

## Mark Scheme

Q1.

Question number	Answer	Additional guidance	Mark
(a)(i)	A description that makes reference to the following two points: <ul style="list-style-type: none"><li>• release of energy (1)</li><li>• within cells (1)</li></ul>	reject production of energy	2

Question number	Answer	Additional guidance	Mark
(a)(ii)	A description that makes reference to the following points: <ul style="list-style-type: none"><li>• keeping named characteristic, e.g. temperature (1)</li><li>• constant within narrow range (1)</li></ul>	allow blood glucose/carbon dioxide/blood pressure/water content/equivalent	2

Question number	Answer	Mark
(b)	C	1

Question number	Answer	Mark
(c)	C	1

(Q01 4SS0/1B, SAM 0)

Q2.

Question number	Answer	Additional guidance	Mark
(a)(i)	A description that makes reference to the following two points: <ul style="list-style-type: none"> <li>• release of energy (1)</li> <li>• within cells (1)</li> </ul>	reject production of energy	2

Question number	Answer	Additional guidance	Mark
(a)(ii)	A description that makes reference to the following points: <ul style="list-style-type: none"> <li>• keeping named characteristic, e.g. temperature (1)</li> <li>• constant within narrow range (1)</li> </ul>	allow blood glucose/carbon dioxide/blood pressure/water content/equivalent	2

Question number	Answer	Mark
(b)	C	1

Question number	Answer	Mark
(c)	C	1

(Q01 4SS0/1B, SAM 0)

Q3.

Question Number	Answer	Mark
(a)	An answer that makes reference to two of the following points: <ul style="list-style-type: none"> <li>• nutrition / feeding / eq (1)</li> <li>• respire / eq (1)</li> <li>• excrete / eq (1)</li> <li>• respond to their surroundings / eq (1)</li> <li>• move /eq (1)</li> <li>• control their internal conditions / homeostasis /eq (1)</li> <li>• reproduce / eq (1)</li> <li>• grow / develop / eq (1)</li> </ul>	2

Question Number	Answer	Mark
(b)(i)	<p>The only correct answer is C hypha</p> <p>A is not correct as they do not contain chloroplasts</p> <p>B is not correct as they do not contain cellulose cell wall</p> <p>D is not correct as they do not contain plasmids</p>	1

Question Number	Answer	Mark
(b)(ii)	<p>The only correct answer is C <i>Mucor</i></p> <p>A is not correct as <i>Amoeba</i> is not a fungus</p> <p>B is not correct as <i>Chlorella</i> is not a fungus</p> <p>D is not correct as <i>Plasmodium</i> is not a fungus</p>	1

Question Number	Answer	additional guidance	Mark
(c)	<p>An explanation that makes reference to <b>two</b> of the following points:</p> <ul style="list-style-type: none"> <li>cannot reproduce / eq (1)</li> <li>without host cell / eq (1)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>do not have cellular structure /cells / eq (1)</li> <li>living organisms have cells / eq (1)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>they do not respire / do not grow / do not excrete / do not respond to stimuli (1)</li> <li>do not show characteristics / features of living organisms /eq (1)</li> </ul>	<p>only reproduce within host /eq</p> <p>ignore don't have nucleus</p> <p>do not respire or grow =1</p> <p>do not show features of living organisms =1</p> <p>do not respire have features of living organisms =2</p>	2
Total = 6 marks			

Q4.

Question Number	Answer	Mark
<b>(a)(i)</b>	<p>An answer that makes reference to two of the following:</p> <ul style="list-style-type: none"> <li>• (require) nutrition / food / eq (1)</li> <li>• respire /eq (1)</li> <li>• excrete (waste) /eq (1)</li> <li>• respond to surroundings / sensitivity / eq (1)</li> <li>• move /eq (1)</li> <li>• control their internal conditions / homeostasis /eq (1)</li> <li>• reproduce /eq (1)</li> <li>• grow / develop /eq (1)</li> </ul>	<b>2</b>

Question Number	Answer	Mark
<b>(a)(ii)</b>	<p>The only correct answer is</p> <p><b>D</b> <i>Pneumococcus</i></p> <p>A is not the answer as <i>Chlorella</i> does not cause bacterial disease in humans</p> <p>B is not the answer as <i>Lactobacillus bulgaricus</i> does not cause bacterial disease in humans</p> <p>C is not the answer as <i>Mucor</i> does not cause bacterial disease in humans</p>	<b>1</b>

Question Number	Answer	Additional guidance	Mark
<b>(b) (i)</b>	<ul style="list-style-type: none"> <li>• Tobacco mosaic virus/ TMV (1)</li> <li>• discoloured leaves / yellow leaves / yellow spots / white leaves / white spots / no chlorophyll/ no chloroplasts / less chlorophyll / no photosynthesis / less photosynthesis /eq (1)</li> </ul>	<p>Allow other correctly named plant virus and effect</p> <p>not just less growth</p> <p>effect without correct virus scores zero</p>	<b>2</b>

Question Number	Answer	Additional guidance	Mark
<b>(b) (ii)</b>	<p>An answer that makes reference to three of the following: Virus</p> <ul style="list-style-type: none"> <li>• smaller / eq (1)</li> <li>• protein coat (1)</li> <li>• no cell wall (1)</li> <li>• no cell membrane / eq (1)</li> <li>• no cytoplasm / organelles / ribosomes / no vacuole / eq (1)</li> <li>• no plasmids (1)</li> <li>• no flagella (1)</li> </ul>	<p><b>Mark first 3 answers</b> allow converse</p> <p>ignore nucleus mitochondria Golgi</p> <p>ignore chloroplasts loop or circles of DNA</p>	<b>3</b>

Total 8 marks

**(Q01 4BI1/1B, June 2023)**

Q5.

Question Number	Answer	Additional guidance	Mark
<b>(a)(i)</b>	<p>B (fungi) is the only correct answer</p> <p>A is incorrect as animals are not single celled</p> <p>C is incorrect as plants do not have chitin or are single celled</p> <p>D is incorrect as protocists do not have chitin</p>		<b>1</b>

Question Number	Answer	Additional guidance	Mark
(a)(ii)	<p>An answer that makes reference to one of the following:</p> <ul style="list-style-type: none"> <li>(viruses) do not grow (1)</li> <li>(viruses) do not respire (1)</li> <li>(viruses) are not sensitive / have internal control / eq (1)</li> <li>(viruses) do not move (1)</li> <li>(viruses) do not excrete (1)</li> <li>(viruses) do not reproduce (independently) / need a host to reproduce / eq (1)</li> <li>(viruses) do not feed / have a nutritional need / eq (1)</li> </ul>	<p><b>Allow</b> do not carry out life processes / do not have all the characteristics of life /do not have MRSGREN(C)</p> <p><b>Ignore</b> need another living organisms / host to live / survive</p> <p><b>Ignore</b> need to live inside another cell</p>	1

Question Number	Answer	Additional guidance	Mark
(b)	<p>An answer that makes reference to the following:</p> <ul style="list-style-type: none"> <li>restriction (enzymes) cut DNA /gene / plasmid / open plasmid / remove gene / eq (1)</li> <li>ligase joins DNA to plasmid / joins DNA / joins sticky ends / inserts DNA / attaches DNA / eq (1)</li> </ul>	<p><b>Allow</b> endonuclease</p> <p><b>Reject</b> lipase</p>	2

Question Number	Answer	Additional guidance	Mark
(c)(i)	<p>An explanation that makes reference to three of the following:</p> <ul style="list-style-type: none"> <li>respiration / fermentation / (chemical) reactions, releases heat (energy) (1)</li> <li>checks / monitor, temperature <b>and</b> lets (cooling) water in / open valve / water is pumped around / eq (1)</li> <li>lowers temperature / removes heat / prevents over heating / stops temperature getting too high (1)</li> <li>maintain <u>optimal temperature</u> / <u>optimum temperature</u> (1)</li> <li>stop <u>enzymes</u> denaturing / stops <u>enzyme</u> shape changing / eq (1)</li> </ul>	<p><b>Ignore</b> cools it down alone</p>	3

Question Number	Answer	Additional guidance	Mark
(c)(ii)	<p>An explanation that makes reference to two of the following:</p> <ul style="list-style-type: none"> <li>• (provides) oxygen (1)</li> <li>• for respiration / prevent anaerobic respiration (1)</li> </ul>	<p><b>Reject for</b> anaerobic respiration</p>	2

Question Number	Answer	Additional guidance	Mark
(c)(iii)	<p>An explanation that makes reference to two of the following:</p> <ul style="list-style-type: none"> <li>• prevent other microbes / bacteria / fungi / pathogens / eq (1)</li> <li>• prevents <u>contamination</u> / <u>contaminate</u> (of product) / toxins (being released) / competition (for nutrients) / eq (1)</li> </ul>	<p><b>Allow</b> remove bacteria / keep sterile  <b>Ignore</b> germs / keep clean</p>	2

(Q02 4BI1/1BR, June 2022)