WJEC CBAC

GCSE MARKING SCHEME

**SCIENCE - BIOLOGY
SPEC A (NEW)**

JANUARY 2012

INTRODUCTION

The marking schemes which follow were those used by WJEC for the January 2012 examination in GCSE BIOLOGY – SPEC A (NEW). They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.
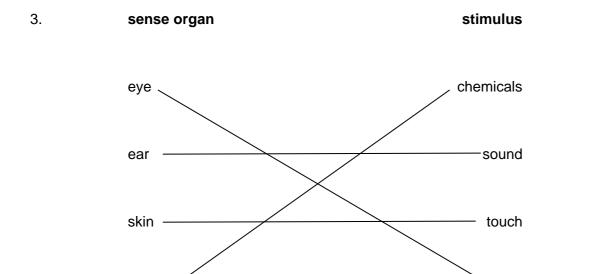
UNIT B1

FOUNDATION TIER

Question	Answer	Mark
1. (a) (i)	Sun/ sunlight/sunshine	1
	NOT sun alone	
(ii)	greenfly(ies);	1
	NOT fly	
(b)	pyramid correct; Blue tit	1
	Greenfly	
(c)	One mark for each correct tick;	3

Organism	Feature	Group			
		Plant	**Vertebrate**	**Invertebrate**	**Microorganisms**
Oak tree	has flowers	given			
Greenfly	has no backbone			✔	
Blue tit	has backbone		✔		
Bacteria	Brings about decay				✔

Total for the Question   6

Question	Answer	Mark
2. (a)	C; A; D;	3
(b)	carbon dioxide; (accept CO_2, if written correctly) NOT CO^2	1
(c)	photosynthesis; accept phonetic spelling	1
	Total for the question	**5**

3.

    sense organ   **stimulus**

eye   chemicals

ear   sound

skin   touch

tongue   light

		Mark
	3 or 4 correct;;;	3
	2 correct;;	2
	1 correct;	1
	Total for the Question	**3**

Question	Answer	Mark
4. (a) (i)	I suitable scale on the time axis; If no scale cannot access mark points I or II/ Scale must start at origin and use at least half of grid	1
	II correct plotting ± ½ small square;	2
	III straight line joining the plots;	1
(ii)	rises and plateaus/levels; ecf from graph Accept : goes up and then stays the same	1
(b) (i)	A - <u>sweat gland</u>;	
	B - <u>blood vessel</u>;	2
(ii)	evaporation;	1

(iii)

Feature of skin	Response
Sweat from sweat gland	more / **<u>less</u>** / stays the same
Blood flow in vessels near surface	more / **<u>less</u>** / says the same

One for each correct answer;;   2

(iv)	I muscle/erector muscle NOT erector alone	1
	II muscle/X contracts/pulls hair vertical up/hair is pulled up;	2
	Traps air/insulates;	

Total for the Question   **13**

3

Question	Answer		Mark
5. (a)	genetic;		1
	sexual;		1
(b)	mutation in a gamete;	✓	1
	broken bone		
	eye colour;	✓	1
	mutation in a skin cell		
	Total for the Question		**4**

Question			Answer	Mark
6.	(a)	i	DNA/ dna accept deoxyribonucleic acid (phonetic)	1
		ii	chromosomes	1
		iii	protein	1
	(b)		23 <u>and</u> 23	1
			46	1
			Total for the Question	5

Question	Answer	Mark
7/1.(a)	7 Two marks for correct answer; One mark for working if incorrect answer (100 – 93)	2
(b)	Meat, fish, eggs ✓ Fruit and vegetables Bread, rice, potatoes, pasta Milk and dairy foods ✓ Foods and drinks high in fat and/or sugar ✓ All three boxes required;	1
(c)	16.5;	1
(d)	reference to comparison; NOT fair testing	1
(e)	Any two from: Overweight/fat/obese/ put on too much weight NOT put on weight mobility problem; joint damage; heart disease/ heart attack NOT heart problems/ damage cholesterol/circulatory disease/stroke/ clogging diabetes; infertility;	2
(f)	energy (store)/membranes/nerves/ insulation NOT keeping warm	1

	Total for the Question	**8**

Question	Answer	Mark

8/2   Indicative content

as blood glucose rises (more) insulin released;

ref to pancreas;

to the liver;

in the blood;

glucose changed to glycogen;

insoluble/stored;

ignore references to glucagon

Question	Answer	Mark

8. **QWC Marking**

Indicative content: ....

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.

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.

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.

0 marks   The candidate does not make any attempt or give a relevant answer worthy of credit.

Question			Answer	Mark
9/3 (a)	(i)		increased (allow slower) reaction time/impaired judgement/	1
			lose concentration/ adverse effect on nervous system	
			NOT car crash/ reduces reaction time/ slows nerve impulses	
	(ii)		effect starts even at low alcohol level	1
			NOT stops any chance of alcohol affecting the driver/ some	
			People are more affected than others	
	(b)		dependency idea/ craves/ hard to give up/ can't live without	
			it/ keep wanting more NOT hooked	
			withdrawal symptoms idea/ cold turkey	2
			Total for the Question	**4**
10/4	(a)		21.3; one mark for working (710 x0.03) or two	2
			marks for correct answer if no working	
	(b)		Any two from	2
			food; NOT named food e.g. nuts	
			water;	
			space/ area NOT land	
			habitat/ places to live NOT homes/ shelter	
	(c)		Any two from	2
			disease;	
			predation;	
			adverse weather, cold, drought/ global warming	
			NOT weather/ climate	
			pollution;	
			'management'/hunting/ culling/ poisoning/ shooting	
			Not able to find a mate	
			Total for the Question	**6**

Question	Answer	Mark
5. (a) (i)	7.5	1
(ii)	4.5 / 4 ½ ;	1

(b) (i)   either:

any two from

receptor/sensory cells;

impulses/ electrical signals   NOT message/ electric signal

along sensory neurones/nerves;

or: in the blood;

in the form of heat;   2

(ii)   Any two from

Vasodilation/ dilate/increase in width/ diameter/ get wider

NOT bigger/ expand/ thicker/ nearer to surface

more blood;   2

radiation/conduction;

Total for the Question   6

Question	Answer	Mark
6. (a)	(Genetic) profile/genetic code/ profiling NOT fingerprinting	1
(b)	Captive tortoises would have all the same patterns	1
	NOT similar	
	(Ref to 'It' = wild population of tortoise)	
	Wild populations would all be different to captive tortoises	1
	Total for the question	**3**
7. (a) (i)	Photosynthesis	1
(ii)	0.5 no unit needed	1
(b)	5120kJ Unit must be unambiguous	1
(c)	Herbivores are more active/ move more or converse/ higher	1
	metabolic rate NOT herbivores excrete	
(d)	Decay/decomposition/ bacteria break down	1
	NOT it breaks down	
	urea to ammonia	1
	ammonia to nitrates	1
	which are taken up by plants and used to make <u>protein</u>	1
	Total for the Question	**8**

Question	Answer	Mark

8.   Indicative content:

Few predators/no virus/other answers relating to availability

of food/space/suitable climate.

Mutation

caused resistance/ immunity

caused variation

which was an advantage/had survival value

allowed survival of the fittest <u>TO BREED</u>

(Mutated) GENE passed on

Total for the Question   **6**

Question	Answer	Mark

8.   Indicative content:

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.

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.

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.

0 marks   The candidate does not make any attempt or give a relevant answer worthy of credit.

Question			Answer	Mark
9.	(a)	(i)	Continuous: bell-shaped bar profile NOT continuous line	1
			Discontinuous: Two bars or more – different heights	1
		(ii)	Continuous	

(b) (i)

	B	b
B	BB	Bb
b	bB	bb

			Gametes	1
			Cross	1
		(ii)	Shows discontinuous variation	1
			Plain is dominant/banded recessive	1
			NOT plain is more/ most dominant	
			Total for the Question	**7**

Question	Answer	Mark
10. (a) (i)	By microorganisms / bacteria/ microbes/ fungi	1
	as a result of respiration NOT respirate/ breathe	1
(b) (i)	Lead killed bacteria/fungi/decomposers OR denatured enzymes/ lead stops bacteria respiring/ working	1
	No carbon dioxide produced	1
(ii)	To show lead was responsible (and not nitrate)/to show nitrate was not responsible (but lead was) (not: as a control)	1
(iii)	sterilised soil/ disinfected soil/ use boiled soil/ use soil with dead microbes NOT soil with no micro-organisms(same volume of reagents as tube A or C)	

Total for the Question   **6**