MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

0608 TWENTY FIRST CENTURY SCIENCE

0608/05   Paper 5 (Comprehension and Practical), maximum raw mark 60

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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

* CIE will not enter into discussions or correspondence in connection with these mark schemes.

Question		Expected Answers	Mks	Additional Guidance
1 (a)		all individuals of species have died out	[1]	
(b)	(i)	predator eat/hunt species (and reduce numbers)	[1]	
	(ii)	new competitor/disease is introduced; another organism in food web become extinct; example of change in environmental conditions, e.g. drought	[1]	Any one Do not accept any ref to predators
(c)		directly: hunting/poaching/fishing; indirectly: destroying habitat/introducing new species;	[2]	
(d)		meeting the needs of people today without damaging the Earth for the people of the future; people rely on range of species for food/ fuel/medicines/clothing;	[2]	
(e)	(i)	genetically identical copy/result of asexual reproduction	[1]	
	(ii)	one embryo formed/one egg + one sperm; embryo splits in two	[2]	
	(iii)	Agree: prevents species becoming extinct; preserves unique genetic make-up of species; used for captive breeding programmes; could lead to cloning of humans; Disagree: harms the animals; expensive; very low success rate; could lead to cloning of humans; 'playing God' idea; don't really know the outcome/could be dangerous;	[4]	Accept any two reasonable answers under each heading
(f)		1/439; 0.22%	[2]	Need to see use of 1 and 439 for first mark

(g)	**(i)**	as number of sailors increased population of dodos decreased;	[1]	owtte
	(ii)	need to find a causal link; other factors must be less significant	[2]	
	(iii)	example of any other correct correlation	[1]	
(h)	**(i)**	extract dodo DNA from remains; remove DNA from pigeon egg cell; insert dodo DNA into empty pigeon egg cell; implant embryo into pigeon/pigeon egg;	[4]	
	(ii)	dodo DNA may not be well preserved/more difficult because pigeon lays eggs/dodo much larger than a pigeon	[1]	
	(iii)	peer review	[1]	
	(iv)	other scientists will be able to say whether it is sensible/valid; so only valid results get published; they may suggest improvements;	[2]	Any two
	(v)	can be repeated by other scientists; repeated results are more reliable;	[2]	
2 (a)		clamp polymer sample (horizontally); add mass on free end; use ruler to measure bend; use 50 g and 100 g masses only;	[4]	
(b)		**A** is more flexible than **B**; **A** bends uniformly/**B** bends more at higher mass;	[2]	ora
(c)	**(i)**	improves reliability; allows outliers to be identified and ignored/ allows average/mean to be calculated;	[2]	
	(ii)	bend would be bigger (for each polymer); errors would be a smaller percentage/proportion of total bend;	[2]	

3	(a)		any suggestion for blocking off light, e.g. draw curtains, put up barrier (1); method that ensures only light from above enters, e.g. place all apparatus in light-proof box, put sensor at bottom of a tube (1);	[2]	
	(b)		125 (1); 80 (1); 55 (1);	[3]	
	(c)	(i)	ruler (1); beaker or other container (1);	[2]	Both can be combined, e.g. measuring cylinder = 2 marks
		(ii)	put in different depths of liquid (above sensor) and read meter each time (1); repeat measurements 3 or more times (1); take mean values after checking for /eliminating outliers (1);	[3]	
4	(a)	(i)	it is an outlier	[1]	
		(ii)	11.5	[1]	
	(b)		2 to 5	[1]	
	(c)		makes results more reliable	[1]	
	(d)		number of woodlice/time allowed before counting/intensity of light	[1]	Accept any reasonable answer
	(e)		sensible scales on axes; axes labelled; bars correctly plotted	[3]	
	(f)	(i)	further away from light = more woodlice/woodlice prefer dark;	[1]	
		(ii)	go in dark to avoid predators/where food source is/where it is damp	[1]	Accept other correct idea
			Total	**[60]**	