Mark Scheme (Results)

Summer 2007

GCSE

GCSE Science B (3B/5627, 6B/5628)

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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. You must give a tick (in red) for every mark awarded. The tick must be placed on the script close to the answer. The total mark awarded for a question should be written in the box at the end of the question.
2. The total marks for a question should then transferred to the front of the script.
3. Suggestion/explanation questions should be marked correct even when the suggestion is contained within the explanation.
4. **Do not** award marks for repetition of the stem of the question.
5. 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 bald, 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.

QUALITY OF WRITTEN COMMUNICATION

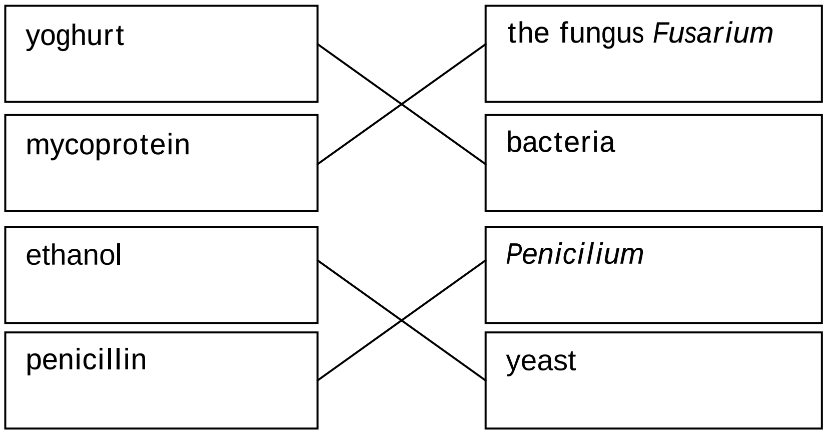
Students will be assessed on their ability to:

- present relevant information in a form that suits its purpose
- ensure that spelling, punctuation and grammar are accurate, so that the meaning is clear
- use of a suitable structure and style of writing.
- use ✓c or Xc to show if the communication mark is given or not.

Mark Scheme

If there are two question numbers the first refers to the Foundation tier paper and the second to the Higher tier paper.

1



Total 3 marks

2		pathogens;	1
		air;	1
		treated;	1

Total 3 marks

3	a) i)	identical;	1
	ii)	nucleus;	1
	b) i)	Ethical reason eg produce organs for transplant surgery/infertility/cloning genius/cloning people for a reason;	1
	ii)	Qualified ethical reason against cloning e.g. addressing the problems of who is the parent?/social challenges as grow up/lots of errors made to get one successful clone/clones have problems/may die young/accept religious argument/its not natural;	1

Total 4 marks

4	a)	12, 10, 4, 3 correct;	1
	b) i)	more than 60 up to and including 70°C;	1
	ii)	don't know which bacteria are harmful / size of colony not taken into account/repeat this,do more than once/contamination/drop size varies/laboratory different to real life;	1
	c)	72 accept 68-80;	1
		15 accept 12-18;	1

Total 5 marks

5/1	a)	*Salmonella sp/Listeria sp/e coli; ignore bacteria ;*	1
	b)	Max of 2 from each set	
		Action: leaving to defrost for only 1 hour;	
		chicken is not defrosted thoroughly;	
		so not cooked all the way through; not all bacteria killed;	
		Action: only cooking till outside brown;	
		so not cooked all the way through; not all bacteria killed;	
		ie - ONLY CREDIT THIS REASON ONCE	
		Action: Leaving by open window to cool;	
		Flies could have landed on it;	
		Spreading bacteria/ bacteria could land on it;	4

Total 5 marks

		any two from:	
6/2	a)	(produce) extracellular;	
		proteases/carbohydrates/amylases/enzymes;	
		(mycelium/hyphae) large surface area; rapid growth;	2
	b)	(produces) lactic acid/lactate;	1
	c)	separate soy sauce/product from fungus; ignore filter soya beans/wheat	1

Total 4 marks

		Any three from:	
7/3	a)	sewage and micro-organisms mixed/agitation;	
		optimum/right temperature/pH;	
		aeration;	
		as aerobic (respiration);ignore anaerobic bacteria/protozoans;	
		ammonia to nitrates (credit urea to ammonia/nitrates)/ ammonia/ammonium ions/urea is oxidised;	3
		QWC – use of suitable structure and style of writing;	1
	b)i	Methane CH_4/Carbon dioxide CO_2 reject methene**;**	
	ii	fertiliser/burnt/used as a fuel /generate electricity;	1
			1

Total 6 marks

4	a) i)	Both kill bacteria/micro-organisms/pathogens/washing hands; Ignore sterilise reject clean**;**	1
	ii)	Disinfectants are stronger/ more harmful/will damage skin than antiseptics;	1
	b)	surgery/put on a cut/food preparation surfaces;	1

Total 3 marks

5	a)	(boiling water) doesn't kill bacterial spores (accept may not kill all bacteria); (disinfectant) may be left behind/not removed, which may affect tissue culture, accept may not kill all bacteria/spores;	1 1
	b)	Any two from wash explant in bleach/iodine/antibacterial soap; reject sterilise explant Wash/clean (three times); thoroughly/in sterile/distilled water;	2
	c)	Mitosis/binary fission;	1
	d)	produce virus free plants/much quick**er** to produce/more plants in the same time accept mass production;	1

Total 6 marks

6	a)	Two from (to insert) DNA strand/gene/ for protein/AAT/insulin/HGH/Factor VIII); reject sheep DNA gene incorporated into genome/DNA; ignore remove gene, reject remove nucleus	2
	b)	Two from Healthy no mutations/resistance to disease/good wool; have protein (in milk); ignore meat/sterile female; Protein is produced in commercially viable concentrations;	2
	c)	Any two from: (Protein/named protein/product/substance) is **in** milk; sheep milked; protein extracted,reject protein is extracted from wool purified;	2

Total 6 marks

TOTAL FOR PAPER: 30 MARKS