

GCSE SCIENCE - BIOLOGY

B3

MARK SCHEME - SUMMER 2014

Question	Marking details	Marks Available
1	(a) (i) Cell drawn , irregular outline with inclusion; Nucleus and cell membrane correctly labelled;	2
	(ii) (For red blood cell) carries <u>oxygen</u> ; (For platelets) clotting;	2
	(b) Any two from urea; carbon dioxide; soluble foods/ glucose/ amino acids/ sugar; protein; salts; hormones; antibodies; <i>(reject- references to heat distribution)</i> <i>NOT waste/ drugs/ named drugs/nutrients</i>	2
	(c) (i) I A; II D;	2
	(ii) <u>Harvey</u> ;	1
	Question 1 total	[9]

Question	Marking details	Marks Available
2 (a)	(i) A Cornea; B Lens;	2
	(ii) This is where the <u>optic</u> nerve {leaves the eye/is} /there are no {light sensitive/receptor} cells here (so no image); <i>NOT attached to optic nerve</i> No impulse {generated/made}; <i>NOT retina</i> 2 nd mark only awarded if 1 st mark awarded	Max 2
(b)	Sclera; Choroid;	2
	Question 2 total	[6]

Question	Marking details	Marks Available										
3 (a)	<p>Either order</p> <p>Brain;</p> <p>Spinal cord; NOT spine</p>	2										
(b) (i)	<p>Automatic/ involuntary/ without thought;</p> <p><i>NOT choose to do it/ protective</i></p>	1										
(ii)	<table border="1"> <thead> <tr> <th>Name</th> <th>Purpose</th> </tr> </thead> <tbody> <tr> <td>Blink;</td> <td>protection of eye;</td> </tr> <tr> <td>Pupil diameter change;</td> <td>Regulating/admitting (appropriate level) of light to the eye;</td> </tr> <tr> <td>Withdrawal/ pulling away (in context);</td> <td>prevents damage/ harm to body part;</td> </tr> <tr> <td>Sneezing;</td> <td>Expel/ remove substances from nose</td> </tr> </tbody> </table>	Name	Purpose	Blink;	protection of eye;	Pupil diameter change;	Regulating/admitting (appropriate level) of light to the eye;	Withdrawal/ pulling away (in context);	prevents damage/ harm to body part;	Sneezing;	Expel/ remove substances from nose	2
Name	Purpose											
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Pupil diameter change;	Regulating/admitting (appropriate level) of light to the eye;											
Withdrawal/ pulling away (in context);	prevents damage/ harm to body part;											
Sneezing;	Expel/ remove substances from nose											
	NOT cough/ choke											
	Question 3 Total	[5]										

Question	Marking details	Marks Available
4	(a) (i) Excretion ; NOT filtration	1
	(b) (i) 28 and 39;	1
	(ii) 4 bars each correct height with label – 3 marks 3bars each correct height with label – 2 marks 2 bars each correct height with label – 1 mark $\frac{1}{2}$ small square tolerance in plotting height <i>Correct order (either way)</i> Kidney (family donor) Kidney (non-family donor) Lung Heart Liver Allow <u>all</u> bars correct height and in sequence but <u>no</u> labels = 1 mark	3
	(iii) They have been done for different lengths of time/ some have been done for longer (time than others);	1
	(iv) Less likely to be rejected; NOT fail Because same/ similar/compatible <u>tissue type</u> ; NOT same cells	2
	Question 4 Total	[8]

Question	Marking details	Marks Available
5 (a) (i)	<p>Increase then {plateau/steady/ OWTTE};</p> <p><i>NOT stops</i></p> <p>Doubles up to 40 hrs/ 300 per mm³;</p>	2
(ii)	<p>270 - 220;</p> <p>(allow ecf)</p> <p>50;</p> <p>(2 correct readings but incorrect subtraction – allow 1 mark)</p> <p>Correct answer = 2 marks</p>	2
(iii)	<p>{Initial increase in temperature / at 37} gives greater numbers;</p> <p>{Further increase in temperature /at 45} gives decreased numbers;</p> <p>Accept suitable alternative wording if clearly expressed</p> <p>NOT 'increase' unqualified</p>	2
(b)	<p>Reproducibility;</p> <p>Accept to have increased confidence in results</p> <p><i>NOT fair test</i></p>	1
(c) (i)	<p>Slows {bacterial/<i>E.coli</i>} {growth/reproduction};</p> <p><i>NOT bacteria cannot grow</i></p>	1
Question 5 Total		[8]

Question	Marking details	Marks Available
6/1 (a)	(i) Phloem; (accept phonetic spelling)	1
	(ii) phloem clearly identified on the diagram (letter A);	1
(b)	Starch;	1
(c)	(i) Fermentation/ fermenting;	1
	(ii) Less food crops/OWTTE; More chemicals/ fertilisers/ pesticides needed; Habitat destruction/ reduce biodiversity; <i>NOT deforestation/ disrupts {ecosystems/ environment}/ destroys wildlife</i>	2
Question 6/1 Total		[6]

Question	Marking details	Marks Available
7/2 (a)	(i) Lymphocyte/ B cells;	1
	(ii) {Lymphocyte/cell} has {reproduced/cloned/produced/ divided into} (identical) copies; Many times;	2
	(iii) {Lots of/more}antibodies produced/ memory cells produced/ so there will be a rapid response;	1
(b)	Different <u>antigens</u> ; So different antibodies needed;	2
(c)	Jenner;	1
(d)	Prevent {blood loss/bleeding}; Prevents {pathogens/microbes} entering/ prevents <u>bacterial</u> infection;	2
	Question 7/2 total	[9]

Question	Marking details	Marks Available
8/3 (a)	Transpiration;	1
(b)	<p>Indicative content</p> <p>Set bubble to zero/start Reference to use of tap Correct ref to time (i.e. time taken or set period of time) Correct ref to distance (i.e. set distance or distance travelled) Record results Repeat but now with the fan Repeat experiment for both conditions Compare results</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p>	6
(c)	<p>Any two from:</p> <p>(air) temperature; NOT heat humidity; light intensity; water availability; NOT amount</p>	2
Question 8/3 Total		[9]