

## Leaving Certificate Biology

RTE 2005

The new biology syllabus which began in 2002 is the first substantial change since biology became a new subject at leaving certificate level in 1969 – that's correct, no real change for 33 years.

Since 1969 there has been remarkable and highly exciting advances in the field of biology. Some of these are included in the new syllabus.

### Trend in Biology Results

#### Higher Level

Over the last number of years more than 10% of students achieved an A grade and around 65% achieved C or better. So about two thirds achieve very good to excellent results – a marvellous performance so far.

#### Ordinary Level

Disappointing level of 'failure' i.e. less than a D grade, just below 20%.

### The Exam Paper

Close scrutiny of your 'enemy' before battle is essential. A particular strategy must be followed to achieve maximum results on this special day.

## **Biology Exam Paper**

<b>Time</b>	<b>3 hours or 180 minutes</b>
<b>Marks</b>	<b>400</b>
<b>Structure</b>	<p><b>Section A (100 marks or 25% of exam)</b></p> <p>Six structured multipart questions.  2 questions from Unit 1 of the Syllabus.  2 questions from Unit 2 of the Syllabus.  2 questions from Unit 3 of the Syllabus.</p> <p>Each question with several small questions that must be answered in the spaces provided on the exam paper.  Instructed to answer any <b>five</b> questions.</p> <p><b>Answer <u>all</u> six questions.</b></p> <p>Each question carries 20 marks.  Marks awarded for your <u>five best scoring questions</u>.</p> <p>Maximum Time: 35 minutes.</p>
	<p><b>Section B (60 marks or 15% of exam)</b></p> <p>Three structured multipart questions based on the 23 mandatory practical activities at higher level and 22 at ordinary level.</p> <p>Answers must be written into the spaces provided on the exam paper.</p> <p>Instructed to answer and <b>two</b> questions.</p> <p><b>Answer <u>all</u> three questions.</b></p> <p>Each question carries 30 marks.  Marks awarded for your <u>two best scoring questions</u>.</p> <p>Maximum Time: 25 minutes.</p>
	<p><b>Section C (240 marks or 60% of exam)</b></p> <p>This section contains six 'long-answer questions'.</p>

	<p>One question from Unit 1 of the Syllabus. Two questions from Unit 2 of the Syllabus. Three questions from Unit 3 of the Syllabus.</p> <p>Answers must be written in the answer book. Instructed to answer any <b>four</b> questions.</p> <p><b>Answer four questions.</b></p> <p>Each question carries 60 marks. Maximu Time : 2 hours (120 minutes i.e. 30 minutes per question).</p> <p>You may answer more than four questions. Marks will be awarded for your <u>four best scoring questions</u>.</p>
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### **Major Topics in The Three Units of the Biology Syllabus**

Aid to Your Study for Sections A and C.

#### **Unit 1: The Study of Life**

The Scientific Method.

The Characteristics of Life

Nutrition – biochemistry of the major food biomolecules

General Principles of Ecology

A Study of an Ecosystem – including fieldwork techniques.

Human Impact on the Biosphere

#### **Unit 2: The Cell**

Cell Structure

Cell Metabolism – enzyme, photosynthesis, respiration.

Cell Continuity – cell cycle, mitosis, meiosis, and cancer.

Cell Diversity – including tissue culture

Genetics – DNA structure and replication, protein synthesis, genetic engineering and genetic crosses.

Evolution

#### **Unit 3: The Organism**

Diversity of Organisms – bacteria, fungi, protista, viruses.

Organisation and the Vascular Structures

Transport and Nutrition

Breathing System and Excretion

Responses to Stimuli

Reproduction and Growth

Or and alternative subdivision of Unit 3

1. Diversity of Organisms – bacteria, fungi, protista, viruses.
2. Plant Biology
  - a) External and internal structure of flowering plants.
  - b) Sexual Reproduction in Flowering Plants including seed dispersal and germination.
  - c) Vegetative Reproduction in Flowering Plants.
  - d) Transport of Water, Minerals and Food in Plants.
  - e) Plant Growth Regulation and Plant Responses.
3. Human Biology
  - a) Human Circulatory System – blood and lymphatic systems.
  - b) Digestive System.
  - c) Breathing System.
  - d) Kidneys
  - e) Homeostasis – including skin, liver, lungs, kidneys.
  - f) The Nervous System.
  - g) Sense Organs – eye, ear, nose, taste buds, skin.
  - h) Endocrine System.
  - i) Human Reproduction

## **Exam Day Strategy**

### **Timing**

First ten minutes - read the entire paper.

You may pick up ideas for answers to Section A as you read the other sections.

Try to get Section A completed within 35 minutes of the start.

After an hour you should have Sections A and B completed.

Two hours to answer Section C.

### **Timing Within Section C Questions**

Check the marks allocated for the major parts in each question i.e. for (a), (b) and (c).

Divide the mark by two to calculate the time in minutes you should give each part of the question.

Questions 10, 11, 12, 13 are subdivided into three parts of the following marks, 9, 24 and 27. Therefore give 4 minutes to the 9 mark part, 12 minutes to the 24 mark section and 13 marks to the 27 mark part.

Questions 14 and 15 have three equal parts to do two so each is worth 30 marks. Give 15 minutes to each part.

### **Time to Recheck Your Answers**

It is most important to check your answers.

The vast, vast, vast majority of students cannot stop ten minutes early to recheck the answers and so rechecking is sacrificed.

**Make it a rule that you will check each answer before you start the next one.**

### **Answering Style**

(i) Sections A and B

Use the space on the exam paper.

Never write these answers into the answer book – if you do then you have not followed instructions. The ability to understand and follow instructions is very important and you may find yourself penalised for any lack in this area.

The depth and breadth of the answer is indicated by the amount of space available.

If the space is not enough for your answer then make sure the overflow is clearly

indicated and easily read.

(ii) Section C.

Quite frequently a particular style of answer is required.

You must answer in the style indicated.

Outline: short answer that includes only the major points – detail not required.

State: express fully and clearly in writing.

Write: use words, not diagrams, to give the information.

Distinguish: point out the essential difference.

Draw a labelled diagram: a written description will score zero – more on diagrams later.

Comment: give a critical opinion or write an explanatory note.

If a particular style is not asked for then you may choose any style that suits you best.

You may answer in continuous prose if you wish i.e. essay style.

Continuous prose is most popular with students but it is not the best method.

A superior way to answer questions is in numbered points.

1. Start each sentence on a new line.
2. Number each sentence.
3. Try to have just one item of information in each sentence.
4. Leave a clear space of several lines after each part of a question.
5. The space will allow you to add any necessary information on rechecking.
6. Clear spacing between parts of a question is very helpful to the corrector.

### **Use of Colour in Your Answers**

Do **not** use red or green to highlight any part of your work.

The examiner corrects in red. The examiner underlines the items of information for which they are awarding marks. The marks are written in red in the right hand margin (you are never to write in this margin). The total marks for the question are ringed in red at the top left at the start of the answer.

Any work that you do in red can interfere with the examiner's work.

Should your paper be checked a second time by an advising examiner it will be marked fresh in green.

Never use colour in diagrams and do not shade.

The diagram may look nicer but it does not contain any extra information.

Colour gains no marks and takes up time that you could use to give a more detailed answer or time to recheck.

## **The Exam Paper – a closer look**

### **Section A (Multipart General Structured Questions)**

Section A carries 25% of the total marks. A very high score is needed here if you wish for an overall top grade.

This Section A is tough as the questions are taken from every little corner and 'hiding place' in the syllabus. If you have not studied all parts of the syllabus you be 'unlucky' and find some of the questions impossible.

You are required to answer five from six questions (each carries 20 marks). It is advisable to answer **all** the questions, and **all parts** to each question - **no blank spaces**.

You will be marked from your best five answers.

Try to make your answer fit the space available to ensure sufficient detail.

If you require more space then your answer is probably too detailed.

Expect two questions based on Unit 1 of the Syllabus, two questions on Unit 2 and two questions on Unit 3.

Good preparation for Section A is to know all the answers to the Sample Papers Bookelet, last year's exam paper and the sample paper issue by the State Examinations Commission for 2004.

Higher level students can accomplish much by also using an ordinary level sample paper booklet. There are many testing and interesting questions which can help to reinforce the basics and build up your confidence.

Also make sure you know the answers to the 'short questions' at the end of the chapters in your textbook or workbook.

An excellent and enjoyable method of revision is to get a 'friend' to quiz you on all these Section A questions. The questions should be asked out of sequence. Make it a target that you immediately answer all these questions by exam day.

A quiz session set up by the teacher in class may be noisy but it is great fun and great learning.

The study you do for Section A is extremely useful for the other two sections.

### **Section B: Questions on the Mandatory Practical Activities**

There are 23 mandatory practical activities at higher level and 22 of these at ordinary level.

The only difference is that at ordinary level 'the investigation of the effect of heat denaturation on the activity of one enzyme' is not required.

There is no difference in detail required at the two levels.

The mandatory practical activities must have been carried out by each student and must also have been written up by each student and retained by each student.

The record of these activities can be a very useful revision aid.

It is not essential that you 'got the right result' during the practical. It is the procedure and the appreciation of the scientific method that is important. Mistakes are often more informative than successes and many eminent scientists have made astounding discoveries due to 'mistakes' in their experimental work.

Section B is tough.

You have three questions to answer two.

It is likely that each of the three questions will deal with a different mandatory activity.

Each mandatory activity must be mastered in order to guarantee a choice.

If you have omitted one activity in your study you may not have a choice.

If you have omitted two you may only be able to answer one question.

If you have omitted three you may not be able to answer any question in this Section.

If you have not mastered each activity then you may be badly caught out in this section.

**You must master all the 23 activities at higher level and 22 at ordinary level.**

Knowing the procedure of each activity is not enough – you must know the reason for each step in the procedure.

**Note: questions on the practical activities may also appear in Sections A and C.**

Each question in Section B is divided in part (a) and part (b).

Part (a) carries six marks and may deal with the theory or some other aspect of the mandatory activity examined in part (b).

Part (b) carries twenty four marks.

Use all the available space on the exam paper for you answer so that it contains enough detail for a good grade.

### **Section C – ‘the long-answer questions’**

There is only 60 marks for each questions. Section C may turn into a clone of Section A and many of the questions are subdivided in many short questions.

Section C questions are based on the three units within the syllabus.

Unit 1 will have one question.

Two question on Unit 2.

Three questions on Unit 3.

You are instructed to answer 4 questions.

### **Choosing Your Best Four Questions**

You must make a wise decision – a wrong question will not score as high.

Follow this strategy from question 10 to question 15.

“Read → Think → Grade → Jot”

Read - the question slowly and carefully.

Think - how this question would suit you if you answered it.

Grade - what grade would you achieve from it: A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub> B<sub>2</sub>, B<sub>3</sub>, C<sub>1</sub> etc.

Jot – the calculated grade beside the question on the exam paper.

Your choice is the four highest graded questions out of the six.

You have about 30 minutes to answer each of the Section C questions.

It is vital that you give at least 30 minutes to your fourth question. To you this is the weakest of your four. You must give it full time so that it is less likely to let you down.

Again: recheck the answer before moving on to the next question.

**But be careful** – do not to go over 30 minutes on your first answer.



**Staying on Track** –sticking to the point of the question

Read the question carefully – you must know precisely what the question requires.

Answer what you are asked – not what you would like to have been asked.

Underline the key words in the question, ‘believe what you read’ and answer accordingly.

Never refuse to answer any part of the question – have a go, the answer to gain full marks may not be as detailed as you think.

**Tips and Predictions**

At best these are educated guesses i.e. gambling.

If you gamble then you must be prepared to lose.

**Advice for Students Aspiring to the Highest Grades**

About 15% of students obtain an A grade each year.

It is reasonable to expect the same again this year or maybe even a little better.

Therefore at least 15% of each question must be too difficult for 85% of the students.

What sort of material is too difficult for this 85%? The material avoided by students during their study i.e. the hard to understand and/or the boring.

If you aspire to the highest grades then the very material you wish to avoid is the very material that is used to separate the As from the others.

Definitely, ‘if you don’t like it, you study it’.

**Drawing Diagrams**

Fear not.

Artistic ability is not needed to gain full marks for the drawings.

Make your drawing (i) **big**, (ii) **all the important parts must be present and** in the (iii) correct **positions** – these are the only three requirements for full marks

Do not waste your time on shading or colour – pencil only.

3D and perspective are not relevant – do not even try.

Labelling of diagrams is essential. If you are not instructed as to which parts to label or how many, then label every part. Remember to include a title for each diagram – it is often taken as a label and scores marks.

The end of the label line must make physical contact with the named item. Label lines between two items will not score.

### **Should Extra Questions Be Attempted?**

Plan to answer four questions in Section C making sure you have at least 30 minutes available for each answer.

Never finish an answer early just to save time to get in an extra question.

It often happens in the exam some of the answers take less time than expected. You may end up with time to spare. **You must recheck your answers.** Then if you still have time to spare an extra question can be answered.

All questions will be marked and you will be given the marks for the four highest scoring questions.

### **Success in Exams**

Leaving Certificate Biology is long. On average the textbooks are 430 pages. A mighty effort is needed to master all this material. But do not depend on knowledge alone to ensure success.

You must know how to use what you know – answering skill is vital.

If you have the knowledge and the answering skill then no exam will be a problem – you are guaranteed to do well. There is no such thing as exam stress if you have done the work.

### **Study Targets**

#### **1. Identify the material that most needs attention.**

Go to the contents page of your book.

Write your target grade for biology on top.

For each chapter calculate the grade you would achieve if you were asked a general question on the topic. Record this grade in pencil beside it on the contents page.

First study the chapters that scored the lowest – you must bring each chapter up to and beyond the targeted grade.

#### **2. Work On Questions**

Exams do not necessarily test you knowledge and understanding of a subject but they certainly test you ability to answer questions.

You must study, understand and learn the answers to questions.

### 3: Textbook Illustrations

Study and learn the diagrams and flow charts.

Closely examine the photographs.

The illustrations contain a huge amount of information – it is good to start the study of a chapter by a quick review of the illustrations.

### 4. Answering Questions

Do your written homework under exam conditions.

Study the topic area. When you think you have mastered the topic answer the homework without any help from textbook or notes. Complete the homework within the time you would have in the exam. Recheck your answer – get into good habits now.

When corrected next day in class you can learn from your mistakes – if any!

How you perform in this type of homework is an excellent guide as to how you may perform on exam day.

### **A ‘Tough Exam Paper’ Is The Best**

A tough paper is better as the marking scheme will be easy, the students relying on tips will be destroyed plus many students will just give up and leave the exam early.

A tough paper eliminates many of your competitors in the fight for points and CAO places.

Celebrate a tough paper.

### **Finally**

Good results mean you have worked hard. Praise is well deserved for good results.

All the best in your studies and exams. ☺