

Mark Scheme (Results) January 2010

GCE

GCE Biology (6BI07/01)

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:

<http://www.edexcel.com/Aboutus/contact-us/>

Alternately, you can speak directly to a subject specialist at Edexcel on our dedicated Science telephone line: 0844 576 0037

January 2010

Publications Code US022648

All the material in this publication is copyright
© Edexcel Ltd 2010

GENERAL INTRODUCTION

Mark schemes are prepared by the Principal Examiners and revised, together with the relevant questions, by a panel of senior examiners and subject teachers. The schemes are further amended at the Standardisation meetings attended by all examiners. The Standardisation meeting ensures as far as possible that the mark scheme covers the candidates' actual responses to questions and that every examiner understands and applies it in the same way.

The schemes in this document are the final mark schemes used by the examiners in this examination and include the amendments made at the meeting. They do not include any details of the discussions that took place in the meeting, nor do they include all of the possible alternative answers or equivalent statements that were considered to be worthy of credit.

It is emphasised that these mark schemes are working documents that apply to these papers in this examination. Every effort is made to ensure a consistent approach to marking from one examination to another but each marking point has to be judged in the context of the candidates' responses and in relation to the other questions in the paper. It should not be assumed that future mark schemes will adopt exactly the same marking points as this one.

Edexcel cannot under any circumstances discuss or comment informally on the marking of individual scripts. Any enquiries about the marks awarded to individual candidates can be dealt with only through the official Enquiry about Results procedure.

GENERAL INFORMATION

The following symbols are used in the mark schemes for all questions:

| Symbol | Meaning of symbol |
|--------------------|--|
| ; semi colon | Indicates the end of a marking point |
| eq | Indicates that credit should be given for other correct alternatives to a word or statement, as discussed in the Standardisation meeting |
| / oblique | Words or phrases separated by an oblique are alternatives to each other |
| { } curly brackets | Indicate the beginning and end of a list of alternatives (separated by obliques) where necessary to avoid confusion |
| () round brackets | Words inside round brackets are to aid understanding of the marking point but are not required to award the point |
| [] square brackets | Words inside square brackets are instructions or guidance for examiners |
| [CE] or [TE] | Consecutive error / transferred error |

Crossed out work

If a candidate has crossed out an answer and written new text, the crossed out work can be ignored. If the candidate has crossed out work but written no new text, the crossed out work for that question or part question should be marked, as far as it is possible to do so.

Spelling and clarity

In general, an error made in an early part of a question is penalised when it occurs but not subsequently. The candidate is penalised once only and can gain credit in later parts of the question by correct reasoning from the earlier incorrect answer.

No marks are awarded specifically for quality of language in the written papers, except for the essays in the synoptic paper. Use of English is however taken into account as follows:

- the spelling of technical terms must be sufficiently correct for the answer to be unambiguous
e.g. for amylase, 'ammalase' is acceptable whereas 'amylose' is not
e.g. for glycogen, 'glicojen' is acceptable whereas 'glucagen' is not
e.g. for ileum, 'illeum' is acceptable whereas 'ilium' is not
e.g. for mitosis, 'mytosis' is acceptable whereas 'meitosis' is not
- candidates must make their meaning clear to the examiner to gain the mark.
- a correct statement that is contradicted by an incorrect statement in the same part of an answer gains no mark - irrelevant material should be ignored

| Question Number | Answer | Mark |
|-----------------|---|----------------|
| 1(a)(i) | <ol style="list-style-type: none"> 1. weigh fixed / known amount plant ; 2. measured/known volume of ethanol / known concentration of ethanol ; 3. shake / leave for known / stated time ; 4. standardised crushing method ; 5. separation / filtration / eq ; 6. use same part of plant / same strain / variety of the plant ; | maximum (2) |

| Question Number | Answer | Mark |
|-----------------|--|----------------|
| 1(a)(ii) | <ol style="list-style-type: none"> 1. description of plate pouring / eq ; 2. description of bacteria spreading / or putting bacteria into molten agar and swirl / mix / eq ; 3. description of how garlic extract added (well, filter paper) / eq ; 4. incubate (at stated temperature, <35) / eq ; 5. (incubate) {for appropriate time 1-3 days / upside down} / eq ; 6. credit description of aseptic precaution e.g. flaming neck of bacteria bottle / swabbing bench at beginning / sterilising {loop / spreader} / using (lit) Bunsen (flame) at back/ eq ; 7. any reference to reducing biohazard described e.g. pipette in disinfectant / autoclave used eqpt. / swabbing bench at end / appropriate taping of lid (i.e. not all round)/ eq ; | maximum (5) |

| Question Number | Answer | Mark |
|-----------------|--|----------------|
| 1(a)(iii) | <ol style="list-style-type: none"> 1. graph paper tracing / {mean / average} diameter / eq ; 2. count squares / calculate area / eq ; 3. subtract area of {well / paper} / eq ; | maximum (2) |

| Question Number | Answer | Mark |
|-----------------|---|------|
| 1(b)(i) | <ol style="list-style-type: none"> 1. axes correct (x-garlic extract, y-diameter) ; 2. axes labelled with units ; 3. correct plotting with sensible scale ; 4. suitable line of best fit / line joining points accurately ruled ; | (4) |

| Question Number | Answer | Mark |
|-----------------|--|------|
| 1(b)(ii) | <ol style="list-style-type: none"> 1. increasing concentration increases antibacterial effect / eq ; 2. no effect 25 and below /positive correlation 50 above / eq ; | (2) |

| Question Number | Answer | Mark |
|-----------------|--------|------|
| 1(c)(i) | 25 ; | (1) |

| Question Number | Answer | Mark |
|-----------------|--|----------------|
| 1(c)(ii) | <ol style="list-style-type: none">1. garlic better than both tetracycline and streptomycin / converse / eq ;2. {not quite as good as / similar to} chloramphenicol / converse / eq ;3. credit correct figure manipulation / eq ; | maximum (2) |

| Question Number | Answer | Mark |
|-----------------|---|------|
| 1(d) | <ol style="list-style-type: none">1. correct ref to clear zone size related to judgement on validity ;2. correct ref to relatedness of onion to garlic ; | (2) |

| Question Number | Answer | Mark |
|-----------------|--|----------------|
| 2(a)(i) | <ol style="list-style-type: none"> 1. potential substance identified / eq ; 2. trial on a small group of people/ eq ; 3. larger group / eq ; 4. dosage refined / ref to near death incident ; 5. publication of treatise / eq ; 6. any ref to specific material in passage e.g. how substance identified / numbers in 'large' trial (163)) ; | maximum (4) |

| Question Number | Answer | Mark |
|-----------------|---|------|
| 2(a)(ii) | <ol style="list-style-type: none"> 1. more expensive / eq ; 2. large numbers / long time / animal testing / legal costs / equipment qualified ; | (2) |

| Question Number | Answer | Mark |
|-----------------|---|------|
| 2(a)(iii) | <p><u>Similarity</u></p> <ol style="list-style-type: none"> 1. discovery / testing on people/ small to start with/ scale up / careful recording of results, publication/ finding effective dosage / similar response to safety issues / monitoring patients / need for replication ; 2. appropriate comments for both protocols ; <p><u>Difference</u></p> <ol style="list-style-type: none"> 3. animal tests / large scale synthesis / placebo, double blind trials / sample size ; 4. appropriate comments for both protocols ; | (4) |

| Question Number | Answer | Mark |
|-----------------|---|------------------------|
| 2(b)(i) | <ol style="list-style-type: none"> 1. people who take statins have muscle problems ; 2. MP1 qualified e.g. named one/ relative incidence of different ones / wide range of problems / most / 57% of people have muscle problems ; 3. raised cholesterol causes increased CVD / correlation / converse / eq ; 4. v low ch increase death rate from all causes/ eq ; 5. v high ch increase death rate from all causes / eq ; 6. but not so with all mortality / low and high cholesterol leads to increased total mortality / eq ; 7. lowering cholesterol (too much) is an overall risk in men ; 8. from v low to medium cholesterol increase risk of death from CVD / eq ; 9. from v high to medium cholesterol increases risk of death from CVD /eq ; 10. ref to in men in relation to fig 2 and/or ref to in women in relation to fig 3 ; | maximum (6) |

| Question Number | Answer | Mark |
|-----------------|---|--|
| 2(b)(ii) | <ol style="list-style-type: none"> 1. ref to other side effects of statins (than muscle problems) ; 2. data for {other age / children} ; 3. other causes of CVD / other factors in graph 2 / eq ; 4. data on women to do with having babies etc ; 5. ref to comparative cost of treatment vs consequences ; 6. data on effect of cholesterol on named conditions (other than CVD) ; 7. gender of people with muscle problems ; 8. search engine ; 9. library qualified / journal qualified ; | <p>sub-max 2 (for 1-7)</p> <p>sub-max 1 (for 8-9)</p> <p>maximum (3)</p> |

| Question Number | Answer | Mark |
|-----------------|---|------|
| 2(b)(iii) | <p>drug company websites / sites related to scientists (e.g. their own / institution where they work/worked) who have big stake in the cholesterol hypothesis / government sites where promoting this hypothesis / any appropriately explained alternative / website or other source saying things without refs ;</p> | (1) |

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481

Email publications@linneydirect.com

Order Code US022648 January 2010

For more information on Edexcel qualifications, please visit www.edexcel.com/quals

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH