

# Mark Scheme (Results)

## Summer 2008

GCE

### GCE SNAB Biology (6134/01)

## 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

### 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)	<ol style="list-style-type: none"> <li>1. T helper cells {destroyed / damaged / reduced in number / cell lysis / eq} ;</li> <li>2. no T killer cell {production / activation} / eq ;</li> <li>3. B cells activation / plasma cells production / eq ;</li> <li>4. (less / no) antibody production / eq ;</li> <li>5. phagocytosis / phagocytes ;</li> </ol>	max (4)

Question Number	Answer	Mark
1(b)	<ol style="list-style-type: none"> <li>1. (inflammation) - preventing infection at site of tissue damage / detail of response e.g. macrophages attracted / oedema / increased blood flow ;</li> <li>2. phagocytosis ;</li> <li>3. (lysozyme action - enzyme to) destroy bacteria / cell lysis / breakdown of cell walls ;</li> <li>4. interferon ;</li> </ol>	(4)

Question Number	Answer	Mark
2(a)	<ol style="list-style-type: none"> <li>1. male fish have unique DNA ;</li> <li>2. inherit DNA from male parent /eq ;</li> <li>3. share DNA fingerprint characteristics /eq ;</li> <li>4. doesn't change during life / eq ;</li> <li>5. reference to microsatellites / restriction enzymes cut DNA predictably ;</li> </ol>	max (3)

Question Number	Answer	Mark
2(b)(i)	<ol style="list-style-type: none"> <li>1. <math>63/68 \times 100</math> ; OR <math>42.6 + 38.2 + 11.8</math></li> <li>2. <math>92.6 / 92.64 / 92.65 / 93</math> ;</li> </ol>	(2)

Question Number	Answer	Mark
2(b)(ii)	<ol style="list-style-type: none"> <li>1. all females are more likely to mate with a male from same population / eq ;</li> <li>2. population A exclusively mates within the same population ;</li> <li>3. populations B and/or C will breed with each other ;</li> <li>4. reference to limitations in data (e.g. ref to small sample size in population C) ;</li> </ol>	max (2)

Question Number	Answer	Mark
2(c)	<ol style="list-style-type: none"><li>1. reference to definition of a species ;</li><li>2. all mating within population /eq ;</li><li>3. reference to reproductive isolation ;</li><li>4. no gene flow ;</li><li>5. reference to accumulation of differences /changes ;</li><li>6. more likely to become genetically different;</li></ol>	<b>max (4)</b>

Question Number	Answer	Mark
3(a)	<ol style="list-style-type: none"> <li>1. thylakoid / granum ;</li> <li>2. membrane ;</li> </ol>	(2)

Question Number	Answer	Mark
3(b)	<p>A ATP;</p> <p>B reduced NADP / eq;</p>	(2)

Question Number	Answer	Mark
3(c)	photolysis;	(1)

Question Number	Answer	Mark
3(d)	<ol style="list-style-type: none"> <li>1. less carbohydrate production ;</li> <li>2. less reduced NADP ;</li> <li>3. less reduction of carbon dioxide ;</li> <li>4. less ATP (to supply energy) ;</li> <li>5. less conversion of GP to GALP ;</li> </ol>	max (4)

Question Number	Answer	Mark
3(e)(i)	<ol style="list-style-type: none"> <li>1. competition ;</li> <li>2. for light ;</li> <li>3. for carbon dioxide;</li> <li>4. for space ;</li> <li>5. for water / ions ;</li> <li>6. fewer resources for growth ;</li> </ol>	max (2)

Question Number	Answer	Mark
3(e)(ii)	<ol style="list-style-type: none"> <li>1. treat crop with atrazine ;</li> <li>2. (non-resistant) weeds die ;</li> <li>3. reference to reduced competition ;</li> <li>4. produce atrazine-resistant crop ;</li> <li>5. reference to selective breeding / genetic modification ;</li> </ol>	max (2)

Question Number	Answer	Mark
4(a)(i)	humidity / oxygen concentration / toxins /pH ;	(1)

Question Number	Answer	Mark
4(a)(ii)	<ol style="list-style-type: none"> <li>1. time for fly to find body is due to chance /eq ;</li> <li>2. reference to succession ;</li> <li>3. earlier organisms change conditions ;</li> <li>4. (changed conditions) more suitable for later organisms / eq ;</li> <li>5. example of condition changes ;</li> </ol>	max (4)

Question Number	Answer	Mark
4(b)(i)	<ol style="list-style-type: none"> <li>1. (45), 9 / 9-10 days ;</li> <li>2. (1.5), 7.5-8.5 ;</li> </ol>	(2)

Question Number	Answer	Mark
4(b)(ii)	<ol style="list-style-type: none"> <li>1. (house fly 4-5 days at 22) 8-9 days at 12 ;</li> <li>2. (flesh fly 4 days at 22) 8 days at 12 ;</li> <li>3. (all figures suggest) within 8-9 days ;</li> <li>4. died within a day of each other ;</li> </ol>	max (3)

Question Number	Answer	Mark
5(a)	<ol style="list-style-type: none"> <li>1. C is bacteriocidal ;</li> <li>2. bacteriocidal kills bacteria ;</li> <li>3. B is bacteriostatic ;</li> <li>4. bacteriostatic prevents reproduction / growth ;</li> </ol>	max (3)

Question Number	Answer	Mark
5(b)	<ol style="list-style-type: none"> <li>1. bacterium is no longer affected by antibiotic A ;</li> <li>2. reference to mutation / changed {gene /DNA} ;</li> <li>3. reference to resistance ;</li> <li>4. reference to selection /eq ;</li> <li>5. reference to plasmid transmission / horizontal inheritance ;</li> </ol>	max (4)

Question Number	Answer	Mark
5(c)	<ol style="list-style-type: none"> <li>1. lawn bacteria / eq ;</li> <li>2. reference agar plate / eq ;</li> <li>3. antibiotic in well / multidisc / eq ;</li> <li>4. incubation qualified ;</li> <li>5. measurement of clear area / eq ;</li> <li>6. bigger area implies more effective ;</li> <li>7. reference to safety / aseptic technique / eq ;</li> </ol>	max (4)

Question Number	Answer	Mark
6(a)	<ol style="list-style-type: none"> <li>1. reference to (selective) advantage ;</li> <li>2. speech provides better communication / eq ;</li> <li>3. reference to better social interactions / eq ;</li> <li>4. greater reproductive success / converse ;</li> </ol>	max (3)

Question Number	Answer	Mark
6(b)(i)	<ol style="list-style-type: none"> <li>1. undermines teaching of bible / ref creation story in Genesis ;</li> <li>2. reference to relationship of man to animals / eq ;</li> <li>3. reference to age of the world / time of evolution ;</li> <li>4. reference to influence of religion on politics / legal system ;</li> </ol>	max (2)

Question Number	Answer	Mark
6(b)(ii)	<ol style="list-style-type: none"> <li>1. evolution is controversial because it contradicts creation story / eq ;</li> <li>2. natural selection as a mechanism of change since creation less controversial ;</li> <li>3. evidence for natural selection can be observed / more evidence for natural selection ;</li> <li>4. distinction between microevolution and macroevolution (new taxa) / eq ;</li> </ol>	max (2)