes.”*  
- Orson De Witt

## FROM AN INTERVIEW WITH PROFESSOR S.R.D.ROSA

---

Physics is a beautiful subject. It explains why the universe behaves the way it does. Once you learn physics, you'll start seeing it in your everyday life. When you see a plane you'll remember Bernoulli's theorem. When your car takes a sharp turn you'll "feel" the centrifugal force. When you study magnetism you'll realize why "opposites attract". The key to mastering physics, or any subject, is to cultivate a deep interest and passion for it. Some fall in love at first sight, but for most, it would take time and effort. Firstly, be smart about the stream you choose. Interests aren't genetic. Just because your parents are doctors or engineers it doesn't mean that you would enjoy the science stream. Many students find that they would be more interested in commerce or arts subjects an entire year after choosing science. It is even more important for parents not to force their children into the science stream unless their skills and passions are in fact for science.

But what do you do if you're studying physics and you find yourself bored? How do you develop an interest in it?

For all those of you who love to explore the laws of nature, Physics is your best friend. It is the ultimate discipline that questions our fundamental beliefs and understanding of the world we live in. Physics is an integral component of all science-based disciplines.

There may be many students who do not find Physics all that interesting for various reasons. However, once you get to know the subject, you will realize how interactive and applicable in everyday life it is! To try and like something that you are sceptical about is a bit tough, but once you do, you will see the subject in a new light. Hear us out!

Observe the Physics around you!

The first step is to apply physics to your life; in day-to-day situations. For instance, you can calculate how fast you can make your bicycle go or how far you can throw a ball.

Physics explains it all!

Understanding how much Physics governs and rules over our actions is a marvellous realization. You will find the subject more interesting when everything from the working of a black hole to the shape of a water drop can be explained through Physics!

Find life in problems

Apart from these obvious perks to your daily life, these will also help you to visualize physics problems. Whenever you are given a problem statement, try to create an image of it in your mind; the application of the force, the angle of uplift, the direction of motion, and all the other minute details. This will help you to analyze the problem better and arrive at a solution faster. Also, think about how physics applies to subjects that are of interest to you.

Not only will it develop your interest in the subject, but it shall also provide you with problem-solving skills. It is only through such thought processes that students develop into problem solvers of the world, analyzing real-life phenomena and finding a solution for human beings.

Once this first crucial requirement of having a deep desire to understand the science in the world around us is fulfilled, your 3As will come to you in your sleep.

Physics shouldn't necessarily be harder for Biology students than for Math students. True, every physics paper has maths in it, but it's quite basic math that someone who aced in O/L mathematics should be able to manage. Furthermore, from 2021 onwards students will be provided with calculators for the 2nd paper, which would aid in making complicated calculations. Though MCQ papers won't allow calculators, examiners make the paper in such a way that most simplifications can be performed mentally or with very little rough work. Though the 2019 Physics paper had some complex



mathematical concepts in it, it is extremely unlikely that a similar paper would be provided again.

The secret to learning physics concepts is simply this, implementation. You have to use what you learn. It is by actively using information that you can effectively remember it. Most students prefer listening to or watching others teach because it's easier. They are too lazy to put in the extra effort of actively working. But this won't do well in the long run. That's why you should spend less time on tuition classes and instead use that time to answer questions. I'd recommend doing as many past papers as possible, but cover papers from 2000 onwards at the minimum. Some term test papers are also useful. Though many of them have a reputation for being extremely hard, some teachers have had the extraordinary ability of predicting questions that would appear in the A/L paper and including them in the final term papers and having done that question before gives you a headstart.

While your primary goal should be to master physics as a subject, if you are to perform well at A/Ls you need to master the art of answering A/L papers. Just knowing the subject content isn't enough if you don't know how to use it to get marks. Here are some tips.

Firstly let's talk about MCQs. A crucial factor here is time. Anyone can get more than 45/50 by taking 4 or 5 hours, but being able to get it done in the allocated 2 hours

is truly marvellous. One of the most important skills in answering MCQs is being able to solve the answers mentally because writing down rough work for each and every question would take too long. To do this you have to train yourself in using shortcuts like the proportionality method, or the method of elimination, and using logic and reason to get the answer instead of long calculations. For this, past papers are the best practice material. After answering them try working on your own to see if you can find easier ways to get the answer.

One of the most common reasons even excellent students underperform in the exam is them coming across a difficult question, getting stuck, and falling off track from that point onwards. They'd spend 15 minutes or more on a hard question and when it still doesn't work out they'd get stressed. Then either due to lack of time or having a clouded mind due to the stress, they'd get much easier questions wrong as well. The best thing to do is to just circle such questions, skip it and do the rest, thus guaranteeing that you'd score on easy questions at least. In the end, you can come back to the circled questions and spend all the time you need on them. If you don't have time, just guess the answer. Keep in mind that getting a really hard question right is not worth running out of time and getting 5 easy questions wrong. With practice, you'll be able to instinctively tell if a question is hard or not as soon as you read it. Time management is crucial

Secondly, when it comes to scoring in the structured

paper, do all the practicals in the laboratory, since the structured essay is to a great deal based on them. This includes practicals from the last few lessons like properties of matter and electronics as well because a lot of students seem to ignore them. Performing the practicals increases memory retention since you proactively recall what you have studied and use it during the practical. Furthermore, to write answers to the level of specificity required to score well in a structured essay paper, you need to include certain fine points that you would only notice and remember if you had done the practical. But keeping all that aside, if you don't have basic practical skills you won't be able to survive in the university, or life, even if you pass the exam

Finally, regarding essays, choose wisely. This decision-making ability would greatly affect your final mark. Use the extra ten minutes given for the second paper for reading all the questions in the essay and choosing the easiest questions. Sometimes it's worth spending even more time on this. Those who are stingy for time will jump into the 1st essay straight away, and if it's anything as hard as the 2019 mechanics question that came first, they would probably get stuck. They could've done much easier questions from the latter end of the paper had they just read through the entire essay paper before starting to write. Many students come for the paper with a predetermined choice of questions, maybe thinking "I'll definitely do the fields question and skip heat", but it's important to keep an open mind to be able to skip

ARTICLE I: FROM AN INTERVIEW WITH  
PROFESSOR S.R.D.ROSA

a preferred question if it happens to be hard and go for that heat question which, though you may not like, might be extremely easy

Proper implementation of these suggestions will make these important 2 years of your life much smoother and more successful.

I wish you all the best!

*Professor S.R.D.Rosa is a Professor of Physics at the University of Colombo. He has been involved in setting the A/L Teachers Guide and has published multiple books on A/L physics, the most famous being the series of publications analyzing the A/L papers from 1994 to 2019. Currently, he is the Chairman of the Sri Lanka Atomic Energy Board*

## UNDERSTANDING THE NATURE OF A/LS

Dr. M. N. Kaumal

---

### Understand Yourself

Chemistry is one of the two common subjects in the Biological and Physical science streams. Most physical science students perform poorly in Chemistry. Also, the biological science students perform poorly in Physics which is the other common subject for both streams.

To understand this, we must break down these subjects based on the content as shown below. The content is analyzed based on whether the subject matter needs to be memorized directly or to be understood.

Biology	Most sections must be memorized
Mathematics	Most sections required to be understood
Chemistry	50% of the content to be understood + 50% of the content to be memorized
Physics	More sections to be understood + Some sections to be memorized

One common mistake done by students is that they try to study all three subjects the same way without understanding the differences between them. Physical Science stream students try to study Chemistry the

same way they study Mathematics/Physics. This makes them perform poorly for the sections required to be memorized. Similarly, the Biological Science stream students try to study Chemistry the same way they study Biology, and this makes them perform poorly for the section that needs to be understood. I strongly believe that the teachers must discuss how a section requires to be studied before they teach each section. This will help the student to make changes in the way each section is studied. A detailed discussion of each section of the Chemistry syllabus is given in the table below. This analysis is based on my experiences and this can be different from person to person.

*I. Atomic Structure, Structure and Bonding,  
Chemical Calculation*

Atomic structure is the first section and most of the content in this section must be memorized, only a few things are required to be understood. I strongly believe that this section may be the reason for the Physical Science stream students to move away from Chemistry. Starting with a section that is more comfortable for the Physical Science students may help them to like the subject more. Students with the capability of memorizing the subject matter may perform well in this section.

Structure and Bonding is the second section in the Chemistry syllabus. Most students try to memorize the structure and bonding section, but this can be mastered well by understanding the concepts. This is because

students try to study this section using the same methods that they used to study the first section.

Chemical Calculation is the third section and the first section that is more comfortable with the Physical science stream student. This is a section that can be easily mastered by understanding the content, however, few subsections are required to be memorized (nomenclature). Teachers can start with this section to improve the interest of the student in the Chemistry subject.

## *II. Gaseous State of Matter & Energetics*

These two sections have subject matter that is required to be understood. However, few subsections are required to be memorized (Definition).

## *III. Inorganic Chemistry*

The student must remember most of the subject matter such as reactions and properties of elements. Physical Science stream students usually perform weakly in this section.

## *IV. Organic Chemistry*

Both understanding and memorizing the content are required to perform well in this section. However, both the Physical and Biological Sciences stream students need

to understand the way of studying Organic Chemistry sections. Training the brain using simple conversions, then trying to answer complex questions is the most effective method to study Organic Chemistry.

#### *V. Physical Chemistry*

Concepts in this section must be understood extremely well to answer the questions in the paper. Biological stream students perform poorly in these sections.

#### *VI. Industrial Chemistry*

Most of the subject content must be memorized. However, many sections also in these two sections require to be understood.

.....

We all can memorize and understand. A phone number must be memorized to remember it, and this is the only way to recall it. On the other hand, the answer to the sum of  $2 + 4$  must be obtained by understanding basic mathematics. However, some students try to memorize the answer to the sum of  $2 + 4$ , which increases the amount to be memorized and consequently produces a poor outcome in the examinations.

After O/L, students must spend some time understanding their process of learning. As a student, you must identify your skills and learning pattern. Then only you can plan



the way you need to study each subject/each section of a subject. This can help you plan/modify the way you study A/L subjects later. Also, students try to spend equal time to study all three subjects. This is a good approach in the second year or close to the examination. In the first year (grade 12), a student must divide the time accordingly among the subjects based on his/her learning pattern. If you are a student who is good at understanding concepts but not equally good with memorizing things, then you must spend more time on the section/ subjects in which the content is required to be memorized.

### **Homework before A/L**

After O/L, we assume that what we learned for O/L is not important anymore, which is wrong. You must need to divide the O/L Science section into the three major subjects in the A/L, i.e Chemistry, Physics and Biology. These sections from the O/L syllabus must be studied with the respective A/L subjects in the first 3 to 6 months. This is extremely essential to bridge the knowledge gap between O/L and A/L. Also, mathematics is a key subject for Chemistry, especially for unit 03 and Physical Chemistry. It is advisable to revise related mathematical sections along with these sections in Chemistry.

### **Getting Ready with the A/L Examination**

Doing past examination papers is a great way to prepare for the examination. However, most students do this in the wrong way. What we studied for two years must be used within 2 hours for the MCQ paper and 3 hours for the

structured and essay papers. This is an extremely difficult process for anyone. The human body and the brain must be trained for such an extremely difficult task. The most difficult part is to keep your self-focus throughout the examination period. Biologically, females are better at memorizing things and recalling them under extreme conditions than males. Students must understand how their brains can be trained to face this extreme challenge at the end of the two-year study period. Rather than doing one question at a time, we must mimic the examination conditions to train ourselves. Try to do 50 MCQs within 2 hours continuously. Similarly, a structured and essay paper must be practiced attempting to write answers continuously within the allocated three-hour period. This can be easily done using the past papers/term papers of your school or other schools.

### **Common Mistakes**

- Always indicate the correct arrows, physical state, and units
- Draw complete structures with the correct number of bonds for organic molecules, the correct number of bonds and lone pairs for the inorganic molecules, and correct arrows and charges when showing reaction mechanisms/resonance structures
- For a calculation, always write the basic equation, then show the substitution with correct units, then indicate the steps of the calculation, and finally provide the answer with correct unit/s

- Always have a rough sketch of the organic conversions, show one step at a time using an arrow with the correct reagent; when two or more reagents are used, if required, indicate the correct sequence using numbers, and read the instructions carefully to understand the allowed number of steps and reagents
- It is OK to guess, but when more than responses are required, always write the answer you are confident before you start guessing
- Not getting ready/confident with the whole syllabus makes most students preselect questions even before the exam. This produces extra pressure on you. You must select the questions only after reading the paper.
- Always try to write neatly, always start a new question in a new page, write question numbers and subsection numbers clearly and indicate the final answer clearly at the end of each calculation
- Don't try new things on the exam day, or immediately before the examination day

### Some useful resources

1. To download past papers -  
Department of Examination  
*<https://www.doenets.lk/pastpaper>*
2. To download prototype question papers, marking schemes and evaluation reports. Evaluation reports contain details about common mistakes done by students along with other information -

Department of Examination  
*<https://www.doenets.lk/evaluationreports>*

3. To download syllabuses -  
National Institute of Education  
*<http://nie.lk/selesyll>*
4. To download teacher instruction manual-  
*<http://nie.lk/seletguide>*
5. To download other materials such as practical hand-  
books, resource books, and other resources -  
*<http://nie.lk/showom>*
6. Video lessons for all subjects-  
*<https://www.youtube.com/c/ChannelNIE>*

### **Before Examination**

You have done all you can to prepare for the examination, keep the faith in what you have learned.

Dr. M. N. Kaumal,

*Dr. M.N.Kaumal is a Scientist, an Educator and a Specialist in Intellectual Property. He was a part of the team that developed the current AL Chemistry syllabus and the resource materials, including the new practical guide. Also, he has been involved in AL examination work for the past eight years. Teacher training is another area, he heavily contributes in multiple ways.*

## MY EXPERIENCE WITH A/L STUDENTS, SUBJECTS AND EXAMS

Mrs. Thamara Kumarihamy

---

My first teaching appointment was in 1991 as an English teacher at Nissanka Madhya Maha Vidyalaya, Badalkumbura. In 1992 I was transferred as an Advanced Level Physics teacher and since then I have been teaching and overseeing hundreds of A/L students as a subject teacher, class teacher, sectional head, and finally, as a principal, while experiencing firsthand the temperament of A/L students, the changing of syllabi, and the implementation of various rules and disciplinary actions, etc. Throughout the past three decades, I served as a Physics and Combined Mathematics teacher at Harischandra College, Negombo, an English medium and Sinhala medium physics teacher at D.S. Senanayaka College, Colombo 08, a Deputy Principal of Asoka Vidyalaya, Colombo 10, and am currently serving as an Assistant Principal of Royal College, Colombo 07.

The students who enter the A/L section are laying the first bricks of the foundation of their future and each group of students displays their individual characteristics.

ARTICLE III: MY EXPERIENCE WITH A/L STUDENTS,  
SUBJECTS AND EXAMS

Observing the students during their two years spent in the A/L section tells us a lot about who they will become in the future and how they will contribute to society as adults. Unfortunately, most students who enter the A/L section do not have any idea of what stream they should choose. Their A/L stream has a large impact on their future decisions and it would be good if they could get a background check on what stream they should choose even as early as their O/L years. Many students who enter the Science stream drop out after just a few months owing to their inability to understand complicated concepts and the lack of time to concentrate on their studies due to the many extra-curricular activities they take part in. Some have no goals or targets for their future and just blindly choose the Science stream because it seems to be the most beneficial, but simply end up changing streams after a few months and therefore, end up unable to cover the syllabus of either stream properly. This eventually leads to many adverse effects on the child's higher educational and career prospects. Therefore, students should put in much more thought into the streams they wish to follow and should be given proper direction and guidance by their parents, teachers, and adults to help them make the right decision. They should be involved in the selected field from a young age and should develop a personal interest in that subject in order to pursue it successfully during their A/L years.

Another issue that requires addressing is that even though the teachers in school teach quite well and make many

sacrifices to cover the syllabus on time, the students don't respect their efforts. They spend much of their school time engaging in extracurricular activities, hoping to receive the subject related education from tuition classes instead. This has been a recurring pattern for many years. Engaging in extracurricular activities is good, but students should have the ability to balance both sides of their school life.

Choosing their teachers well is another important factor that affects the success of an A/L student. Finding a teacher whose teaching style suits them is an absolute necessity. Different teachers have different methods and approaches and different students can get the best out of certain teachers that match their learning style. A good teacher to one may be a bad teacher to another. So, it's pointless to follow the crowds and flock around 'popular' teachers when they might not be the suitable teacher for you. This must be even more stressed on when considering a subject such as A/L Physics.

Physics is a subject that deals with unseen forces, physical quantities, and many such concepts and definitions. Understanding and implementing these concepts is the basis of physics. Students studying this subject should be able to understand these in-depth, have good comprehension abilities, and think innovatively and critically in order to avoid losing their grasp on the subject halfway. If they only learn and memorize the subject but fail to develop thinking patterns, they will find it extremely difficult to face the final exam successfully.

ARTICLE III: MY EXPERIENCE WITH A/L STUDENTS,  
SUBJECTS AND EXAMS

Though some parts of the syllabus may seem outdated in the present world, many new branches and sub-topics of a more futuristic nature such as relativity, etc. are being continuously added to the existing syllabus. The local A/L syllabus gives a very good foundation for those who wish to follow an occupation in the given field. But the percentage of students who properly understand the subject and obtain this foundation is somewhat low. To explain the concepts within the syllabus and for the students to properly grasp it at a leisurely pace would take at least three years of learning the subject. Therefore, with the given time limit, the children have to do a large amount of work and should receive a solid education and sound preparation before they are ready to face the final examination.

When teachers make exam papers they focus on how, when, and where a certain concept is applied, the students' knowledge of this and how well they have understood its application. This is put to test through many steps in each questions. The entire syllabus is evenly included in every paper and each section is represented through related MCQs, structured essays, and essay questions.

My experience as a Marking Examiner for Advanced Level papers spans almost 25 years. Starting in 1995 as a Marking Examiner for Applied Mathematics and acting as a Marking Examiner for Advanced Level Physics from the year 2000 onwards, I was appointed as the Additional Chief of Paper Marking in the English Medium Physics



division from the year 2005 onwards. Last year, in 2019, I was appointed as a Controlled Marking Examiner by the Department of Examination and was able to contribute towards deciding the marking scheme of the 2019 A/L physics paper.

Thus, I have marked papers of students island-wide for many years and something I saw over and over again was that even though the students had learned the subject well, they had not been taught how to properly answer the questions in a way that they would receive the full allocated marks. They do not properly read or understand the questions, analyze the given diagrams, and apply the theories to their answer. These weaknesses are seen in at least 85% of the papers we receive. Students should read the questions more attentively, analyze the diagrams more closely, understand how the various concepts/theories relate to the given question, and properly mention the relevant theories and concepts in the answers they give. The best way to do this is to practise answering past papers and observe how the questions have been asked and how the correct answers have been given under the guidance of marking schemes. Having a proper mentality and sound preparation for the exam is of utmost importance. Without proper preparation, students will have insufficient time in the paper and may be unable to clearly express their ideas in their answers.

Finally, the encouragement given and attitudes imposed upon the students by their parents also play a great

ARTICLE III: MY EXPERIENCE WITH A/L STUDENTS,  
SUBJECTS AND EXAMS

role during these two years and have a major effect on how successfully they will face their A/L examinations. Isolated children, without the protection of parents or those who face various domestic issues, are prone to run into various obstacles during their A/L years. Their attendance is unsatisfactory and they get involved in many disciplinary issues and other unnecessary entanglements and as teachers, we are faced with the challenge of handling these special cases with the utmost care every year.

Mrs. Thamara Kumarihamy  
*Assistant Principal*  
*Sectional Head*  
*- A/L Science Section*

# CASE STUDIES

---

The following case studies describe the experiences of 3 successful students of the recent past. They explain how they practically implemented the above guidelines and share many more tips and useful pieces of advice. You can definitely relate to them. You might be sharing the same targets, facing the same challenges, and hoping to use the same study techniques.

*“Wise men learn from others’ mistakes. Fools wait till they make their own mistakes”*

## WISE WORDS FROM AN ISLAND 3<sup>RD</sup>

---

I'm Thevindu Wijesekara, 2nd in the Colombo district and 3rd in the island in the mathematics stream in 2018, with a Z score of 2.7992. People often asked me "What was your secret to getting an island rank? What did you do that no one else did?" To be honest I wasn't targeting an island rank. I just wanted to get into the Engineering Faculty of the University of Moratuwa. True, I worked hard. You would expect me to have slept for 3 or 4 hours a day and to have studied the remaining 20. But no, I slept 10 hours each day. You might think I have a brain like Einstein's, and that raw inborn talent got me my rank. That's not it. I didn't even top my class during O/Ls and before.

So what was my secret? Let's see. I knew my theory well. It was 2nd nature to me. I could have spouted out the entire syllabus if you asked. How was I capable of that?

Firstly I can't stress enough the importance of paying attention in class. If you're anyway in the class might as well take it seriously. It's an obvious thing to say, but many of us don't realize how helpful it is. It saved me a lot of trouble later on. Because I paid attention, when my friends were working hard studying the note, I already remembered it. Once you **properly understand the theory**

**taught by your teacher, half your job is already done.**

After learning the theory in class, I immediately strengthened my knowledge by doing questions on that unit from past A/L papers and recognized model question books.

Of course, later on, I had to re-read the theory note several times to remember it. I always referred to the syllabus and teachers guide. But I'm aware that now a resource book has been released which can be used instead. When I needed help understanding something, or wanted to get some extra practice on a particular section, I referred to several standard textbooks and supplementary books. But I didn't read them unnecessarily from top to bottom. That would've taken way too much time.

Just to name a few of these books, for physics; books by Prof. S.R.D.Rosa, Prof. Balo Daya, Dr. Geekiyanage, Prof. Lakshman Dissanayake, and textbooks by Nelkon & Parker. For chemistry, I used books by Prof. Jayathilaka, Prof. J.K.P.Ariyaratne, Hemachandra Basnayake, and 'Concise Inorganic Chemistry' by J.D.Lee. For pure maths, textbooks by S.L.Green and S.L.Loney can be recommended. These helped me to cover up any holes in my knowledge and to learn the finer points needed to get an island rank.

Doing practicals by yourself is very important, especially for physics, since the structured essay questions are based on them. Practical books and videos are not as effective as doing it in the laboratory. You must have experience in

using equipment, getting readings, and facing errors that may occur during the practical. **Never skip practicals**

**Understanding the fundamental theory in each subject was the foundation of my success.** But that wasn't unique to me. Many others had good theory knowledge, yet some of them didn't manage to get 3As, let alone an island rank. So then.....what was my secret?

Maybe it was the emphasis I gave on past papers. I already mentioned how I did them after learning each lesson. I'd recommend everyone to do at least 20 years of past A/L papers. I did slightly more. Many questions you face in the exam will be extremely similar to those in past papers. You'd realize that the patterns repeat year after year. It's quite easy to get a question correct if you've done it before right? That's exactly why I did so many past papers. In fact, after some time I'd do the same paper again, just so I'd remember the patterns better. **Give priority to past A/L papers.** Before a battle, smart generals study their enemies. Similarly, we too must study the paper.

But even then, almost everyone knows how important past papers are, and those who use them well are very likely to get 3As. But what pushed me all the way up to 3rd in the island? What was my secret?

There's a difference between knowing maths, and knowing how to get marks in maths. Of course, without knowing maths you won't have a chance at getting those

marks at all. But merely knowing maths won't get you those marks either. You need to know how to apply your knowledge to write answers that will score the maximum marks.

For example, in chemistry and maths essays, part marks are allocated for steps of calculations. Even if you make an error somewhere like a simplification error and get a wrong final answer, you'd still get several marks for correctly showing the steps. In chemistry and physics marks are allocated for the correct units. In physics structured essays, and as I've heard in bio essays and structured essays, marks are given for specific keywords. Even if you describe the same idea in different words without that particular keyword you are unlikely to get marks. These are just a few of many such examples where a thorough understanding of the style of A/L paper marking is essential to score marks.

So how did I get that understanding? **If anyone asks me the single most useful thing that I did that helped me get my rank, I'll give full credit to this; I studied marking schemes of past A/L papers.** Some even to the extent of memorizing them. It is best to get original marking schemes from teachers who were involved in paper marking, since those in past paper books may have mistakes, and often don't include updates and alternate methods that were added to the initial marking scheme after paper discussions. After answering a paper I took my time and studied the marking scheme, understanding the pattern

in which the professors have allocated marks. It made it very clear how I should write answers to get full marks. I even had some past papers marked by teachers who had attended A/L paper marking several times, which helped me fine-tune my answers to suit the A/L marking pattern.

One of my biggest challenges in the beginning, was managing time during the paper. For most students, the MCQ paper is the hardest. The simple reason is that the same methods they use for answering essay questions are used to answer MCQs, and that takes way too much time. Once I realized this and started using faster methods and shortcuts, MCQs became the easiest part of A/Ls and my favourite. I was able to finish physics MCQ papers in 40 minutes. That's 1/3rd of the allocated time. There are so many tricks and shortcuts you can use. Though there are many books written on MCQs, very few of them, like Rosa sir's reviews, explain these MCQ techniques. Many others explain MCQs as essay questions. Try and avoid them. You can also find your own ways of doing some MCQs. Try applying different methods (your own methods and methods found from books) and select the one that suits you. **Master MCQ answering techniques.**

It's also important to **time yourself when doing complete A/L papers** towards the last few months. This gives you a good understanding of what parts you spend too much time on and helps you to understand how you should manage time during the paper.



To be able to do past A/L papers so much I had to manage and plan my entire 2.5 years such that I could **finish the syllabi more than 3 months before A/Ls**. That way I had time to focus a lot on doing past papers with the marking schemes towards the end. While I was practising past papers I was able to identify mistakes I commonly made and having completed the syllabi early gave me enough time to correct them.

So what was my secret? It wasn't just one of these, but a combination. However, I can say that I focused almost all my time and energy on what I've mentioned above, and didn't spend much time on anything less effective.

If my article has inspired and instructed someone to pass A/Ls, get 3As, and hopefully even surpass my position and get that much-desired island 1st rank, I could be happy. I'd also like to thank the Prefects' Council for allowing me to share my experiences for the betterment of our Alma Mater

Thevindu Wijesekara  
*3As-Physical Science-2018*  
*District 2nd, Island 3rd*

## WORK SMART, NOT HARD

---

When people asked me what my target in A/Ls was, I said “to be 100% sure that I would get 3As, even before I sit for the paper.” I didn’t want to leave anything to luck or chance. I didn’t want to let stress get in the way or let a heat-of-the-moment mistake during the paper destroy years of hard work. And my plan seemed to have worked out even better than I expected.

My name is Minul Doluweera and I got 3As with a Z score of 2.8077, ranking 14th in the district, and 30th in the island in the Biology stream in 2019. This was while I was highly involved in many extra and co-curricular activities. I was the captain of the College Chess team in 2019, the vice-captain in 2018, and played chess extremely actively nationally and internationally in 2017 and 2018, being a member of the Men’s National Team. In 2017 I was the National Chess Champion and was nominated as the Most Outstanding Sportsman at Sri Lanka Schools Colours Awarding Ceremony. You can imagine the dedication I had for chess. Furthermore, I was the Chairman of the Debaters’ Council, a member of the lower board of the Gavel Club, and a main actor of the Shakespeare drama cast in 2017. I was a Steward in 2018 and was involved in several other projects during this time. Because of my

many extracurricular commitments, I had much less time and energy for studies compared to most of my friends. I couldn't work as hard. Instead, I had to work smart and get the most out of the little time I had for studies.

Working smart is about deciding what to do, and then planning the best way to do it. There are many tips and tricks you can use for this. Using them is like using cheat codes in a game. My family and teachers gave me many such ideas and my father showed me dozens of YouTube videos on study tips. I talked to my elder brother and many other seniors and got ideas from their success stories. I experimented with many of them and chose what worked best for me. It was well worth the time of researching. As Abraham Lincoln said, "give me six hours to chop down a tree and I will spend the first four sharpening the axe." Think of this article as another source of such ideas for you to experiment with.

1. My main practice material was past A/L papers. I managed to do them as follows,

### MCQs

	Chemistry	Physics	Biology
1980 - 1999	3 times	4 times	-
2000 - 2007	9 times	6 times	3 times
2007 - 2018	9 times	6 times	4 times

## CASE STUDY II: WORK SMART, NOT HARD

### Structured Essays & Essays

	Chemistry	Physics	Biology
2000 - 2018	3 times	2-3 times	2 times

	Chemistry			Biology				Physics			
	2003	2004	2005	2006	2007	2008	2009	2006	2007	2008	2009
MCQ	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓
Structure											
1	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
2	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
3	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
4	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Essays											
5	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
6	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
7	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
8	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
9A	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
9B	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
10A	✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
10B	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓

Fig 1. Notebook on tracking past paper progress

After doing the same past paper several times I started skipping the easier questions and doing only the hard ones. I'd just scan the question, get the answer mentally, check it, and move on without even writing anything. So it took very little time to complete a paper, usually

getting through an MCQ in half an hour. You might think that it is impossible to do past papers so many times, but by speeding up as above you can cover a lot in very little time. Scoring well in past papers made me confident that I'd do well in the exam too. If you could get an A for the last 20 A/L papers, there's no way you wouldn't get an A for this year's paper as well right?

I had a notebook which I used to track my progress. After doing a past paper I ticked it off in the notebook. This made my work very organized and the satisfaction I felt when I made a tick was heavenly. That feeling motivated me to do yet another paper.

My strongest subject was probably physics, and I owe most of it to how I did my first round of past papers questions. To illustrate, if I had just learned hydrostatics in class, I would turn to that chapter on my classified MCQ book (I used Pesulu), do the 1st sum, mark it, then look it up on Prof. S.R.D.Rosa's Physics Review of the relevant year, irrespective of whether I was correct or not, and note down all important points in a separate book, which I read through once a month or so. Then I would move onto the next question and repeat the same process until I had done all the hydrostatics past paper MCQs. By the end, I'd have a very deep theoretical knowledge on the topic, and I'd know how to use it in sums.

2. Many teachers and seniors recommended that I should cover my syllabi early. My chemistry teacher finished the

syllabus in July 2018, with a year to spare. For physics, at my mother's advice, I joined a class for 2018 A/L students in my first year, so I could cover the latter end of the syllabus, while I covered the beginning as usual at a class with my 2019 batch. As such, I was able to finish the physics syllabus in April 2018 along with the senior batch. Bio was trickier since the resource book wasn't finalized until a few months before the exam. But I arranged extra classes to do the last few lessons and covered the syllabus by March 2019, 2 or 3 months before my batchmates. Thanks to this, by December 2018 I had done enough chemistry and physics past papers to know I should be able to get an A quite easily. I was confident of my Bio A by June 2019, and I could say I achieved my target of being confident of getting 3As before sitting for the exam.

3. What did I do in the last few months before A/Ls?

Firstly I fixed my biggest weaknesses; making careless mistakes. I'm sure many of you can relate. I'd get 3 or 4 MCQs wrong in each paper at first. But then I consulted two of my teachers, and they recommended a method to overcome it. After each paper, I wrote down all the silly mistakes I made and how I could avoid them in a notebook. Soon I noticed that I made the same types of mistakes over and over again. There were common patterns. The next time I did a paper and came across a situation where I was likely to make careless mistakes I made a conscious effort to break that pattern. This worked so well that I minimized my careless mistakes to 1 or even none in past papers I did later, and even in my

A/L paper.

Secondly, I started replicating the A/L experience whenever I did past papers. I timed my papers, filled in MCQs on standard A/L answer sheets, circled questions that I wasn't sure of, carefully selected essay questions, and so on. Anything that I planned to do in the paper, I'd practice dozens of times at home. I'll give an example of how this helped: I took selecting essay questions very seriously. I'd read all 8 questions, do the sums in my mind and jot down the answer or the method on the paper, and at the end choose the easiest 4. Of the 2 hours allocated for the essay, I'd spend 45-50 minutes choosing, when most others barely took 10 minutes! But because I had already done the questions in my mind, and since I was doing the easiest questions, I could finish each question in 10-15 minutes, instead of the allocated 30. When I practised at home I constantly found myself finishing the paper with 10 minutes to spare, despite spending so long to choose. So when in the A/L paper I found myself starting the 1st question after 50 minutes of choosing, I was confident enough that I could do all 4 essays in the remaining 1h 10 mins. In fact, just like in the tens of times I did essays at home I finished early, and had enough time to do an extra question too!

4. As you may have already noticed writing down everything was a very important part of my work ethic. This was especially true for my goals. I had one day reserved for planning my week. I sat down with my moth-

## CASE STUDY II: WORK SMART, NOT HARD

er and reviewed my previous week. Was this class good for me? Was reading this reference book worth my time? Was studying with my friends time-efficient? and so on. I stopped anything that we thought was ineffective. They did not make it through to my to-do list for the next week. After writing down all the tasks for the next week I ticked them off after I did them, and with each tick comes an adrenaline rush. Though that process took a couple of hours each week, it saved me dozens of hours by ensuring my time was spent only on useful things. Again, think of Abraham Lincoln.

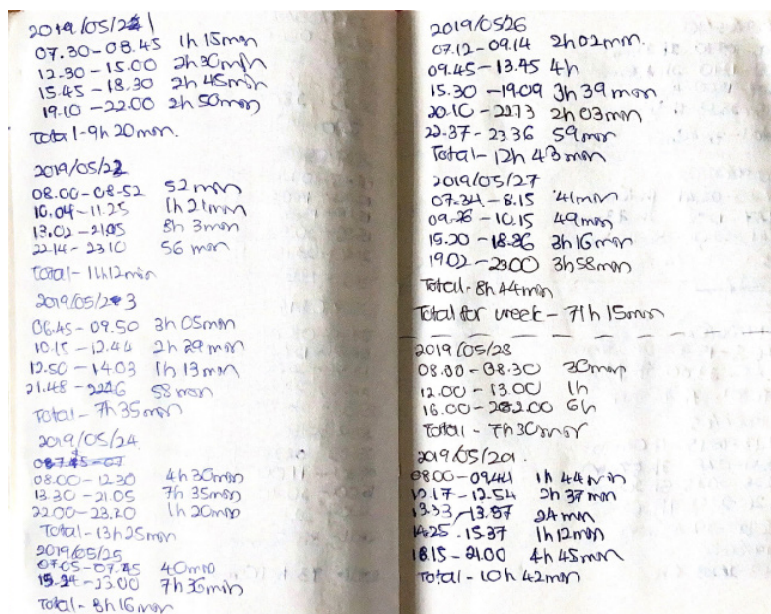


Fig 2. Notebook on time management



5. One of the things that boosted my productivity the most was writing down how long I studied. I had another notebook in which I wrote the time I sat down to study and the time I finished. I repeated this for each session and at the end of the day added it up. At the end of the week, I'd get the total to see if I reached my target. For 2018 it was 40 hours a week and for 2019 it was 70 hours a week. Mind you this was the time I spent on studying alone only, excluding school and tuition. Because I wrote this down I knew exactly why and when I'd waste time and I wouldn't let it happen again. At the end of the day if I had studied a lot I'd sleep happily. If I don't study enough there's no hiding from it, and I'd go to sleep determined to make up for it the next day

6. Though meeting my study-time targets were important, I'd never compromise on my sleep. In fact, I slept more during my A/L years than I did before and after. I'd get around 7.5 hours of sleep a day, with 6.5 hours at night and 1 hour in the afternoon, which gave me a much-needed break. I had read an article that going to sleep and waking up at roughly the same time every day improves the quality of sleep, so I tried my best to maintain that regularity. I learned the hard way that you should never study when you are sleepy. It's a waste of time. You'd be drooling on your book with nothing you read going into your head. If you're sleepy, try to break out of it. If it doesn't work, just go to sleep and wake up early. Don't be stingy over that time you'd be sleeping. Time spent on good sleep is not a waste

7. Choose your friends wisely. They say you are the average of the 5 people you spend the most time with. I was lucky that way. Between my 5 closest friends and myself, we had four 3As, one AAB, and one ABC. And these weren't book worms. Among us, we had 3 captains, 3 coloursmen, 2 chairmen, and 2 treasurers. Having friends who had similar goals, similar obstacles, similar intelligence, and a similar drive to achieve, made an intolerable journey enjoyable. Our chemistry and bio study groups met weekly. Having these get-togethers kept me sane during the most monotonous time of my life. It was the spice of my life. Whenever one of us was feeling too bored to study alone we'd meet up and study together the next day, and that never got boring. Studying together meant discussing a topic, or teaching someone or having trivia contests in the car. I might sound nerdy right now but these interactive ways of recalling what we studied went a long way in remembering what we learned. Though study sessions have so many advantages, it has a bad reputation because when friends get together they usually end up talking for hours about politics or girls or the latest gossip. That's where our choice of friends is crucial; where their discipline and self-control come into play. When we spiral off-topic, at least one of our friends must be able to say "Shall we move on to the next question"

8. Though I mention this last it is perhaps the single most important point of my article; mentors. Mentors are like coaches. You make your game plan with them.

You get your moral support from them. You find ways to troubleshoot your problems with them. Almost everything I mentioned above was told to me by my family and a few extremely trustworthy teachers. I'll illustrate with an example that will be relevant to most of us, falling asleep while studying! In the beginning, I used to fall asleep on my book by 9 pm. This started my search for a way to break out of it. My parents suggested splashing water on my face or studying while walking. My teachers advised exercising when I got sleepy or studying together with someone else. Though these might work on someone else they disappointed me each time. But finally, my mother found the solution. I pushed my dinner from 8 pm to 11 pm, and I went to sleep right after. That meant my stomach wouldn't take oxygen meant for my brain when I wanted to study, and the craving for dinner kept me alert until 11 pm each day. If rarely this didn't work I decided to just go and sleep.

Minul Doluweera  
*Deputy Head Prefect of Academics*  
*Royal College Prefects' Council 2019/20*

## FROM ZERO TO HERO..... IN 8 MONTHS

---

I'm Kaushitha Silva. I sat for A/Ls in 2019 in the physical science stream and got 3As with a Z Score of 2.157. Anyone who knew me before 2016 would be surprised if I hadn't got 3As. Being a smart kid who averaged 90+ for all subjects back then, I was consistently either first or second in my class. But everything changed when A/Ls started.

I'll start by stating how I prepared for O/Ls and how it differed from A/Ls. O/L Term tests were a joke to me. I'd sleep during the day. wake up at around 9 pm, study through the night and write the paper the next day without any sleep and still get more than 90%. A week later I'd have forgotten what I had studied. I thought, "My system worked for 9 subjects, it'll easily work for 3", a huge mistake made by so many of us. After O/Ls I joined multiple clubs and societies, mainly as a graphic designer. I was appointed as the Chairman of the Computer Society, Treasurer of the Photographic Society, and the Assistant Chairman of the General Knowledge Club. Along with these positions I had the privilege of serving school as a Probationary Steward. With these other commitments, I

started losing track of my studies. I missed tuition classes and lost interest in both Physics and Chemistry. Term after term my marks went downhill. I scored an average of 20s. The situation with my clubs got worse as almost all our projects failed or got postponed. I was stressed out, and I had to sacrifice something to keep doing the other. I chose clubs and societies. At some point in September 2018, I planned to just sit through A/Ls and become a full-time graphic designer. The year ended, and I was disappointed. I didn't get the senior steward card. RCCS got a "B" grade. Yet many of my friends achieved a lot in extracurriculars and did well in studies too.

#### *December 2018*

Days passed by, as I was regretting my life choices and pondered over what made a straight-A student a failure in A/Ls. I scored a milestone score of 6/100 for a chemistry exam in my tuition paper class.

#### *December 14th, 2018*

I was lying in bed trying to sleep, planning a future without A/Ls, and something snapped. The more I thought about it, the more I wanted 3As. I knew that I'd have to do in 8 months what others try to do in 2.5 years. My only chance was to spend whatever remaining time as effectively and efficiently as possible.

I found a new CR book and I drew a layout for a study journal, which I credit to be one of the biggest secrets of my success. I wrote down every hour of my day. Every

toilet break, every water break, every minute that I went out of focus was recorded in the study journal. Thus I knew exactly how I used my time, and how I could spend it better. For example, if I hadn't studied enough at the end of the hour I took a minute to think about why and wrote it in the study journal. I made sure that I never repeated the same mistake. I have attached a photo of the journal for your reference. My target was to study 55 minutes every hour. On the very first day with my journal, I managed to study for over 10 hours, which was in fact 8 hours more than what I did before! Every day I repeated the same procedure. My days were boring and predictable but were effective and efficient. The 5 minutes break prepared me for the next 55 minutes. Each day I wanted to study more than I did before. I wanted to beat myself. A couple of weeks later I got 68/100 for a chemistry paper and was second in my tuition class. From 6 to 68 marks, that took only 2 weeks. That's when I realized my potential and started getting more and more hopeful and motivated. This continued till the last day of A/Ls 8 months later.

I'll never forget the moment I checked my results on [doenets.lk](http://doenets.lk). It was the first time I worked this hard for something, and the 3As on my result sheet told me it paid off.

The systems and habits I followed and recommend may not suit everyone, but if you relate with my story I suggest you give it a try.

## A GUIDE TO A/L SUCCESS

	STUDYING	WASTED	REST	REASON (FOR WASTING TIME)
7:30 - 8:00	24	3		
8:00 - 9:00	52	8		Tea
9:00 - 10:00	53	2		breakfast
10:00 - 11:00	53	2	5	
11:00 - 12:00	40	10	5 + 5	bored.
12:00 - 1:00	53	7		
1:00 - 2:00	42	8		lunch
2:00 - 3:00	53	2	5	
3:00 - 4:00	50	2 + 2 + 1	5	
4:00 - 5:00	52	3	5	
5:00 - 6:00	47	2 + 6	5	
6:00 - 7:00	51	2 + 2	5	
7:00 - 8:00	50	5	5	
8:00 - 9:00	51	2 + 1	5	

11 hours & 11 minutes

fig 3 - Study Journal

### Deep explanation of my system

#### *I. Journaling*

As I already mentioned, my study journal was my biggest secret to getting self-disciplined. Besides, I kept track of every chapter I studied, every paper I did and every score I got for past papers. By going through them regularly and just by seeing them I got motivated to study more. I wrote reviews on my performance for exams. I also wrote down every silly mistake I made and why I made them.

I wrote down my daily, weekly, and monthly targets. I made sure I was on track at the end of the day. A lot of the most successful people in the world write down their future goals and record their past experiences. It's not surprising. When I read through my journals, it was like having a personal guardian angel who looked over my shoulder 24/7, reminding me of my mistakes and how I can correct them, patting me on the back when I got good marks, and telling me I relaxed too much this week, I had a lot more chapters to cover.

## *II. Variation in Studying & Boredom*

Studying in the same manner is ineffective and inefficient. Variety is the spice of life. If you always sit down and study, maybe try studying while walking. You may find out that it's easier to remember what you studied. I always associated something else. an emotion, a location, a sensation with what I studied. For example, I studied organic chemistry by writing reviews of past paper questions from 1974 onwards. For inorganic chemistry, I used voice recordings and colourful charts which I pasted on my wall. For some physics lessons, I watched Walter Lewin's lectures on YouTube. You could try explaining a lesson to someone who has no idea about it. You are less likely to forget that person's reaction to your explanation. In fact, research has shown that teaching someone is one of the most effective ways to remember. Find creative ways to associate another emotion with how you study. Use different sensory organs. Read the chapter out loud, draw diagrams and charts, record your voice explaining



it yourself, maybe video yourself explaining, etc. With this method, you'll find yourself less bored with studying and remembering more.

### *III. Visual Cues*

The first thing I saw when I woke up was my study journal on the table waiting for me, a beckoning call to start studying. On the wall, I had 3 posters of quotes that kept me motivated. Some days I closed my books thinking I've done enough. Then when I saw those posters I sat down and studied again.

### *IV. Follow Up Habits*

One habit leads to another. Develop a simple habit that you can do in seconds, which will lead to you opening a book and studying. For me, that was switching on my light. Whenever I switched on my light, I studied. In fact, sometimes I had the light on in broad daylight. Maybe for me getting 3As was as simple as turning on a light! There was a flow of actions when I studied, where one triggered off the next. I would study for 55 minutes. Then enter it into the journal. Afterwards I'd start my countdown for 5 mins on the digital watch. The watch would beep in the last 10 seconds. I'd run back to my room and record 5 mins of relaxing. Writing that was my cue to start studying again. Read the above flow of actions and habits again and notice the pattern; I have specified the action I take after each small habit.

### *V. Distractions*

I locked my door and never opened it until the 55 minutes were done, keeping anything distracting out of sight. I got rid of smartphones, social media, TV, games, and anything else that I wasted time on. This is where my study journal told me where I wasted time. I tried not to attend parties, get-togethers, and especially funerals not only because it took a lot of time, but also because it broke my rhythm and made it harder to get in the mood afterwards.

### *VI. Guilty Pleasures - One Space, One Use*

One of my favourite leisure activities was watching movies. I had a method to have a great time enjoying a movie while not losing focus on my goals. If I wanted to watch a movie I fixed a date with a group of friends, got out of my studying space, and went to the cinema. I emphasize on, “went to the cinema”. It’s easier to just watch a movie on TV at home. But that action is repeatable and will introduce a new bad habit. But you cannot go to the cinema every day. You go out once, have a good time, return to your room (switch on the light!) and study. It’s as simple as that. Keep your home for studying and the cinema for entertainment. Don’t mix the two spaces.

### *VII. Rewarding Yourself*

Winners don’t take days off, don’t rest for a day each week. You’d be doing yourself an injustice for the 6 days you worked. If the reward is ruining what you worked so hard for then you are not rewarding yourself, you are

punishing yourself. But this is a debatable topic. If you feel exhausted, go out for a movie or dinner. But make sure you are in control. I only took such breaks two days per month for 4-6 hours each. Try to reward yourself with truly profitable actions. For example, if I studied 10 hours before 8 PM, I'd sleep early or go to the gym.

### ***VIII. Fitness and Health***

This is something I underestimated but turned out to be extremely important. As soon as you have some extra time, exercise. Use the 5 minutes break for physical activity. Forget about the 10 hours study time if you find yourself unfit or sick. Give your full attention and dedication to cure any health issues as it may cost you months or even years of your life. And that is time you cannot afford to lose.

### ***IX. Tuition Classes & Past Papers***

I had 4 tuition classes for the 3 subjects. I finished the maths syllabus in December 2018 which was a massive advantage for me. I completed the physics syllabus in April and the chemistry syllabus in June 2019. Don't wait until you finish the syllabus to start past papers. I did physics and chemistry MCQs from 1970 to 2018 more than three times. By August, I could recall questions with the question number in a specific year by heart. "History repeats itself". It doesn't matter if it's the new or old syllabus, Newton's Laws are still the same. I started doing structured questions in March and essays by the end of April. Although I didn't have time to answer all

the questions as much as I would have liked, I read every question and its answer more than 10 or 20 times before the A/L paper

### *X. Sleep*

Many people will tell you to sleep 'X number of hours'. However, I let my brain decide how long it needs. On some days your brain needs more sleep and on other days it'll need less. I kept an alarm to remind myself to sleep at a specific time in the night, but I didn't keep one to wake me up in the morning

### *XI. Match Day*

I was not very good at handling tension. I tend to focus on the worst that could happen. In the last couple of weeks, I flipped through my study journal and I thought to myself, "It's alright if I fail, I gave my 100%." (Failure for me was to get a 'B'). Hope for the best, prepare for the worst. I performed very badly in the physics MCQ, which was one of the hardest A/L papers ever to have been made. In the middle of the paper, I kept thinking about getting poor results. I wasted time and panicked. However, after that paper, I thought of every possible bad outcome I could get, and guess what.....I was okay with it. When you are fine with the worst that could happen, you have nothing to lose, and everything to gain, and your mindset can't get any better than that. Try to remove emotional connections to A/Ls. It's just another exam at the end of the day. If you believe that without A/Ls you'll fail life, you'll fail A/Ls too. Imagine yourself with

bad results and mentally prepare for it if anything goes wrong.

You are capable of much more than you imagine. Where there's a will there's a way. If there's one thing you take from my article, it's that it's never too late to start turning your life upside down.

All the best!

Kaushitha Silva  
*Senior Prefect*  
*Royal College Prefects' Council 2019/20*

## ACKNOWLEDGEMENTS

---

The Royal College Prefects' Council 2019/20 would like to sincerely thank the following individuals for their support in making "A Guide to A/L Success" a triumph.

- The Principal of Royal College, Mr. B.A.Abeyrathna for supporting and motivating this venture right till the end
- The Master in Charge of Prefects, Mr. T.D.C.P. Amaratunga, for overseeing and guiding our every move. Whenever we hit a roadblock, one call to Sir would give us the solution.
- Mrs. Thamara Kumarihamy, Sectional Head of the A/L Science Section, not only for writing a valuable article but also for approving the entire publication. We can surely count on her to share the wisdom in this guide to all Royalists for years to come.
- The members of the administrative and academic staff of Royal College, for being the backbone behind this project.
- Professor S.R.D.Rosa of the University of Colombo, for sparing a few hours of his busy schedule for an interview. It was truly a privilege to get the stamp of approval from someone idolized by hundreds of thousands of Physics students, past and present.
- Dr. M.N.Kaumal, Senior Lecturer of the University of Colombo, for his write-up on the secrets of mastering A/L Chemistry. Though we approached him when those with A/L duties were busiest, he found the time to make this book all the more valuable.
- The many other professors, lecturers and teachers who contributed to this project, but could not be mentioned or wish to remain unnamed. They reflected on our research, finetuned the guidelines, and connected us to many other resource persons.

- Thevindu Wijesekara, of the Batch of 2018, who not only brought glory to his Alma Mater as an Island ranker, but also shared the secrets of his success for the benefit of thousands of Royalists to come. He is truly a product of Royal we all can be proud of
- All the Old Royalists of the Batches of 2019, 2018, 2017, 2016, and 2015 who answered our survey, giving us the information needed to compile our guidelines.
- The Royal College Old Boys Association, Australia, for generously sponsoring the project, thus making the printing and distribution of the book possible
- Mrs. Tharanga Wijesundara, the English teacher of Royal College who was kind enough to proofread the entire book in a matter of hours at very short notice
- Our designers *Lorem Ipsum*, for taking raw text and making it the fine end product you see before your eyes. Their artistic eye and infallible instincts have made magic for Royal yet again.
- The Royal College Computer Society, for their support in analyzing the results of the survey and in designing sections of the publication.
- Most importantly, our families, who supported, guided, motivated and tolerated us throughout this project. Words fail to describe how much we owe you, for everything.

# THE ART OF A/LS

THE RESEARCH-BACKED  
HANDBOOK OF THE EFFECTIVE  
A/L STUDENT

“A marvellous job. Sharing experience is very important and highly beneficial for others to do the correct things. It is commendable that you selected the right group as the sample. Thanks are due to them too.”

- A SENIOR PROFESSOR OF ZOOLOGY INVOLVED IN A/LS

Do you have too much work to do and too little time to do it? Do you keep forgetting what you studied? Do you keep losing marks on careless mistakes and technicalities in the marking scheme? Do you feel like A/LS is too much to handle?

We did.

That's why we went to the ends of the Earth to find the solutions to these, and so many more questions, that plague A/L students.

In "A Guide to A/L Success" you will find,

8 guidelines, based on our original research conducted on 313 past A/L students that will help you

- Discover the fundamental dos and don'ts to succeed in A/LS
- Learn the essential 20% of work to be done that will get you 80% of your marks

3 articles authored by Professor S.R.D.Rosa, Dr. M.N.Kaumal and Mrs. Thamara Kumarihamy, sharing their wealth of experience interacting with thousands of A/L students, over decades of their careers.

From them you will

- Learn how to enjoy and master your subject
- Learn inside information on the nature of A/LS and how to score well in it

3 instructive case studies of high-performing students, from which you will

- Learn tips and tricks to make your studies more efficient
- Understand the story of how they practically implemented the above advice