

# Mark Scheme Summer 2009

GCE

## GCE08 Biology (8BI01) International Supplement

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## 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 (<math>^{\circ}\text{C}</math> 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>

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