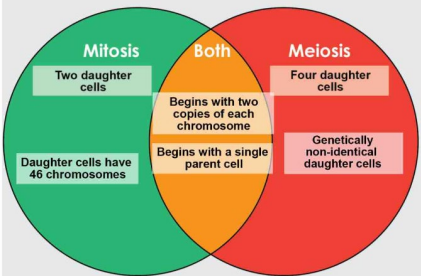
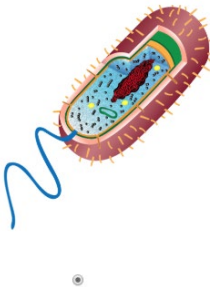


Question	Answers		Notes	Total	Criterion
1	a	Mammal		1	A
	b	<p>Pollination (pollen needs to be transferred from one plant to another) for reproduction or (pollen needs to be transferred from one plant to another) to increase variation</p> <p>Seed dispersal (seeds are transported away from parent plant for) better chance to survive or increased chance to grow or decreased competition</p>	<i>Do not accept a description of pollen moving alone</i>	2	A
	c	palm tree or eucalyptus or mango tree or grass	<i>Do not accept tree alone</i>	1	A
	d	<p>Advantage (flying fox) eats moth larvae (which would destroy the mango crop) or (flying foxes) act as pollinators</p> <p>Disadvantage the flying foxes eat mango (so profit is decreased)</p>	<i>Accept references to seed dispersal</i>	2	A

2	a	<p>Any two from [max 2]</p> <ul style="list-style-type: none"> • growth • repair or replacement • (sexual) reproduction or to produce gametes • (asexual) reproduction 	Allow reproduction alone for one mark	2	A
	b	 <p>one correctly placed in mitosis and both and meiosis or mitosis or "both" or meiosis fully correct all correctly placed</p>		2	A
	c	<p>every individual has different genetic material</p> <p>every sex cell / gamete is unique</p> <p>genetic material from two parents is combined</p> <p>A further point, for example [max 1]</p> <ul style="list-style-type: none"> • every sex cell / gamete has an equal chance of being fertilized • the offspring express traits from both parents or an individual is unique from both parents 	<p>Allow reference to characteristics or traits</p> <p>Allow reference to sperm and egg</p>	4	A

3	a	nervous system cardio-vascular system or muscular system		2	A
	b	the nervous system detects or communicates (the reduction in temperature) causing vasoconstriction / blood vessels narrow or blood is diverted away from extremities (thereby) reducing heat loss Or the nervous system detects or communicates (the reduction in temperature) causing hairs to rise (thereby) reducing heat loss Or the nervous system detects or communicates (the reduction in temperature) causing shivering / involuntary muscle contractions produce heat or increased cellular respiration (in the muscles)	ORA	3	A
	c	enzymes have an optimum temperature too cold and reactions do not occur fast enough too hot and enzymes change shape and no longer function Correct use of a term from the list: active site; denature; catalyze; lock and key; substrate	<i>Do not accept die</i> WTTE	5	A D

4	a			1	A
	b	A		1	C
	c	<p>Qualitative data, for example [max 1]</p> <ul style="list-style-type: none"> • colour • form • elevation • margin <p>Quantitative data, for example [max 1]</p> <ul style="list-style-type: none"> • number of colonies • measurement of size or diameter or radius 	Allow named examples	2	C
	d	<p>An RQ linking different disinfecting agents</p> <p>With an implied DV for example [max 1]</p> <ul style="list-style-type: none"> • zone of no growth • growth of bacteria • presence / absence of bacteria 		2	B

e	<p>IV: type of disinfectant</p> <p>DV: diameter of zone of inhibition or clear zone around disk</p> <p>Any two reasonable CV, for example [max 2]</p> <ul style="list-style-type: none"> species of bacteria on the plate size of disk time of immersion of disk concentration of the disinfectant time period of bacterial growth 	<p><i>Do not accept growth, DV must be measurable</i></p>	4	B																		
f	<p>Any reasonable suggestion relating to sterility of disk or water, for example [max 1]</p> <ul style="list-style-type: none"> it shows that the effect is not caused by the disk or water zone is caused by disinfectant (not disk, water, movement of liquid) it is a negative control to measure how effective water is as a disinfectant 		1	B																		
g	<table border="1"> <thead> <tr> <th>Liquid</th> <th>Diameter of zone of no growth on plate 1 / mm</th> <th>Diameter of zone of no growth on plate 2 / mm</th> </tr> </thead> <tbody> <tr> <td>bleach</td> <td>22</td> <td>24</td> </tr> <tr> <td>ethanol</td> <td>9</td> <td>7</td> </tr> <tr> <td>hydrogen peroxide</td> <td>27</td> <td>13</td> </tr> <tr> <td>iodine</td> <td>17</td> <td>15</td> </tr> <tr> <td>water</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>two measurements correct to ± 1 mm</p> <p>all measurements correct to ± 1 mm</p>	Liquid	Diameter of zone of no growth on plate 1 / mm	Diameter of zone of no growth on plate 2 / mm	bleach	22	24	ethanol	9	7	hydrogen peroxide	27	13	iodine	17	15	water	0	0		2	C
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h	<p>Any reasonable strength, for example [max 1]</p> <ul style="list-style-type: none"> • a range of disinfectants produced results that can be compared • a control (water) was used • reference to reliability of data linked to a named control variable <p>Any reasonable weakness, for example [max 1]</p> <ul style="list-style-type: none"> • only two trials • results cannot be verified with only two data points • cannot identify outliers • data for hydrogen peroxide was not reproducible <p>Two additional statements from either list</p>	<p><i>ORA accept either but not both</i></p>	<p>4</p>	<p>C</p>
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5	a	<p>Stage 2 bacteria sensitive to an antibiotic are killed by it or only resistant individuals survive</p> <p>Stage 5 no bacteria are killed (as all are resistant) or population of resistant bacteria increases (as antibiotic has no effect)</p>	<i>Do not accept references to immunity</i>	2	A										
	b	<table border="1"> <tr><td>2010</td><td>6.0</td></tr> <tr><td>2011</td><td>5.0</td></tr> <tr><td>2012</td><td>6.5</td></tr> <tr><td>2013</td><td>8.1</td></tr> <tr><td>2014</td><td>8.9</td></tr> </table> <p>two data points plotted correctly ± 0.1 for percentages all data points plotted correctly ± 0.1 for percentages</p>	2010	6.0	2011	5.0	2012	6.5	2013	8.1	2014	8.9		2	C
	2010	6.0													
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c	<p>Trimethoprim ▾</p> <p>it has the zone which is largest and clear(est)</p> <p>An attempt at a scientific explanation, for example [max 1]</p> <ul style="list-style-type: none"> there are no resistant bacteria so the zone is clear (trimethoprim) is effective at a lower concentration (than the other antibiotics) 		3	C											
d	<p>the light absorbed increases as population of bacteria increases or positive relationship proportional or linear relationship</p>	<i>Award two marks for directly proportional</i>	2	C											

6

	1	2	3	4
V (Identification of IV and DV)	Some variables are referred to that are connected to the problem but these may not be explicitly identified	concentration of salt solution identified as IV or % absorption identified as DV	concentration of salt solution identified as IV and % absorption identified as DV	
CV (Control variables)	one control variable is identified	two control variables are identified		
H (Hypothesis)	Formulates a hypothesis connected to the variables but not explicitly linked to IV or their DV	Formulate a testable hypothesis correctly linked to the IV and their DV (no explanation)	Formulate a testable hypothesis correctly linked to the IV and their DV with reference to osmosis or dehydration	
M (Manipulation of variables/ description of method)	Attempt at a method but detail is insufficient for manipulation of variables	Partial method is described with detail sufficient for CV and IV or CV and their DV	Partial method is described with detail sufficient for IV and their DV and one CV	Method is described with detail sufficient for IV and their DV and two CV
D (Collection of data)	Plans to repeat at least three trials for a single concentration or measures for at least five different concentrations	Plans to repeat at least three trials and measures for at least five different concentrations	Plans to repeat at least three trials and measures for at least five different concentrations and range includes 0% concentration	
S (Safety)	A general comment relating to safety	A safety comment relating specifically to the safe handling or disposal of bacteria		

17

B

7	a	(coronary) <u>artery</u> narrows or is obstructed less (oxygenated) blood reaches the heart muscle / tissue or making blood flow more difficult the heart (muscle) is unable to respire sufficiently or cannot beat	WTTE	3	D
	b	inflating the balloon increases the diameter of the artery or squashes the plaque or keeps artery open allowing more blood to flow or making it easier for the blood to flow heart does not need to pump as hard (to supply the same volume of blood)	WTTE	3	D
	c	prevents or slows the pathway or reactions (that produce cholesterol) from occurring (because) statin molecule blocks the enzyme's <u>active site</u>	<i>Do not accept "affects the active site"</i>	2	D
	d	Angioplasty Advantages, for example [max 1] <ul style="list-style-type: none"> • effective over a long time / one-time procedure • short recovery time from surgery Disadvantages, for example [max 1] <ul style="list-style-type: none"> • possible risk of complication (heart attack) / infection during surgery • risk of a clot developing near the stent / thrombosis • scar after surgical procedure • does not lower cholesterol levels Statins Advantages, for example [max 1] <ul style="list-style-type: none"> • reduce the amount of (LDL) cholesterol • increase the amount of HDL cholesterol • prevents other diseases Disadvantages, for example [max 1] <ul style="list-style-type: none"> • must be taken regularly / long term • possible side effects e.g. headache, nausea, reduction in vitamin D/hormones • effect is not instant – takes time to work. 	<i>Allow generic advantages / disadvantages such as cost, waiting times, doesn't change behaviour/address underlying causes, links to genetics etc</i> <i>Take care to ensure each point is only awarded once</i> <i>Accept "bad" for LDL cholesterol and "good" for HDL cholesterol</i>	4	D

	1	2	3	4
impact on quality of life	A reduced quality of life is implied	A statement of one impact on quality of life	Statements of more than one impact on quality of life	Statements of more than one impact on quality of life with further support for at least one impact
economic	An advantage <i>or</i> disadvantage is implied	A statement of an advantage <i>and</i> a disadvantage <i>or</i> a statement of an advantage <i>or</i> a disadvantage that is justified clearly linked to economic factor	A statement of an advantage <i>and</i> a disadvantage <i>and</i> justification for one of these clearly linked to economic factor	A statement of an advantage <i>and</i> a disadvantage <i>and</i> justification for both clearly linked to economic factor
Individual	A statement of an individual's responsibility is implied	A statement of an individual's responsibility with justification <i>Or</i> Two statements of an individual's responsibility	More than one statement of an individual's responsibility with justification	
Society	A statement of a responsibility of society is implied	A statement of a responsibility of society with justification <i>Or</i> Two statements of a responsibility of society	More than one statement of a responsibility of society with justification	
Conclusion	A conclusion is given			