

# Variety of Living Organisms

## Mark Scheme 1

<b>Level</b>	IGCSE(9-1)
<b>Subject</b>	Biology
<b>Exam Board</b>	Edexcel IGCSE
<b>Module</b>	Double Award (Paper 1B)
<b>Topic</b>	The Nature and Variety of Living Organisms
<b>Sub-Topic</b>	Variety of Living Organisms
<b>Booklet</b>	Mark Scheme 1

**Time Allowed:** 78 minutes

**Score:** /65

**Percentage:** /100

**Grade Boundaries:**

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

Question number	Answer	Notes	Marks
1 (a) (i)	1. cannot reproduce without host; 2. do not move; 3. do not respire; 4. do not respond to stimuli; 5. do not grow / develop; 6. do not excrete; 7. do not feed; 8. do not control interna conditions;		2
(ii)	1. HIV/ AIDS; 2. TM(V) / tobacco mosaic disease; 3. influenza flu / cold / Ebola / eq;	allow any named virus or disease caused by virus	1

(b)	1. no genetic material / DNA / RNA; 2. not recognised by immune system / eq; 3. smaller; 4. always fatal; 5. viruses have protein coat; 6. viruses can be used as vectors;	allow converse	2
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Total 5 marks

Question number	Answer	Notes	Marks																											
2	<table border="1"> <thead> <tr> <th rowspan="2">Feature of organism</th> <th colspan="3">Type of organism</th> </tr> <tr> <th>Bacteria</th> <th>Fungus</th> <th>Virus</th> </tr> </thead> <tbody> <tr> <td>have a protein coat</td> <td>(x)</td> <td>x)</td> <td>✓)</td> </tr> <tr> <td>all are pathogens</td> <td>x</td> <td>x</td> <td>✓;</td> </tr> <tr> <td>cell walls made of chitin</td> <td>x</td> <td>✓</td> <td>x;</td> </tr> <tr> <td>contain DNA in a nucleus</td> <td>x</td> <td>✓</td> <td>x;</td> </tr> <tr> <td>respire</td> <td>✓</td> <td>✓</td> <td>x;</td> </tr> </tbody> </table>	Feature of organism	Type of organism			Bacteria	Fungus	Virus	have a protein coat	(x)	x)	✓)	all are pathogens	x	x	✓;	cell walls made of chitin	x	✓	x;	contain DNA in a nucleus	x	✓	x;	respire	✓	✓	x;	Tick cross hybrid = 0	4
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			Total 4 Marks																											

Question number	Answer	Notes	Marks
3 (a) (i)	Lactobacillus;	Allow approx. spelling	1
(ii)	Mucor;		1
(iii)	bean;		1
(iv)	mosquito;		1
(b) (i)	only reproduce in living cells / eq; protein coat; <u>only</u> DNA / <u>only</u> RNA / one type of nucleic acid / eq;  smaller; no organelles; no cytoplasm; no mitochondria;  do not move; do not respire; do not feed; no sensitivity; do not grow; do not excrete / produce waste;	ignore cell wall / cell membrane / chloroplast / nucleus / nucleiod / multicellular	max 3
(ii)	HIV / eq; human / eq; AIDS / effects immune system / eq;	if named disease wrong still allow effect ignore organs	3

TOTAL 10 MARKS

Question number	Answer	Notes	Marks
4 (a)	1. do not respire; 2. cannot reproduce without (host) cell / reproduce in (host) cell / can only reproduce within an organism; 3. do not move; 4. do not sense; 5. do not <u>excrete</u> ; 6. do not grow; 7. do not feed / do not need nutrition; 8. do not control their internal conditions; 9. are not cellular;		2 max
(b)	HIV / TMV / influenza / Ebola / herpes / swine flu / bird flu / H15;	Allow named virus disease Ignore AIDS	1

	<ol style="list-style-type: none"><li>1. bacteria are bigger / viruses are smaller;</li><li>2. cell membrane in bacterium;</li><li>3. cell wall in bacteria / protein coat/capsid in virus / envelope in virus;</li><li>4. flagellum in bacteria / eq;</li><li>5. bacteria have plasmids / nucleoid;</li><li>6. bacteria have cytoplasm;</li></ol>	<p>Ignore cellular structure alone</p> <p>Ignore nucleus / shape</p>	<p>1 max</p>

Total 4 marks

Question number	Answer	Notes	Marks
5 (a) (i)	fungi / bacteria / <i>Penicillium</i> ;	allow named correct organism	1
	(ii) bacteria;		1
(b)	1. <u>mutation</u> ; 2. <u>variation</u> ; 3. gene / allele / DNA; 4. survive / not killed / eq; 5. <u>resistant</u> ; 6. reproduce / multiply / replicate / breed / produce offspring / eq; 7. pass on <u>gene / allele / DNA</u> ;	allow resist  pass on resistance = 1 for resistance MP 5 only  pass on gene = 2 = Mp3 and Mp7	5

(Total = 7 marks)



Question number	Answer	Notes	Marks
6	1 <u>variation / variety</u> ; 2 rare / random; 3 mutation / mutant;  4 gene / allele / DNA / eq; 5 survive / not killed / live / eq; 6 reproduce / breed / have offspring / eq; 7 pass on (gene) / eq;  8 many generations / repeated over time / eq;	allow converse for non-resistant  ignore pass on phenotype / characteristic	Max 5
		<b>Total</b>	5

Question number	Answer					Notes	Marks																				
7 (a)	<table border="1"> <thead> <tr> <th>Group</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>animals</td> <td>human / eq;</td> </tr> <tr> <td>fungi</td> <td><i>Mucor</i> / eq;</td> </tr> <tr> <td>bacteria</td> <td><i>Lactobacillus</i> / <i>Pneumococcus</i> / <i>Salmonella</i> / eq;</td> </tr> <tr> <td>protocists</td> <td><i>Amoeba</i> / <i>Chlorella</i> / <i>Plasmodium</i> / seaweed / algae / eq;</td> </tr> </tbody> </table>					Group	Example	animals	human / eq;	fungi	<i>Mucor</i> / eq;	bacteria	<i>Lactobacillus</i> / <i>Pneumococcus</i> / <i>Salmonella</i> / eq;	protocists	<i>Amoeba</i> / <i>Chlorella</i> / <i>Plasmodium</i> / seaweed / algae / eq;	allow mammals / birds / eq allow mushroom / yeast / mould toadstool / ignore named disease / athlete's foot ignore malaria	4										
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7 (c) (i)	smaller; protein coat / no cell wall / eq; no cell membrane; no cytoplasm / no organelles / no plasmids / no ribosome / eq; no <u>flagellum</u> ;	ignore reference to shape and reproduction ignore nucleus / Golgi / mitochondria / eq allow converse ignore HIV	1
	(ii) tobacco mosaic / AIDS / <u>influenza</u> / any correct flu / cold / measles / eq;		1
		<b>Total</b>	<b>9</b>

Question number	Answer			Notes	Marks
8 (a)	Feature		Animals	4 marks all correct 3 marks for 6 or 7 2 marks for 4 or 5 1 marks for 2 or 3 0 marks for 0 or 1  blank squares = wrong  tick cross combined = wrong	4
can move from place to place	(X)	(√)			
can carry out photosynthesis	√	X;			
are multicellular	√	√;			
have cells with cell walls	√	X;			
store carbohydrate as glycogen	X	√;			
(b)	fungi; bacteria / prokaryotes; protocists / protozoa; viruses;			allow singular or plural ignore parasites / microorganisms / specific names eg cholera / amoeba	Max 2

Total 6 marks

Question number	Answer	Marks
9 (a)	pressur vena cava; ventricle; pulmonary; artery; capillaries; bacteria;	7

**Total 7 Marks**

Question number	Answer	Notes	Marks												
10(a)	1. iodine; 2. blue/ black / blue black = starch; 3. Benedict' / eq; 4. heat / use water bath / eq; 5. red/ orange / yellow / green = glucose;	if iodine for glucose goes blue black = 0  only award Mp1 and Mp3 if linked to correct test  heat must be linked to Benedict's	4 max												
(b)	<table border="1"> <thead> <tr> <th>Group</th> <th>Example from the group</th> <th>Molecule used to store carbohydrate</th> </tr> </thead> <tbody> <tr> <td>animals</td> <td></td> <td>glycogen;</td> </tr> <tr> <td>plants</td> <td>(maize)</td> <td>starch / sucrose;</td> </tr> <tr> <td>fungi</td> <td>mucor / yeast / mushroom / mould / eq;</td> <td>glycogen;</td> </tr> </tbody> </table>	Group	Example from the group	Molecule used to store carbohydrate	animals		glycogen;	plants	(maize)	starch / sucrose;	fungi	mucor / yeast / mushroom / mould / eq;	glycogen;	Ignore in plants sugar / glucose / fructose  Allow  <i>Fomes formentarius</i> / eq	4
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