

Mark Scheme (RESULTS)

January 2008

GCE

GCE Biology (Salters Nuffield) (6134/01)

Question Number	Answer	Mark
1 (a)	<ol style="list-style-type: none"> 1. detection by (thermo) receptors ; 2. hypothalamus ; 3. sweating ; 4. vasodilation ; 5. reduced activity / reduced metabolic rate ; 6. effectors stopped when return to normal ; 	max 3

Question Number	Answer	Mark
1 (b)	<ol style="list-style-type: none"> 1. set point normal / higher ; 2. effectors not activated until higher temperature / eq ; 3. switched off sooner / at higher temperature ; 4. reference to chemicals / lymphokines ; 	max 2

Question Number	Answer	Mark
1 (c)	<ol style="list-style-type: none"> 1. higher <u>core</u> temperature at death ; 2. cooling takes longer / raises cooling curve ; 3. higher measured temperature ; 4. estimated time since death shorter / eq ; 	max 2

Question Number	Answer	Mark
2 (a)	<ol style="list-style-type: none"> 1. cross over recombines existing alleles ; 2. mutation produces new alleles / changes DNA ; 3. mutations happen in any cell division / cross over <u>only</u> occurs in meiosis ; 4. mutations more likely to be non-viable ; 	max 2

Question Number	Answer	Mark														
2 (b)(i)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Genotype</th> <th>Tick</th> </tr> </thead> <tbody> <tr> <td>RLT</td> <td></td> </tr> <tr> <td>rIT</td> <td></td> </tr> <tr> <td>RIT</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>RLt</td> <td></td> </tr> <tr> <td>Rlt</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>rLt</td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> <p style="text-align: center;"><i>2 marks all correct, lose one mark per error</i></p>	Genotype	Tick	RLT		rIT		RIT	✓	RLt		Rlt	✓	rLt	✓	2
Genotype	Tick															
RLT																
rIT																
RIT	✓															
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Question Number	Answer	Mark
2 (b)(ii)	<ol style="list-style-type: none"> 1. (Parents) RRTT x rrtt ; 2. (Gametes) RT rt ; 3. (F1) RrTt ; 4. (Gametes) RT, Rt, rT, rt ; 5. (F2 genotypes) R_T_, R_tt, rrT_, rrtt ; 6. 9:3:3:1 ; 7. Correct phenotypes (purple present, purple absent, red present, red absent) ; 	max 5

Question Number	Answer	Mark
2 (c)	<ol style="list-style-type: none">1. conserve genetic variety / prevent inbreeding / increase gene pool ;2. breeding programmes ;3. research / eq ;4. education ;5. reference to attracting visitors / increasing revenue / increasing publicity ;6. ethics of killing healthy animals / would die if released into wild ;	max 3

Question Number	Answer	Mark
3 (a)	<ol style="list-style-type: none"> 1. fixed / constant area ; 2. reference to sampling ; 3. valid comparisons possible ; 4. easy so can be repeated ; 	max 2

Question Number	Answer	Mark
3 (b)	<ol style="list-style-type: none"> 1. sampling along changing conditions / environmental gradient ; 2. systematic sampling / random sampling does not show distribution / eq ; 	2

Question Number	Answer	Mark
3 (c)	<ol style="list-style-type: none"> 1. <u>more</u> coverage by plants in 5 / converse ; 2. <u>more</u> organic matter in 5 / converse ; 3. <u>more</u> species in 5 / converse ; 4. different species present ; 5. credit figures (e.g. 3 times more plants, 2.4g more matter, 17 more species) ; 	max 3

Question Number	Answer	Mark
3 (d)	<ol style="list-style-type: none"> 1. different communities at different distances ; 2. few species near beach ; 3. reference to pioneer species ; 4. organic matter (increase with distance from beach) ; 5. consequence of increased organic matter (e.g. increased water holding, mineral content) ; 6. suited to more species further from beach ; 7. reference to competition ; 8. few dominant species ; 9. (might be) climax community / mature community ; 	<p style="text-align: right;">max 5</p>

Question Number	Answer	Mark
4 (a)	photolysis (of water) ;	1

Question Number	Answer	Mark
4 (b)	light / enzyme / chlorophyll /eq ;	1

Question Number	Answer	Mark
4 (c)	<ol style="list-style-type: none"> 1. passed to chlorophyll / photosystem / replace electrons lost by chlorophyll / eq ; 2. light energy {promotes electrons to higher energy level / excites electrons } / electrons emitted ; 3. ATP production ; 4. reduction of NADP / production of NADPH / eq ; 5. reference to electron carriers / electron transport chain ; 6. reference to redox / eq ; 	max 4

Question Number	Answer	Mark
4 (d)	<ol style="list-style-type: none"> 1. GP ; 2. reduced ; 3. using H from reduced NADP ; 4. and ATP as source of <u>energy</u> ; 	4

Question Number	Answer	Mark
4 (e)	<ol style="list-style-type: none"> 1. 10/12 GALP /eq ; 2. (regeneration of) RuBP /eq ; 3. (rest used to form) glucose ; 4. and starch / other organic chemicals /eq ; 	max 2

Question Number	Answer	Mark
5 (a)	<ol style="list-style-type: none"> 1. response of immune system / body's immune cells /eq ; 2. to antigen /eq ; 3. producing antibodies ; 4. T killer cells ; 	max 2

Question Number	Answer	Mark
5 (b)	<ol style="list-style-type: none"> 1. memory cells produced ; 2. response more rapid (on reinfection) / faster antibody production ; 3. prevents symptoms /eq ; 4. <u>higher</u> concentrations of antibodies produced ; 5. antibodies produced for longer ; 6. reference to secondary response ; 	max 2

Question Number	Answer	Mark
5 (c)	<ol style="list-style-type: none"> 1. population can be protected more quickly /eq ; 2. possible to keep high levels of immunity / herd immunity; 3. distribution more reliable / possible to remote areas /eq; 4. ref. to example of distribution benefit ; 5. allows rapid response to change in pathogens /eq ; 	max 3

Question Number	Answer	Mark
5 (d)	<ol style="list-style-type: none">1. also T memory cells ;2. more lymphocytes to combat infection / eq ;3. virus infects body cells ;4. antibodies only destroy virus in blood / eq ;5. T killer cells destroy virally infected cells ;6. virus cannot spread / hide inside cells;	max 4

Question Number	Answer	Mark
6(a)	same genus / reflects close relationship /eq ;	1

Question Number	Answer	Mark
6(b)	<ol style="list-style-type: none"> 1. isolation of populations; / reproductive isolation /eq ; 2. mutations cannot pass between populations ; 3. genetic drift / founder effect ; 4. different selection pressures / eq ; 5. (reference to effects of local conditions on) allele frequencies ; 	max 3

Question Number	Answer	Mark
6(c)	<ol style="list-style-type: none"> 1. requires co-ordination between governments / eq ; 2. (government might have) different approaches to conservation / e.g. tourism / eq ; 3. (government might have) different needs for local populations / different wealth of countries / eq ; 4. leopards know no boundaries ; 	max 2

PAPER TOTAL: 60 MARKS