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**GCSE  
BIOLOGY**

**PAPER 1H**

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**Mark scheme**

**Specimen 2018**

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Version 0.1

Draft

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from [aqa.org.uk](http://aqa.org.uk)

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## Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

### Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

### Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the Indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

## Question 1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
01.1	active transport		1	AO1/1 4.1.3.3
01.2	xylem		1	AO1/1 4.2.3.1
01.3	any <b>three</b> from: <ul style="list-style-type: none"> <li>• mount epidermis on a slide</li> <li>• count stomata in one area</li> <li>• repeat in four more areas</li> <li>• repeat method on lower surface of leaf</li> <li>• calculate mean</li> </ul>	allow nail varnish film	3	AO2/2 4.2.3.2
01.4	1	allow numbers written out in a line with middle number circled	1	AO2/2 4.2.3.2
01.5	41	allow 41.2 for 1 mark	2	AO2/2 4.2.3.2
01.6	less water lost		1	AO3/1a 4.2.3.2
	so it does not wilt		1	AO3/1b 4.2.3.2
<b>Total</b>			<b>10</b>	

## Question 2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.1	lower rate (of photosynthesis)	allow less photosynthesis	1	AO2/1 4.3.1.2 4.3.3.1
02.2	water	allow sugar(s)	1	AO1/1 4.4.1.1
	glucose		1	AO1/1 4.4.1.1
02.3	less glucose made		1	AO2/1 4.4.1.3
	glucose needed for respiration		1	AO2/1 4.4.1.3
	which provided energy for growth or cannot make proteins		1	AO2/1 4.4.1.3
02.4	to kill virus or to prevent virus spreading		1	AO2/2 4.3.1.2 4.3.3.1
02.5	take (stem) cells from meristem or tissue culture	allow take cuttings	1	AO2/1 4.1.2.3
<b>Total</b>			<b>8</b>	

## Question 3

Question	Answers	Extra information	Mark	AO / Spec. Ref.	ID
03.1	(hydrochloric (acid) / HCl		1	AO1/1 4.3.1.6	E
03.2	any <b>two</b> from: <ul style="list-style-type: none"> <li>• (carry out) phagocytosis</li> <li><b>or</b></li> <li>described</li> <li>• produce antibodies</li> <li>• produce antitoxins</li> </ul>		2	AO1/1 4.3.1.6	E
03.3	any <b>six</b> from: <ul style="list-style-type: none"> <li>• test on cells</li> <li><b>or</b></li> <li>tissues</li> <li><b>or</b></li> <li>live animals</li> <li>• trials / test on healthy volunteers</li> <li>• (initially) use low doses</li> <li>• monitor for safety</li> <li><b>or</b></li> <li>side effects</li> <li>• test for (effective) dosage</li> <li>• test for efficacy</li> <li>• ref to double blind trial</li> <li>• ref to peer review of data</li> </ul>		6	AO1/2 4.3.1.9	E
<b>Total</b>			<b>9</b>		

## Question 4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
04.1	mitochondria		1	AO1/1 4.1.1.2
04.2	$C_6H_{12}O_6$		1	AO1/1 4.4.2.1
	$6H_2O$		1	AO1/1 4.4.2.1
04.3	to stop air getting in		1	AO2/2 4.4.2.1
04.4	yellow		1	AO2/2 4.4.2.1
04.5	collect the $CO_2$ / gas with a measuring cylinder / gas syringe  (volume collected) in a certain time using a timer / watch		1	AO3/3b 4.4.2.1
			1	AO3/3b 4.4.2.1
04.6	yeast produces ethanol but muscles produce lactic acid	marks can be awarded from correct word or balanced symbol equations	1	AO1/1 4.4.2.1
	yeast produces $CO_2$ but muscles do not	answers must be comparative	1	AO1/1 4.4.2.1
	both release small amounts of energy		1	AO1/1 4.4.2.1
<b>Total</b>			<b>10</b>	

## Question 5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.1	11.1 (%)	accept for 1 mark (0.15 / 1.35) × 100	2	AO2/2 4.1.3.2
05.2	to allow results to be compared <b>or</b> they had different masses at the start		1	AO2/2 4.1.3.2
05.3	axis correct scale and labelled		1	AO2/2 4.1.3.2
	5 points correctly plotted	allow 1 mark for 4 points correctly plotted	2	AO2/2 4.1.3.2
	line through points	allow ecf	1	AO2/2 4.1.3.2
05.4	0.5	allow 0.45–0.55	1	AO3/2a 4.1.3.2
05.5	(0.0 to 0.4) water moves into cells		1	AO2/1 4.1.3.2
	(0.6 to 0.8) water leaves cells		1	AO2/1 4.1.3.2
	by osmosis		1	AO1/1 4.1.3.2
05.6	any <b>two</b> from: <ul style="list-style-type: none"> <li>• concentration of solutions</li> <li>• drying of chips</li> <li>• accuracy of balance</li> <li>• evaporation from tubes</li> </ul>		2	AO3/3a 4.1.3.2
<b>Total</b>			<b>13</b>	



## Question 6

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.1	stomach labelled		1	AO1/1 4.2.2.1
06.2	bacteria not killed (by stomach acid / HCl) and damage mucus lining  so <u>acid / HCl</u> damages stomach tissue / causes an ulcer		1  1	AO2/1 4.2.2.1  AO3/2b 4.2.2.1
06.3	food molecules are soluble  diffusion (allows food molecules to move) from high concentration in the gut to a lower concentration in the blood.  active transport (allows sugar / glucose molecules to be absorbed) from a lower concentration in the gut to a higher concentration in the blood	allow down concentration gradient  allow up / against concentration gradient	1  1  1	AO1/1 4.2.2.1  AO1/1 4.1.3.1  AO1/1 4.1.3.3
06.4	damaged villi reduces surface area for absorption (of food molecules)  (therefore) fewer amino acids / glucose absorbed  (therefore) fewer amino acids for growth/to make proteins  (therefore) less glucose for respiration / release of energy (for growth)		1  1  1  1	AO2/1 4.2.2.1  AO3/2b 4.2.2.1  AO3/2b 4.2.2.1  AO3/2b 4.2.2.1
<b>Total</b>			<b>10</b>	

## Question 7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.1	compare them to (pictures in) a gardening manual / website		1	AO1/1 4.3.3.1
	send to laboratory (for testing)		1	AO1/1 4.3.3.1
07.2	(nitrate) stunted growth		1	AO1/1 4.3.3.1
	(magnesium) yellowing of leaves	allow chlorosis	1	AO1/1 4.3.3.1
07.3	any <b>three</b> from: <ul style="list-style-type: none"> <li>• (fertiliser <b>S</b> has) more minerals than compost</li> <li>• wants plants to develop stronger roots</li> <li>• cheaper than fertiliser <b>T</b></li> <li>• has most nitrogen</li> <li>• has less phosphate but same potassium</li> </ul>		3	AO3/2a 4.3.3.1
07.4	the insect may fall off the leaf	allow may frighten insect away	1	AO3/2b 4.3.3.2
	the insect cannot get to parts of the leaf to eat it	accept eggs may fall off	1	AO3/2b 4.3.3.2
<b>Total</b>			<b>9</b>	

## Question 8

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.1	vector		1	AO2/1 4.3.1.1
08.2	any <b>three</b> from: <ul style="list-style-type: none"> <li>• destroy the snails</li> <li>• isolate infected dogs</li> <li>• treat infected dogs</li> <li>• educate owners about picking up dog faeces</li> </ul>	allow vaccination	3	AO2/1 4.3.1.1
08.3	stop mosquitoes breeding	allow correct description	1	AO1/1 4.3.1.5
	use mosquito nets	allow use of insect repellent	1	AO1/1 4.3.1.5
<b>Total</b>			<b>6</b>	

## Question 9

Question	Answers	Extra information	Mark	AO / Spec. Ref.
09.1	C		1	AO2/1 4.1.2.2
09.2	cytoplasm <b>and</b> cell membrane dividing	accept cytokinesis for 1 mark	1	AO2/1 4.1.2.2
	to form two identical daughter cells		1	AO2/1 4.1.2.2
09.3	meristem		1	AO1/1 4.2.3.1
09.4	stage 4		1	AO3/1a 4.1.2.2
	only one cell seen in this stage		1	AO2/2 4.1.2.2
09.5	80 (minutes)	allow 1 mark for 3/36 or $(3/36) \times 16$ or $(3/36) \times 16 \times 60$	2	AO2/2 4.1.2.2
09.6	binary fission		1	AO1/1 4.1.1.6
09.7	shortage of nutrients / oxygen		1	AO3/1a 4.1.1.6
	so cells die or death rate = rate of cell division		1	AO3/1a 4.1.1.6
<b>Total</b>			<b>11</b>	

## Question 10

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10	<b>Level 3:</b> More than one correct description of circulation including heart function <b>and</b> gas exchange <b>and</b> more than one correct description of the named blood vessels <b>and</b> blood cells.		5–6	AO1/1 4.2.2.3 4.2.2.4
	<b>Level 2:</b> At least one correct description of circulation including the heart function <b>or</b> gas exchange <b>and</b> at least one correct description of the named blood vessels <b>or</b> blood cells.		3–4	
	<b>Level 1:</b> At least one correct description of heart function <b>or</b> gas exchange <b>or</b> at least one correct description of named blood vessels <b>or</b> blood cells.		1–2	
	No relevant content.		0	
	<b>Indicative content</b>			
	<ul style="list-style-type: none"> <li>• dual / double circulatory system</li> <li>• heart made of (cardiac) muscle</li> <li>• pumps blood to lungs</li> <li>• in pulmonary artery</li> <li>• gas exchange in the lungs</li> <li>• oxygen carried by RBCs</li> <li>• haemoglobin bind oxygen</li> <li>• blood returns to heart via pulmonary vein</li> <li>• heart pumps to body via aorta</li> <li>• arteries carry oxygenated blood to tissues</li> <li>• capillaries deliver oxygen to cells</li> <li>• thin walls allow for easy diffusion</li> <li>• waste products removed eg CO<sub>2</sub></li> <li>• blood goes back to the heart</li> <li>• deoxygenated blood returns to the heart in the veins / vena cava</li> </ul> <p>accept annotated diagrams</p>			
<b>Total</b>			<b>6</b>	

## Question 11

Question	Answers	Extra information	Mark	AO / Spec. Ref.
11.1	A		1	AO3/1a 4.3.2.2
11.2	C		1	AO3/1a 4.3.2.2
11.3	any <b>one</b> from: <ul style="list-style-type: none"> <li>identify / locate specific molecules / other hormones</li> <li>locate blood clots</li> <li>diagnose / treat some cancers</li> </ul>		1	AO1/1 4.3.2.2
11.4	(as) urine passes through reaction zone		1	AO3/2b 4.3.2.2
	HCG hormone binds to the mobile HCG antibody (in the reaction zone)		1	AO2/1 4.3.2.2
	(passes up the stick) HCG hormone binds to the immobilised HCG antibodies in the results zone		1	AO2/1 4.3.2.2
	(other) antibodies which do not attach to HCG bind to antibodies in control zone		1	AO2/1 4.3.2.2
	blue dye appears in both control and results zones (to show positive result)		1	AO3/2b 4.3.2.2
<b>Total</b>			<b>8</b>	

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