OCR
Oxford Cambridge and RSA

GCSE

Biology B

Unit **B732/01**: Modules B4, B5, B6 (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2014

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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1. Annotations used in scoris

Annotation	Meaning
BP	Blank Page – this annotation **must** be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
	correct response
	incorrect response
BOD	benefit of the doubt
NBOD	benefit of the doubt **not** given
ECF	error carried forward
^	information omitted
I	ignore
R	reject
CON	contradiction

2. Abbreviations, annotations and conventions used in the detailed Mark Scheme.

/ = alternative and acceptable answers for the same marking point
(1) = separates marking points
allow = answers that can be accepted
not = answers which are not worthy of credit
reject = answers which are not worthy of credit
ignore = statements which are irrelevant
( ) = words which are not essential to gain credit
__ = underlined words must be present in answer to score a mark (although not correctly spelt unless otherwise stated)
ecf = error carried forward
AW = alternative wording
ora = or reverse argument

MARK SCHEME

Question	Answer	Marks	Guidance
1 a	water (1) oxygen (1)	2	**allow** formulae if correct: H_20 (1) O_2 (1)
b	through stomata (1) by diffusion (1)	2	**allow** pores **ignore** holes in leaves
c	more chlorophyll / more chloroplasts (1) to absorb more light / to absorb as much light as possible / because less light (to absorb) / more shading (1)	2	 **allow** less access to sun(light) **ignore** cannot reach sunlight / sunlight cannot reach the plant **not** any reference to availability of gases or water
	Total	**6**	

Question	Answer	Marks	Guidance
2 a	☐ ✓ nitrate (1) ☐ ✓ phosphate (1) ☐ ☐	2	
b	provides minerals (1) when it decays (1)	2	**allow** specific examples e.g. nitrates **ignore** nutrients **allow** decomposes / breaks down (1) **allow additional marking point:** improves soil texture / aerates soil (1)
	Total	**4**	

Question	Answer	Marks	Guidance
3	**[Level 3]** Gives a full description of the experiment including the results. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks) **[Level 2]** Gives a description of the experiment. **or** Gives a partial description of the experiment with a description of the results. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks) **[Level 1]** Gives a partial description of the experiment **or** a description of the results Quality of written communication impedes communication of the science at this level. (1 – 2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to C** **Indicative scientific points about description at level 3 may include:** • compare mass loss at different fan speeds / distances • ideas of repeat readings • idea of with and without a plant shoot **Indicative scientific points about description at all levels** • measure transpiration by loss in mass • measure transpiration by loss of water from flask **Indicative scientific points regarding results may include:** • increasing air movement increases transpiration rate / loss of mass **Use the L1, L2, L3 annotations in Scoris; do not use ticks.**
	Total	**6**	

Question	Answer	Marks	Guidance
4 a i	lacewings increase, aphids decrease **or** lacewings decrease, aphids increase **or** aphids decrease followed by lacewings decreasing (1) idea that lacewings eat aphids (1)	2	**allow** more lacewings, fewer aphids (1) fewer aphids followed by fewer lacewings (1) **ignore** actual data / aphids die out (but **allow** lacewings increase, aphids die) **allow** lacewings are predators of aphid OR aphids are prey / food supply of lacewings
ii	(growing buckwheat / graph B) does increases the number of lacewings (overall) (1) (growing buckwheat graph B) does decrease the number of aphids (overall) (1) but no evidence about crop yield / crop damage (1)	3	**ignore** buckwheat attracts lacewings (in question) **allow** reverse arguments for no buckwheat **allow** no evidence of crop damage **allow for additional marking point** if fewer aphids then (can assume) more crop yield / less crop damage (1)
b i	pooters (1) small / do not fly (1)	2	 **allow** no wings need pooters to get second mark with the answer small / do not fly, however second mark can be scored in these ways: **allow** explanations why other methods are not suitable: not nets as do not fly / not pitfall traps as do not live on ground / not quadrats because move around
ii	nets (1) they fly (1)	2	 **allow** have wings need nets to get second mark with the answer they fly, however second mark can be scored in these ways: **allow** explanations why other methods are not suitable: not pitfall traps as do not live on ground / not pooters because too big or delicate / not quadrats because move around
	Total	**9**	

Question	Answer	Marks	Guidance
5 a i	menstruation (1)	1	**allow** period **ignore** menstrual cycle
ii	pituitary (1)	1	**allow** phonetic spelling
b	blocked fallopian tubes ✓ blocked sperm ducts eggs not released ✓ uterus lining will not accept a fertilised egg ✓	1	
c i	25 (1)	1	
ii	24 (%) (1)	1	

iii	young women (1)
	
	women with low FSH levels (1)
		2	If quote ages to treat then
			allow only treat women in a certain age range (must be a range between ages 20 to 44)
			allow only treat women under a stated age in the range 20 - 44
			
			If quote levels to treat then
			allow only treat women in a certain range (must be a range between level 4 to 12)
			allow only treat women under a stated level in the range 4 - 12

	Total	**7**	

Question	Answer	Marks	Guidance
6 a	urea / water / salts (1)	1	**ignore** urine
b	accident / trauma / injury (1) infection / disease (1)	2	**ignore** they have been working too hard **allow** named disease or disorder eg diabetes / high blood pressure / low blood pressure / kidney stones / alcohol abuse / cancer of the kidney
	Total	**3**	

Question	Answer	Marks	Guidance
7	**[Level 3]** Answer correctly calculates urine volume during the day before race. It also predicts one reason why one output may change during the race with a reason and link this to one change in input. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks) **[Level 2]** Answer correctly calculates urine volume during the day before race. It also predicts one change that may occur on the day of the race. **OR** Answer predicts one reason why one output may change during the race with a reason and link this to one change in input. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks) **[Level 1]** Answer correctly calculates urine volume during the day before race **or** predicts one change that may occur on the day of the race. Quality of written communication impedes communication of the science at this level. (1 – 2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at G to C** **Indicative scientific points may include:** **during day before race:** • At rest Kaye is taking in 2500cm^3 • Therefore she must give out 2500 cm^3 • Her urine volume must be 1600 cm^3 **during day of race:** • during race she will sweat more / sweating will help to lose heat generated in race linked to: water will need to be replaced so likely to drink more **or** • during race she will sweat more / sweating will help to lose heat generated in race linked to: likely to pass less urine Other predictions include: • Respiration rate will increase during race • More water gain from respiration **Use the L1, L2, L3 annotations in Scoris; do not use ticks.**
	Total	**6**	

Question	Answer	Marks	Guidance
8 a i	stomach (1)	1	
ii	liver (1)	1	
b	small intestine (1) food has been digested by this point / is digested here (1) glucose from food is absorbed here / passes through the lining of small intestine (1)	3	
	Total	**5**	

Question	Answer	Marks	Guidance
9 a	links (powerful) pump to the action of the heart (1) links gas exchanger to function of lungs (1)	2	**allow** idea that pump moves the blood around the body **allow** idea that in gas exchanger blood exchanges CO_2 for O_2 / removes CO_2 / gains O_2 inclusion of collecting tube negates mark
b	too much drug could stop blood clotting / too much blood may be lost from cut blood vessels (1) too little drug could make blood clot (in machine) (1)	2	**ignore** thins the blood if no other mark scored, **allow** one mark for a clear appreciation that blood clotting is affected
	Total	**4**	

Question	Answer	Marks	Guidance
10 a	enzymes (1)	1	
b i	dip the test strip in the urine (1) look at the colour of the test area / test area changes colour (1) compare with colour on label (1)	3	**allow** urinates on strip **ignore** tests her urine Compare the colour of the test area with the colour on the label / references to named colours on chart indicated named levels =2
ii	glucose in urine / medium level (of glucose) / concentration (of glucose) is medium (1) therefore person has diabetes (1)	2	
	Total	**6**	

Question	Answer	Marks	Guidance
11 a	air / water (1)	1	**allow** correct named gas **/** moisture **allow** minerals / named mineral
b i	particles of different density (1) **but** particles of greater density sink faster / further (2)	2	**allow** sand particles are heavier / clay particles lighter (1) **allow** sand particles are heavier and so sink faster / further ORA (2) for density **allow** mass / weight **ignore** references to size
ii	answer in range 34 - 36% (2) but reading in range 17 – 18 (mm) (1)	2	**allow** 1.7 – 1.8 but must say cm
iii	loam (1)	1	if answer is sandy then **allow** if % in (ii) is >55
	Total	**6**	

Question	Answer	Marks	Guidance
12 a	kill (other) microorganisms / stop microorganisms entering (1) prevent production of other products / spoilage (1)	2	**ignore** stop microbes reproducing **allow** prevents contamination **allow** kill bacteria / fungi / so there are no microorganisms present **ignore** germs / bugs / viruses / stop bacteria **allow** change the product / reduce alcohol production **allow** idea that the microorganisms may be harmful **allow** (other microorganisms) compete for resources

Question	Answer	Marks	Guidance
b	**[Level 3]** Answer includes good description to conditions needed for fermentation. **also** includes reference to total alcohol made and rate of production. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks) **[Level 2]** Answer includes some of the conditions for fermentation and there is some description of the two graphs. **or** answer includes complete reference to conditions needed for fermentation. **or** includes reference to total alcohol made and rate of production. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks) **[Level 1]** Limited description of the conditions for fermentation is given **or** limited description of the graph. Quality of written communication impedes communication of the science at this level. (1 – 2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at G to E grades** **Indicative scientific points about wine production may include:** • Alcohol is made by yeast • Fermentation • Absence of oxygen • Use of sugar • Allow higher level answers such as the equation for fermentation**.** **Indicative scientific points about batches may include:** • Alcohol content increases during fermentation **and** percentage alcohol levels off • Both make wine with same percentage /14% alcohol • Batch with no added sugar takes longer to finish fermenting **/** batch with added sugar ferments faster at beginning **Use the L1, L2, L3 annotations in Scoris; do not use ticks.**
	Total	**8**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>13 a</td><td>
<table>
<tr><th>Feature</th><th>Bacteria only</th><th>Yeast only</th><th>Both</th></tr>
<tr><td>cytoplasm</td><td></td><td></td><td>(✓)</td></tr>
<tr><td>cell wall</td><td></td><td></td><td>✓</td></tr>
<tr><td>DNA</td><td></td><td></td><td>✓</td></tr>
<tr><td>flagellum</td><td>✓</td><td></td><td></td></tr>
</table>
</td><td>2</td><td>all correct rows (2)
2 correct rows (1)
1 or 0 correct rows (0)</td></tr>
<tr><td>b</td><td>by budding / asexually (1)</td><td>1</td><td>ignore splitting into two / mitosis</td></tr>
<tr><td>c</td><td>drug A (1)

because it has the largest area around it that is clear of bacteria (1)</td><td>2</td><td>

allow kills more bacteria / microorganisms (1)
answer must be comparative ie not just ‘ kills lots of microbes’</td></tr>
<tr><td></td><td>Total</td><td>5</td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
14 a i	7509 (1)	1	
ii	animals (1)	1	
iii	prokaryotes (1)	1	
b i	**any three from** (ways they are similar:) idea that both graphs show an (overall) increase (1) idea that neither graph shows a smooth increase (1) (ways they are different:) graph for birds is levelling off / graph for beetles is still rising (1) the numbers for beetles are (far) greater than for birds (1)	3	**allow** in 1750 there were more birds recorded than beetles / beetles started from zero / beetles started from a lower number
ii	**any two from these ideas** birds are easier to spot / beetles are more difficult to spot (1) more people watch / are interested in birds than study beetles (1) birds migrate / move around more (1) beetle species are similar and only recently have people realised they are different species (1) there are more niches for beetles (1) beetles are older than birds and have had time to evolve into more species (1) identification/collection techniques (for beetles) has improved (1)	2	**ignore** descriptions of differences between the graphs with no explanations eg there are fewer bird species than beetle species **allow** birds are bigger than beetles **allow** people have been recording birds for longer **allow** beetles may live in places with few people

Question	Answer	Marks	Guidance
c	**any two from these ideas** (no) (no marks) a correlation does not prove causation (1) need more evidence (to prove) / could be other factors (causing extinction) (1) there is not a (complete) match between the two graphs (1) it could just be that we are better at recording extinctions now compared with 200 years ago (1)	2	yes = 0 marks **allow** there have always been extinctions so any match could be a coincidence **allow** human population is increasing exponentially but extinction is not / **allow** not much increase in extinctions in first 100 years although there is an increase in human population **allow additional marking point** graph may be from a bias source (1)
	Total	**10**	

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