



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

MARINE SCIENCE

5180/03

Paper 3

For Examination from 2014

SPECIMEN MARK SCHEME

1 hour 30 minutes

MAXIMUM MARK: 60

This document consists of **4** printed pages.



- 1 (a) Drawing correct size ; [accept range 15 to 16 cm]
Correct proportions ; [head in relation to body, length and width proportions approximately correct]
Neat lines ; [continuous rather than sketchy lines]
Correct number of features ; [5 fins and lateral line shown] [4]

(b) (i) Any five of:

- Mouth ;
- Eye ;
- Operculum ;
- Lateral line ;
- Pelvic fin ;
- Anal Fin ;
- Caudal fin ;
- Dorsal fin(s) ; [5]

(ii) Scale line on drawing correctly showing the length of the specimen as 30 cm ; [1]

(c) Any two of:

- Scales;
- paired fins;
- lateral line;
- operculum ; [2]

[Total: 12]

- 2 (a) D ;
A ;
B ;
E ;
C ;

[5]

(b)

Sea urchin	Starfish
Spherical / eq	5 arms / eq ;
Long spines present	No spines ;
Tube feet not visible / eq	Tube feet visible / eq ;
All one colour	Two colours / eq ;

[3]

- (c) (i) 5.6 cm (+ or – 1 mm) ;

[1]

- (ii) Calculation (e.g. $5.6 \div 14$) ;
= $\times 0.4$;

[correct answer only gains both marks]

[2]

[Total: 11]

- 3 (a) Add iodine (solution) ;
Colour change described ;

[2]

- (b) Add biuret reagent ;
Colour change described ;

[2]

- (c) Add dilute (hydrochloric) acid ;

Heat ;
Then cool ;
Add alkali / sodium hydrogencarbonate ;
To neutralise acid ;
Add Benedict's reagent / Fehling's ;
Heat ;
Colour change described ;

[6]

[Total: 10]

- 4 (a) Neat table ; [lines drawn with a ruler]
 Column heading Fish number ;
 Column heading Fork length in cm / eq ;
 Column heading Mass in g / eq ;
 Data correctly tabulated ; [3]
- (b) Axes labelled correctly ;
 Points plotted accurately ;; [all 8 points gains two marks, 1 or 2 errors gains 1 mark]
 Neat line of best fit ; [4]
- (c) Comment on direct relationship between length and mass / eq ; [1]
- [Total: 8]**
- 5 (a) Carry out investigation on same day / same time of day ;
 Avoid trampling ;
 Reference to use of quadrat ;
 Suitable stated size (e.g. 0.5 m²) ;
 Use of tape measure / eq ;
 Reference to a line transect / belt transect ;
 Place quadrat at stated distance from water's edge / at top of shore ;
 Count number of burrows (within quadrat) ;
 Repeat at stated intervals (e.g. every 1 metre) ;
 Reference to repeating transect ; [8]
- (b) Reference to tabulation of results ;
 Headings for columns, distance from water in metres / eq ;
 Number of ghost crab burrows ;
 Reference to calculation of means ;
 Reference to suitable graph ; [accept graph appropriate for data]
 Both axes labelled ;
 Reference to calculating number of burrows per unit area;
 Reference to results in relation to hypothesis ; [6]
- (c) Difficult to identify burrows / eq ;
 Some burrows may not contain a crab ;
 (Therefore) number of burrows may not indicate the actual number of crabs ;
 Reference to need for more samples to support hypothesis ;
 Repeat investigation at different times of the year ;
 Investigate distribution of crabs in relation to another factor (e.g. distribution of organic matter) ;
 Investigate distribution of crabs on different shores / eq ; [5]
- [Total: 19]**