CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2014 series

5180 MARINE SCIENCE

5180/03 Paper 3 (Practical Assessment Paper), 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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

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CAMBRIDGE
International Examinations

Question	Expected answers	Additional guidance	Marks
1 (a)	drawing correct size ; correct proportions ; neat lines ; correct features ;	approx. ¾ width of box body length to width proportions approximately correct continuous rather than sketchy lines eye, dorsal, caudal and pectoral fins shown 	[4]
(b)	caudal fin correctly labelled ; dorsal fin correctly labelled ; pectoral fin correctly labelled ; operculum correctly labelled ;		[4]
(c)	scale line on drawing correctly showing the length as 24 cm ;		[1]
			[Total: 9]

<table>
<tr><td>2 (a) (i)</td><td>Arthropoda / arthropods ;</td><td></td><td>[1]</td></tr>
<tr><td>(ii)</td><td>exoskeleton ;

jointed appendages / eq ;</td><td>I segmented

A jointed limbs / legs</td><td>

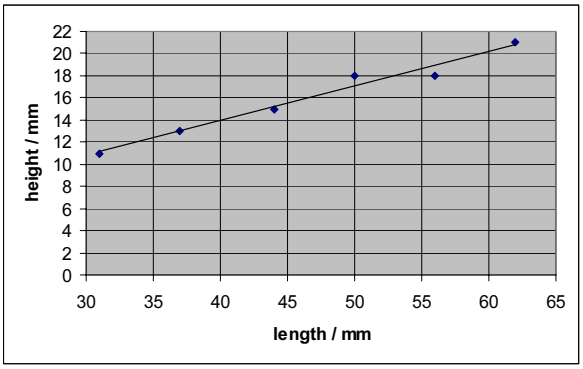
[2]</td></tr>
<tr><td>(iii)</td><td>
<table>
<tr><th>name of feature</th><th>shrimp</th><th>crab</th></tr>
<tr><td>antennae</td><td>long / large</td><td>short / small ;</td></tr>
<tr><td>pincers / claws / eq</td><td>small / absent</td><td>large / present ;</td></tr>
<tr><td>abdomen</td><td>visible</td><td>not visible ;</td></tr>
<tr><td>swimming appendages</td><td>present</td><td>absent ;</td></tr>
<tr><td>body</td><td>segmented</td><td>not segmented;</td></tr>
<tr><td>mouthparts</td><td>visible</td><td>not visible;</td></tr>
<tr><td>legs / eq</td><td>thin</td><td>thick / eq ;</td></tr>
</table>
</td><td></td><td>[3]</td></tr>
<tr><td>(b) (i)</td><td>47 mm ;</td><td>A 4.7 cm
A range 47 ± 1 mm</td><td>[1]</td></tr>
<tr><td>(ii)</td><td>47 ÷ 78 ;

magnification = (×) 0.6 ;</td><td>A ecf

I ‘mm’ with magnification</td><td>

[2]</td></tr>
<tr><td>(c) (i)</td><td>5.1 / 5.2 m ;</td><td></td><td>[1]</td></tr>
<tr><td>(ii)</td><td>A times between 1730 and 1800 ;</td><td>6.00 is incorrect, but 6.00 pm is correct</td><td>[1]</td></tr>
<tr><td colspan="4">[Total: 11]</td></tr>
</table>

3 (a) (i)	reference to use of biuret reagent ; colour change correctly described (blue to lilac / violet / purple / mauve) ;	**A** Millon's reagent ; colour change colourless to pink / red ;	[2]
(ii)	reference to use of Benedict's reagent / Fehling's ; heat ; colour change correctly described (blue to green / yellow / orange / red) ;	**A** sodium hydroxide **+** copper(II) sulfate **A** potassium hydroxide as alternative to NaOH **A** warm	[3]
(b)	reference to the use of a suitable float (e.g. a bottle containing sand) ; attached to string / line / rope / eq ; stated length of string ; find time taken for float to move a certain distance (e.g. to the end of the line) ; speed = distance ÷ time ; reference to repeats ; how mean calculated ;	**A** any reference to a floating object, e.g. bottle or drifter	[5]
			[Total: 10]

4	(a)	credit a neat table ; column heading length / mm ; column heading height / mm ; mean length shown as 46.7 ; mean height shown as 16.0 ;	ruled horizontal and vertical lines **A** 47.0	[5]
	(b)	both axes labelled with units ; suitable linear scale for both axes ; all points plotted correctly ; ; [one error = 1 mark, two or more errors = 0] suitable straight line of best fit drawn <u>without</u> extrapolation ;	**sample graph**  	[5]
	(c)	idea that height and length are proportional ;	**A** description, e.g. as height increases, length increases	[1]
				[Total: 11]

5	(a)	use of quadrat ; suitable stated size (e.g. 0.25 m^2) ; compass (to find direction) ; reference to random positions of quadrats ; how random coordinates generated ; place quadrat in position ; count number of seagrass plants / estimate percentage cover ; reference to repetition (in each area) / stated number of samples ; reference to safety / respect for the environment ;	 e.g. reference to random number tables, but not 'throwing the quadrat' **A** references to 'wearing goggles' 'wearing shoes' and any other sensible suggestions	[8]
	(b)	reference to tabulation of results ; column for sample number ; column for number of seagrass plants / percentage cover ; reference to calculation of means ; reference to calculation of standard deviation ; results expressed as density (plants per unit area) ; reference to appropriate graph (e.g. bars for mean in each site) ; comment on results in relation to hypothesis ;	**A** drawn table e.g. 'more sea grass plants on south side supports hypothesis'	[6]

(c)	may be difficult to count individual plants ; plants vary in size / idea that numbers may not represent growth ; reference to more samples needed to support hypothesis ; reference to anomalous results ; results may not be representative / idea of time when investigation carried out ; repeat investigation at different times of the year ; investigate distribution of seagrass in relation to another factor ; reference to measuring another biotic / abiotic factor ; investigate east and west sides ;	e.g. storm may have affected one side of island	[5]
			[Total: 19]