

# Mark Scheme Summer 2009

GCE

## GCE08 Biology (8BI01) International Supplement

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](http://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

Summer 2009

Publications Code US021143

All the material in this publication is copyright

© Edexcel Ltd 2009

## Contents

Unit	Name	page
6BI07	Practical Biology and Research Skills	1

**6BI07/01**  
**Practical Biology and Research Skills**

Question Number	Answer	Mark
1(a)(i)	same {amount / volume / eq} of pigment / same surface area / number of cells on surface / eq ;	(1)

Question Number	Answer	Mark
1(a)(ii)	temperature ;	(1)

Question Number	Answer	Mark
1(a)(iii)	<p>colorimeter (or description) ;</p> <p>Then any two from</p> <ul style="list-style-type: none"> <li>• shake before measurement</li> <li>• use of appropriate colour filter</li> <li>• zeroing against blank</li> <li>• clean cuvettes</li> <li>• wiping cuvettes</li> <li>• transparent side <b>REJECT</b> smooth side</li> <li>• measure absorbance / transmission</li> <li>• enough liquid to allow light go through ; ;</li> </ul> <p><b>OR</b></p> <p>comparison of colour ;</p> <p>Then any two from</p> <ul style="list-style-type: none"> <li>• with {known / chart / standard} samples</li> <li>• comparing tubes by looking down and adding water until same and measurement is depth</li> <li>• convert to numerical ; ;</li> </ul>	(3)

Question Number	Answer	Mark
1(a)(iv)	<p>Any two from:</p> <ol style="list-style-type: none"> <li>1. <u>volume</u> of water (in the boiling tube) ;</li> <li>2. suitable method e.g. measuring cylinder, pipette / eq ;</li> <li>3. reference to rinsing ;</li> <li>4. until clear / for fixed time for all ;</li> <li>5. similar {variety / density / eq} of beetroot ;</li> <li>6. method to ensure same variety e.g. same beetroot ;</li> <li>7. pre-treatment e.g. storage ;</li> <li>8. detail of above ;</li> <li>9. (use same) part of beetroot / eq ;</li> <li>10. detail e.g. cut from middle, peeling ;</li> </ol>	max (4)

Question Number	Answer	Mark
1(b)(i)	<p>working ;</p> <p>answer (0.69) ;</p>	(2)

Question Number	Answer	Mark
1(b)(ii)	<ol style="list-style-type: none"> <li>1. axes correct (x = temperature, y = degree of redness) with appropriate scale ;</li> <li>2. axes correctly labelled, with units (°C and arbitrary (or abs)) ;</li> <li>3. correct plotting ;</li> <li>4. suitable line of best fit / line joining points accurately ruled ;</li> </ol>	(4)

Question Number	Answer	Mark
1(b)(iii)	<p><b>Description</b></p> <ol style="list-style-type: none"> <li>1. 0-10/20 °C falls ;</li> <li>2. 10/20 to 40 °C flat / varies little ;</li> <li>3. above 40 (50) to 60 °C (steep) rise ;</li> <li>4. above 60 °C falls / levels off ;</li> </ol> <p><b>Explanation</b></p> <ol style="list-style-type: none"> <li>1. freezing / condensation effect at low temperature explained ;</li> <li>2. correct reference to effect of temperature on membrane permeability ;</li> <li>3. correct reference to effect of temperature on membrane component ;</li> <li>4. {all / as much} pigment as possible gone at 60 °C / idea of high temperature destroys pigment / eq ;</li> </ol>	<p>sub-max (3)</p> <p>sub-max (3)</p> <p>max (5)</p>

Question Number	Answer	Mark
2(a)(i)	<p>Any two of:</p> <ol style="list-style-type: none"> <li>1. pre-implantation screening (of embryos) to select healthy embryos / eq ;</li> <li>2. (foetal) screening, followed by abortions / eq ;</li> <li>3. (adult) screening, followed by voluntary / statutory ban on marriage / reproduction, between carriers / eq ;</li> </ol>	max (2)

Question Number	Answer	Mark
2(a)(ii)	<p>Any two appropriate ethical implications;;</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• invasive procedure</li> <li>• elimination / disposal / storage of unused embryos / right to life</li> <li>• eugenics / designer babies / discrimination</li> <li>• who should have access</li> <li>• high cost</li> </ul> <p>(false positives)</p> <ul style="list-style-type: none"> <li>• distress - abortion not justified</li> <li>• distress - worry about baby / not having children when not a problem</li> <li>• distress - about abortion that was not needed</li> </ul> <p>(false negatives)</p> <ul style="list-style-type: none"> <li>• shock of diseased baby born</li> <li>• false confidence</li> </ul>	(2)

Question Number	Answer	Mark
2(b)(i)	<ol style="list-style-type: none"> <li>1. correct parental genotypes ;</li> <li>2. correct gametes ;</li> <li>3. Tay-Sachs genotype highlighted ;</li> <li>4. any line 3 - 7 ;</li> <li>5. ref to inheritance of Tay-Sachs (in Abshire) ;</li> </ol>	(5)

Question Number	Answer	Mark
2(b)(ii)	<ol style="list-style-type: none"> <li>1. axes correct and labelled with units ;</li> <li>2. appropriate scale ;</li> <li>3. plotting ;</li> </ol>	(3)

Question Number	Answer	Mark
2(b)(iii)	<p><b>Diagram A</b></p> <ol style="list-style-type: none"> <li>1. most people have definite opinions (few / only 2%} not sure, no response % low) ;</li> <li>2. the idea that {a majority / most} think somebody has a right to know /eq ;</li> </ol> <p><b>Diagram B</b></p> <ol style="list-style-type: none"> <li>3. more think that medical practitioners should know than think commercial insurers should ACCEPT converse ;</li> <li>4. more people are unsure / no response / eq about medical practitioners knowing than about commercial insurers ;</li> <li>5. anywhere within lines 55 and 65 ;</li> </ol>	(5)



Question Number	Answer	Mark
2(b)(iv)	<p>Credit any two appropriate questions ;;</p> <p>For example</p> <ul style="list-style-type: none"> <li>• what research is being done on treatments for TSD</li> <li>• what is gene therapy</li> <li>• what progress on gene therapy (in relation to named diseases)</li> <li>• is it available</li> </ul> <p>internet search engine / scientific journals / magazines / reference to specialist library / reference to relevant experts / eq ;</p>	<p>(sub-max 2)</p> <p>(1)</p> <p>max (3)</p>

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](mailto:publications@linneydirect.com)

Order Code US021143 Summer 2009

For more information on Edexcel qualifications, please visit [www.edexcel.com/quals](http://www.edexcel.com/quals)

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