

# Mark Scheme (Results)

March 2011

GCSE

360Science

GCSE Additional Science  
Structured Paper B2 (5016H/1H)

GCSE Biology  
Structured Paper B2 (5028H/1H)

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## 5016H & 5028H Mark Scheme

Question Number	Answer	Additional guidance	Mark
1.	<p><b>cellulose cell wall</b> for protection / rigidity / support / strength / barrier (to microbes) ;</p> <p><b>chloroplast</b> (site of) photosynthesis / traps light ;</p> <p><b>vacuole</b> storage of water/sugar/minerals / nutrients / cell sap / support / turgidity / controls the amount of water in the cell ;</p> <p><b>cell membrane</b> controls what goes in and out of a cell / allow small molecules into / out of cell / prevents large molecules entering / leaving cell / protection;</p>	<p>Accept keeps the cells shape / holds the cell together</p> <p>Accept making glucose/ sugar Ignore food /starch Ignore contains chlorophyll</p> <p>Accept 'hold' or 'contain' Ignore cell elongation</p> <p>Ignore holds the cell together</p> <p>Accept 'protection..' if qualified from what</p>	(4)

Question Number	Answer	Additional guidance	Mark
2	<p>1. double helix / 2 strands coiled ;</p> <p>2. correct ref to structure e.g. (pair) bases / hydrogen bonds / sugar phosphate backbone eq ;</p>	<p>Accept: refs to spiralled strands / twisted ladder / diagram showing shape</p> <p>Ignore references to spiral / spiralled unqualified</p>	(2)

Question Number	Answer	Additional guidance	Mark
<b>3(a)</b>	<p>Any <b>two</b> from:</p> <ol style="list-style-type: none"> <li>1. (more) food / fruits / leaves/ flowers available to eat from plants / warmer / prey for predators;</li> <li>2. (more) habitats ;</li> <li>3. easier to avoid predators / easier to move to other trees;</li> </ol>	<p>Ignore: more sunlight unless qualified e.g. for vitamin D</p> <p>Accept more shelter than emergent layer</p>	<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>3(b)</b>	<p>less light / less energy (1) ; (so) reduced photosynthesis (1) ;</p> <p>OR</p> <p>more competition for nutrients / space / water (1) ; (so) correct consequence of above (1) ;</p>	<p>Ignore refs to less growth</p> <p>Reject: no light / no photosynthesis</p>	<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>4(a)(i)</b>	Any <b>two</b> from  1. fertilisers / sewage / manure run off from farmland ;  2. excess nitrate / phosphates / nutrients ;  3. increased growth of algae / plants / algal bloom ;  4. eutrophication ;	Ignore: pollution / chemicals	<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>4(a)(ii)</b>	Any <b>two</b> from:  1. blocks out sunlight / light ;  2. so less photosynthesis ;  3. so plants grow less / die ;	Ignore sun  Ignore references to oxygen depletion	<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>4(b)</b>	Any <b>two</b> from:  1. no fish so water fleas survive ;  2. water flea numbers increase ;  3. water fleas eat the algae ;		<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>5(a)</b>	Any two from: <ol style="list-style-type: none"> <li>1. glucose ;</li> <li>2. oxygen ;</li> <li>3. fat / lipids / oils / proteins / amino acids ;</li> </ol>	Ignore sugar  Ignore water  <b>Two correct answers for 1 mark</b>	<b>(1)</b>

Question Number	Answer	Additional guidance	Mark
<b>5(b)</b>	Any <b>two</b> from: <ol style="list-style-type: none"> <li>1. from a higher concentration (of carbon dioxide inside the cells) to a lower concentration (of carbon dioxide outside the cells) ;</li> <li>2. moves down the concentration gradient ;</li> <li>3. a passive process (no energy required) ;</li> </ol>		<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>5(c)</b>	Any <b>two</b> from: <ol style="list-style-type: none"> <li>1. glucose broken down ;</li> <li>2. in the absence of oxygen ;</li> <li>3. (into) lactic acid ;</li> <li>4. (less) energy released ;</li> <li>5. reference to oxygen debt / cramp / EPOC ;</li> </ol>	Ignore sugar Accept monosaccharide / named example	<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>6(a)</b>	will show the effect of growth with no minerals / to ensure no other factors affect growth / acts as a <b>control</b> / to show the effect of nitrates / phosphates compared with water;	Ignore fair test	<b>(1)</b>

Question Number	Answer	Additional guidance	Mark
<b>6(b)</b>	Any <b>one</b> from  1. reduce root length ;  2. reduce root number ;  3. leaves are dull green with purple / yellow spots	accept less / stunted roots / eq;  ignore any other references to leaves	<b>(1)</b>

Question Number	Answer	Additional guidance	Mark
<b>6(c)</b>	Any <b>three</b> from:  1. minerals dissolved in solution ;  2. active transport ;  3. by root hair (cells) ;  4. against a concentration gradient ;  5. molecular pumps ;  6. requires energy / respiration ;  7. diffusion if concentration in soil is higher ;	Accept from low concentration to high concentration	<b>(3)</b>

Question Number	Answer	Additional guidance	Mark
<b>7</b>	<p>Any <b>four</b> from:</p> <ol style="list-style-type: none"> <li>1. nucleus removed from the unfertilised egg / egg cell enucleated ;</li> <li>2. nucleus removed from body cell (taken from mammal) ;</li> <li>3. nucleus (from body cell) inserted into egg ;</li> <li>4. treated with chemicals / electric shock ;</li> <li>5. cell division / mitosis ;</li> <li>6. implanted in (uterus of) surrogate mother ;</li> </ol>	<p>For error in sequence deduct one mark</p>	<b>(4)</b>

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