

# Mark Scheme (FINAL)

## Summer 2008

GCE

### GCE SNAB Biology (6134/01)

## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

**PRE-STANDARDISATION MARK SCHEME - UNIT SN4**  
**(6134/01)**  
**A2 BIOLOGY (SNAB) June 2008**

**STRICTLY CONFIDENTIAL**

**Principal Examiner:** Steve Hall; 48 Newlands Avenue, Shirley,  
Southampton, SO15 5ES  
Telephone: 02380 365 889  
Email: [steve@shall.co.uk](mailto:steve@shall.co.uk)

- (1) You must have provisionally marked 15 of every item **ONLINE** before the Standardisation Meeting on **21/06/2008** in order to familiarise yourself with the Pre-standardisation mark scheme.
- (2) At the meeting the mark scheme will be discussed and amplified. It will be amended in the light of the discussion and of marking experience. Assistant Examiners will then be asked to take part in an Agreement Trial. The marks will be compared and discussed. Scripts used in Agreement Trials may be taken away from the meeting for reference purposes; these must be **destroyed** at the conclusion of marking.
- (3) Within **48 hours** of the Standardisation meeting, Assistant Examiners must mark fully, **ONLINE**, a sample of **10** of every item in the light of the amended **FINAL** mark scheme which you will be able to access **ONLINE**. Please note that you will not be able to mark any more responses until after you have received clearance from your Team Leader, and any differences are resolved.
- (4) Once clearance has been received from the Team Leader, you **MUST** start marking and all your marking **MUST** be done by the **contract completion date** in your contract.
- (5) Further checks on your marking will be made by your Team Leader at any point throughout the marking period to ensure that your marking is accurate.

Please contact the ePEN helpdesk for technical queries:

**Online Associates Helpdesk**

Telephone 0800 169 9202

Email [UKservicedesk@pearson.com](mailto:UKservicedesk@pearson.com)

## GCE Biology SNAB Exam Management Contact Details

<b>QDAM</b>	Damian Riddle
<b>Tel</b>	0207 190 5024
<b>Email</b>	damian.riddle@edexcel.org.uk
<b>Address</b>	Edexcel 5 <sup>th</sup> Floor 190 High Holborn London WC1V 7BH

<b>Subject Leader</b>	Assie Yamin
<b>Tel</b>	0207 190 4741
<b>Email</b>	assie.yamin@edexcel.org.uk
<b>Address</b>	Edexcel 5 <sup>th</sup> Floor 190 High Holborn London WC1V 7BH

<b>Exams Co-ordinator</b>	Katerina Keplova
<b>Tel</b>	0207 190 4367
<b>Email</b>	katerina.keplova@edexcel.org.uk
<b>Address</b>	Edexcel 5 <sup>th</sup> Floor 190 High Holborn London WC1V 7BH

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 ; <b>ALLOW</b> one mark for unqualified T cells affected</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> <p><b>NB</b> 2 marks for correct working and answer, 1 mark for correct working but wrong answer</p>	(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> <p><b>NB IGNORE</b> reference to 'species' instead of 'population'</p>	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> <p>ACCEPT 'no' instead of 'less'</p>	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 ; REJECT 'at about the same time'</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 ; <b>NOT</b> 'immune'</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 ; <b>REJECT</b> body temperature</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> <p><b>ACCEPT</b> core practical, but assess others</p>	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)