

Question Number	Answer	Mark
1(a) (i)	B ;	(1)

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

Question Number	Answer	Mark
1(a) (iii)	B ;	(1)

Question Number	Answer	Mark
1(a) (iv)	A ;	(1)

Question Number	Answer	Mark
1(a) (v)	C ;	(1)

Question Number	Answer	Mark
*1(b)QW	<p>(QWC - <b>Spelling</b> of technical terms must be correct and the answer must be organised in a logical sequence)</p> <ol style="list-style-type: none"> <li>1. <i>nucleolus</i> {disappears / breaks down} / eq ;</li> <li>2. <i>nuclear</i> {envelope/membrane} breaks down / eq ;</li> <li>3. <i>centrioles</i> move to (opposite) poles / <i>centrioles</i> separate / eq ;</li> <li>4. {<i>spindle</i> / <i>spindle</i> fibres / asters} form / are visible / are produced by <i>centrioles</i> / eq ;</li> <li>5. {<i>chromosomes</i> / <i>chromatids</i>} become visible / eq ;</li> <li>6. {<i>chromosome</i> / <i>chromatid</i> /<i>chromatin</i> } condenses / DNA coils / eq ;</li> <li>7. (chromosomes can be seen as) {pairs of /sister } <i>chromatids</i> / eq ;</li> <li>8. correct reference to <i>centromere</i> (holding chromatids in pairs );</li> </ol>	(5)

Question Number	Answer	Mark
2 (a)	<p>context - as diameter increases, the mass needed to break the rope</p> <ol style="list-style-type: none"> <li>1. increases / positive correlation (for both) ;</li> <li>2. idea that relationship is not linear (for both) e.g. gradient increases for both ;</li> <li>3. is always higher for nylon / eq ;</li> <li>4. difference between the two increases as the diameter increases / eq ;</li> <li>5. credit correct comparative manipulation of the data, e.g. at 5mm the mass taken to break nylon was 350-400 kg more than manila, at 10mm it was 1300-1350kg more ;</li> </ol>	(3)


Question Number	Answer	Mark
2(b) (i)	<p>A = flagellum / flagella ;</p> <p>B = (bacterial/ murein / peptidoglycan ) cell wall ;</p>	(2)

Question Number	Answer	Mark
2 (b) (ii)	<p>Any two structures drawn and labelled from the following</p> <ol style="list-style-type: none"> <li>1. plasmids ;</li> <li>2. circular DNA ;</li> <li>3. ribosomes ;</li> <li>4. glycogen granule ;</li> <li>5. lipid droplets ;</li> </ol>	(2)

Question Number	Answer	Mark
3 (a)(i)	C ;	(1)

Question Number	Answer	Mark
3(a)(ii)	C ;	(1)

Question Number	Answer	Mark
3(b)	<ol style="list-style-type: none"> <li>1. idea that chromosomes will be in the process of {decondensing /uncoiling/ becoming invisible / eq} ;</li> <li>2. idea that the {nucleus / nuclear envelope(s)} is visible;</li> <li>3. idea that a nucleolus may be present ;</li> <li>4. idea that spindle has {contracted / broken down / absent / eq} ;</li> <li>5. two {separate nuclei/masses of chromatin} now visible ;</li> <li>6. idea that there will be evidence of cell plate formation ;</li> </ol>	(3)

Question Number	Answer	Mark
3(c)(i)		(1)

Question Number	Answer	Mark
3(c) (ii)	<p>The diagram shows a cross-section of a plant embryo sac. At the top, three small circles are labeled 'Antipodal cell'. In the center, two small dots are labeled 'Two polar nuclei'. At the bottom, a large circle is labeled 'Egg cell', and two smaller circles on either side are labeled 'Synergid'.</p>	(2)

Question Number	Answer	Mark
3 (c) (iii)	<p>Any one from</p> <ol style="list-style-type: none"> <li>1. half the number (of chromosomes) found in {body cells / somatic cells / named body cell / eq}</li> <li>2. the number of chromosomes in {gametes/sex cells}</li> <li>3. the number (of chromosomes) in a cell following meiosis ;</li> </ol>	(1)

Question Number	Answer	Mark												
4(a)	<table border="1"> <thead> <tr> <th>Description</th> <th>Name of structure</th> <th>P, E or B</th> </tr> </thead> <tbody> <tr> <td>Enclosed by outer smooth membrane inner membrane folded forming cristae</td> <td>Mitochondrion / mitochondria</td> <td>E / eukaryotic</td> </tr> <tr> <td>Long strand-like structure extending out from the cell Used for locomotion</td> <td>Flagellum / flagella</td> <td>B / both</td> </tr> <tr> <td>Small, circular loop of double-stranded DNA</td> <td>plasmid</td> <td>P / prokaryotic</td> </tr> </tbody> </table>	Description	Name of structure	P, E or B	Enclosed by outer smooth membrane inner membrane folded forming cristae	Mitochondrion / mitochondria	E / eukaryotic	Long strand-like structure extending out from the cell Used for locomotion	Flagellum / flagella	B / both	Small, circular loop of double-stranded DNA	plasmid	P / prokaryotic	(3)
	Description	Name of structure	P, E or B											
	Enclosed by outer smooth membrane inner membrane folded forming cristae	Mitochondrion / mitochondria	E / eukaryotic											
	Long strand-like structure extending out from the cell Used for locomotion	Flagellum / flagella	B / both											
Small, circular loop of double-stranded DNA	plasmid	P / prokaryotic												
1 mark for any two correct cells ;;;														

Question Number	Answer	Mark
4(b)(i)	bactericidal ;	(1)

Question Number	Answer	Mark
4(b)(ii)	<ol style="list-style-type: none"> <li>1. cell wall {weaker /cannot form properly / eq} ;</li> <li>2. {cell / cell wall} bursts (easily) / eq ;</li> <li>3. during division /eq ;</li> </ol>	max (2)

Question Number	Answer	Mark
4(b)(iii)	<ol style="list-style-type: none"> <li>1. reference to antibiotic acting as selective pressure ;</li> <li>2. reference to some bacteria resistant (to antibiotic) ;</li> <li>3. idea that resistant bacteria survive and {reproduce / pass on resistance / pass on gene / eq};</li> <li>4. idea that antibiotic no longer effective ;</li> <li>5. reference to some infections cannot be treated with antibiotics ;</li> </ol>	max (2)

Question Number	Answer	Mark
4(c)	<ol style="list-style-type: none"> <li>1. idea of bacteria distributed evenly / description of technique e.g. lawn spreading ;</li> <li>2. description of method used to apply different antibiotics at known positions e.g. multidisks, wells in agar ;</li> <li>3. reference to control of antibiotic concentration ;</li> <li>4. reference to {sterile / aseptic} technique ;</li> <li>5. reference to incubation at a suitable temperature ;</li> <li>6. description of how effect is assessed e.g. measure {clear area / inhibition zone / eq} ;</li> <li>7. reference to replication (with same bacterium) ;</li> <li>8. reference to repetition with different bacteria ;</li> </ol>	max (4)

Question Number	Answer	Mark
<b>5(a)(i)</b>	B ;	<b>(1)</b>

Question Number	Answer	Mark
<b>5(a)(ii)</b>	B ;	<b>(1)</b>

Question Number	Answer	Mark
<b>5(a)(iii)</b>	D ;	<b>(1)</b>

Question Number	Answer	Mark
<b>5(a)(iv)</b>	A ;	<b>(1)</b>

Question Number	Answer	Mark
<b>5(a)(v)</b>	A ;	<b>(1)</b>

Question Number	Answer	Mark
<b>5(a)(vi)</b>	C ;	<b>(1)</b>



Question Number	Answer	Mark
5 (b)(i)	{rough endoplasmic reticulum / RER / rER} ;	(1)

Question Number	Answer	Mark
5 (b)(ii)	A = (80S/ large) {ribosomes / ribosome } ; B = membrane / {cisterna / eq } ;	(2)