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Mark Scheme (Results)

January 2012

GCE Biology (6BI07) Paper 3B
Practical Biology and Research Skills

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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

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Q.No.	Answer	Mark
1(a)(i)	1. heating time / eq ; 2. cooling time / eq ; 3. concentration of DCPIP / eq ;	**(2)**

Q.No.	Answer	Mark
1(a)(ii)	1. named variable e.g. volume DCPIP / {/type / source / age / eq} of orange juice ; 2. means of controlled described e.g. {suitable measuring device named / use same orange / orange juice carton} ;	**(2)**

Q.No.	Answer	Mark
1(b)(i)	1. 35.7 ÷ 5 ; 2. 7.1 ; correct answer only, gains 2 marks	**(2)**

Q.No.	Answer	Mark
1(b)(ii)	**A** axes correct (x-temp, y- titre /) ; **L** axes labelled with units ; **P** correct plotting ; **S** suitable line of best fit / line joining points drawn with straight edge ; **SD** standard deviation plotted as bars above and below ;	**(5)**

Q.No.	Answer	Mark
1(b)(iii)	1. as temperature increases vitamin C decreases / eq ; 2. credit manipulation of data ;	**(2)**

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Q.No.	Answer	Mark
1(b)(iv)	1. idea that {SD / range} measures reliability / eq ; 2. SDs low / eq, therefore reliability high / eq OR replicated results similar at each temperature / eq ; 3. SDs differ at various temps, therefore so does reliability ; 4. 20, 23 and 50 (any 2) same reliability ; 5. and more reliable than 40/30 / eq ; 6. 30 least reliable / eq ; 7. comment on anomalous data / eq ;	**(2)**

Q.No.		Mark
1(c)(i)	1. both (sets of data) show loss on heating / eq ; 2. all the vegetables show similar loss which is less than hers/eq ; 3. credit comparative manipulation of data to support ;	**(3)**

Q.No.		Mark
1(c)(ii)	Any **two** from: 1. cooking temp / eq ; 2. cooking time / eq ; 3. cooking method / eq ; 4. source of fruit or vegetable / eq ; 5. comment on juice compared with whole extract ;	**(2)**

Q.No.	Answer	Mark
2(a)	use of stem cells to {treat diseases / in medicine} / ethics in the {use /source of} stem cells / eq ;	**(1)**

Q.No.	Answer	Mark
2(b)	A ; because it will describe how the work is done / eq ;	**(2)**

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Q.No.	Answer	Mark
2(c)	One of the following advantages ; 1. ref to controlled environment e.g. less likely to be {damaged / infected / eq } ; 2. reference to long term storage / avoiding extinction ; 3. reference to {educational / research / fund raising} ; One of the following disadvantages ; 4. idea that it affects the gene pool (of ex situ stock) ; 5. reference cost of maintaining stock ; 6. does not' solve real problem (habitat loss / eq) / eq ;	**(2)**

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Q.No.	Answer	Mark
2(d)(i)	1. (Using source A) this would not support the statement / eq ; 2. (Using source A) (because) it's a survey of the general population / there is no evidence from religious groups / eq ; 3. (Using Souce B) don't know what % is therefore not much use / eq ; 4. If makes an assumption about what it is a percentage of, credit correct conclusion from that assumption ; 5. (Using source B) only considers one religious group / catholics / eq ; 6. (Using source B) catholics compared with non-catholics, who still might be religious people / eq ; 7. (Using source B) there is {no / little} difference between the two groups / eq ; 8. (Using sources A and B) there is {no / little} difference between general population, Catholics, non-Catholics / eq ; 9. use of comparative figures ; 10. We have no idea of sample size in either study/ We have no idea of variability of estimates/ We cannot say anything about reliability / eq ;	**(4)**

Q.No.	Answer	Mark
2(d)(ii)	1. Appropriate type of chart / graph ; 2. detail of chart / graph ; 3. relevant information selected ;	**(3)**

Q.No.	Answer	Mark
2(e)(i)	economic ;	**(1)**

Q.No.	Answer	**Mark**
2(e)(ii)	13 ;	**(1)**

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Q.No.	Answer	Mark
2(e)(iii)	1. increase cost in short term /eq ; 2. because money spent on trialling stem cell therapies / eq ; 3. reduce the cost in long term / eq ; 4. because benefits easily come by / eq ; 5. so other (expensive) research not needed / eq ;	**(3)**

Q.No.	Answer	Mark
2(f)(i)	1. (Jiang, Dennis, 'The Stem Cells That Promise No Miracles') the journal of young investigators ; 2. 18 (3) 2008 ;	**(2)**

Q. No.	Answer	Mark
2(f)(ii)	idea of adding in missing references from material used e.g. URL economic ref / URL ref to research on morality/ ref to Kew paper ;	**(1)**

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