

Mark Scheme (Results)

June 2008

GCSE

360Science

GCSE Biology B3 (5029/01)

USING THE MARK SCHEME

1. This mark scheme gives you;
 - * an idea of the type of response expected
 - * how individual marks are to be awarded
 - * the total mark for each question
 - * examples of responses that should not receive credit.
2. ; separates points for the award of each mark.
3. / means that the responses are **alternatives** and either answer should receive full credit.
4. () means that a phrase/word is not essential for the award of the mark but helps the examiner to get the sense of the expected answer.
5. Phrases/words in **bold** indicate that the meaning of the phrase/word is **essential** to the answer.
6. OWTTE (or words to that effect) and eq (equivalent) indicate that valid alternative answers (which have not been specified) are acceptable.
7. 'Ignore' means that this answer is not worth a mark but does not negate an additional correct response.
8. 'Reject' means that the answer is wrong and negates any additional correct response for that specific mark.
9. ORA (or reverse argument) indicates that the complete reverse is also valid for the award of marks.
10. ecf (error carried forward) means that a wrong answer given in an earlier part of a question is used correctly in answer to a later part of the same question.

MARKING

1. Suggestion/explanation questions should be marked correct even when the suggestion is contained within the explanation.
2. **Do not** award marks for repetition of the stem of the question.
3. Make sure that the answer makes sense. Do not give credit for correct words/phrases which are put together in a meaningless manner. Answers must be in the correct scientific context.

AMPLIFICATION

1. In calculations, full credit must be given for a bold, correct answer. If a numerical answer is incorrect, look at the working and award marks according to the mark scheme.
2. Consequential marking should be used in calculations. This is where a candidate's working is correct but is based upon a previous error. When consequential marks have been awarded write "ecf" next to the ticks.
3. If candidates use the mole in calculations they must be awarded full marks for a correct answer even though the term may not be on the syllabus at their level.
4. If candidates use chemical formulae instead of chemical names, credit can only be given if the formulae are correct.

Unit 5029 / 01 (B3) Mark Scheme

Question Number	Answer	Mark
1(a)	<p>1 mark for each correct line</p>	(2)
1 (b)	less;	(1)
2 (a)(i) and (ii)	<p>grilled fish ticked; less fat (fattening)/additive/cholesterol/calories/ more protein/ source of omega 3; [Accept less energy for less calories for 1 mark]</p> <p>apple ticked; less calories/fat (fattening)/ more fibre/ source of vitamins; [Accept less energy for less calories for 1 mark] [Ignore less sugar]</p> <p>semi skimmed milk ticked; less additives/acid/ source of minerals/vitamins/protein;</p>	(1) (1) (1) (1)
3 (a)	courtship;	(1)

Question Number	Answer	Mark
3 (b)	healthy/suited; suited; only credit suited once	(1) (1)
3 (c)	genes;	(1)
4	Any three from: 1. spray crop with herbicide; 2. which kills weeds and not crop ; [Reject immune to spray] 3. (so) less competition (for light/water/mineral/etc); 4. therefore higher (crop) yield ;	(3)
5 (a) (i)	the pheromone becomes less (concentrated)/ particles are further apart/more spread out/ concentration weaker/less dense;	(1)
5 (a) (ii)	flies up a concentration gradient (low to high);	(1)
5 (b)	Any two from: 1. many other chemicals/pheromones around; 2. would not know which way to go/confused/ would fly to wrong species. 3. wouldn't find a mate/mating not successful/ no point in female - female attraction;	(2)
6 (a)	learned; harmless;	(1) (1)
6 (b)	test very young/new born squirrels from London with loud sounds; if they react to them or show habituation then behaviour is not inherited/ not innate/OR; OR bring squirrels from village to London/expose to loud sounds; see if they show habituation eg if after few days the squirrels stop reacting then it supports not inherited ;	(2)

Question Number	Answer	Mark
8 (b)	Any two from: <ol style="list-style-type: none"> 1. companionship/entertainment; 2. reduce stress/health benefits; 3. protection; 4. assist with work; 5. status; [Accept for use of products eg milk, hair, eggs but not products involving death of pet eg meat]	(2)
8 (c)	Any two from: <ol style="list-style-type: none"> 1. easier to handle; 2. less likely to injure each other; 3. provide transport; 4. provide food/skins (readily accessible); 5. allow settlements to develop; [Ignore selective breeding]	(2)
9 (a)	the bark of the <u>cinchona tree</u> ;	(1)
9 (b) (i)	may be toxic/have side-effects/harmful/allergic reactions/ to see if it is effective;	(1)
9 (b) (ii)	Any three from: <ol style="list-style-type: none"> 1. grow more <i>Artemisia</i>; 2. use genes from <i>Artemisia</i> to genetically modify other plants; 3. genetically modify/selectively breed <i>Artemisia</i> to increase concentration of Artemisinin/grow faster; 4. improve efficiency of extraction technique; 5. use GM micro organisms to produce Artemisinin; 6. tissue culture; 7. use of transgenic animals; 	(3)

Question Number	Answer	Mark
10	<p>Any four in correct sequence from:</p> <ol style="list-style-type: none"> 1. cook soya bean; 2. mix with (ground) roasted wheat; 3. ferment with <i>Aspergillus</i> ; 4. brine is added; 5. yeast and/or <i>Lactobacillus</i> added; 6. second fermentation/refermentation; 7. filtered; 8. pasteurisation; 9. use sterile bottle; <p>[Ignore sterilising]</p> <p>Max 3 marks if any points in wrong sequence</p>	(4)
11 (a)	carbohydrates/ oligosaccharides;	(1)
11 (b)	<p>increase/stimulate the growth of (friendly) bacteria; decrease the growth of bad bacteria; health benefits related to above e.g reduction of toxins from bad bacteria/increasing B vitamins from good bacteria;</p>	(3)
12 (a)	imbalance of sexes/change in gene pool;	(1)
12 (b)	<p>Any two from:</p> <ol style="list-style-type: none"> 1. wrong to interfere with nature/qualified groups eg reference to Catholics; 2. cultural variations favour one gender; 3. a family which already has daughters may wish to have a son or vice versa/parents should have the right to choose; 4. 'slippery slope' leading to more genetic selection; 5. may lead to discrimination for one sex/ one sex not valued as another; 6. use to avoid sex linked genetic diseases; 7. reference to increased number of terminations of babies of unwanted gender; 	(2)

Question Number	Answer	Mark
13 (a)	<p>Any four from:</p> <ol style="list-style-type: none"> 1. puppy shows desired behaviour e.g sit at curb/ORAs; 2. desired behaviour is rewarded e.g given biscuit/ORAs; 3. this reinforces behaviour/ORAs; 4. desired behaviour increased and becomes the norm; 5. credit correct reference to operant conditioning; <p>[Ignore references to Pavlov's dogs as not 'training' to modify natural behaviour]</p>	(4)
13 (b)	<p>Any four from:</p> <ol style="list-style-type: none"> 1. some behaviour is inherited/innate; 2. imprinting; 3. learn from copying parents/owners/adults; 4. allow offspring to learn species specific behaviour e.g bird song; 5. this allows it to cope socially; 6. increased chance of courtship 7. increase chances of survival e.g finding food; 8. habituation to stimuli in early life (will reduce unnecessary behaviours); 9. credit correct reference to parents 'teaching' children/offsprings; <p>Credit other appropriate responses</p>	(4)

TOTAL MARK 60