

Characteristics and Classification of Living Organisms

Mark Scheme 1

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Characteristics and Classification of Living Organisms
Sub-Topic	
Paper Type	Alternative to Practical
Booklet	Mark Scheme 1

Time Allowed: 54 minutes

Score: /45

Percentage: /100

1	(a) (i)	C ;	[1]	
	(ii)	any two from small(er); smooth surface ; no segments no chaetae ;	Max [2]	
	(iii)	annelid(s) / annelida / segmented worm ;	[1]	B annelid but A is a myriapod [1] ignore ref to myriapod.
	(b)	Outline: use of single clear lines for drawing ; Size: larger than photograph ; Detail: segments / saddle ; Label: 1 label mark only ; one from: segments / saddle / chaetae or bristles / clitellum ;	[4]	

<p>(c) (i)</p>	<p>One in each range to ;;</p> <table border="1"> <tr> <th>worm</th> <th>range / cm</th> </tr> <tr> <td>D</td> <td>8.2–8.</td> </tr> <tr> <td>C</td> <td>10.8–11.</td> </tr> <tr> <td>A</td> <td>11.4–11.</td> </tr> <tr> <td>B</td> <td>12.2–12.</td> </tr> <tr> <td>E</td> <td>13.6–13.</td> </tr> </table>	worm	range / cm	D	8.2–8.	C	10.8–11.	A	11.4–11.	B	12.2–12.	E	13.6–13.	<p>[2]</p>	<p>(worms identified clockwise A to E)</p>									
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<p>(ii)</p>	<table border="1"> <thead> <tr> <th>range of length / cm</th> <th>tally</th> <th>freq</th> </tr> </thead> <tbody> <tr> <td>5.0–6.9</td> <td></td> <td>3</td> </tr> <tr> <td>7.0–8.9</td> <td></td> <td>9</td> </tr> <tr> <td>9.0–10.9</td> <td>+1 or [if worm C is , 11.0]</td> <td>7 or 6</td> </tr> <tr> <td>11.0–12.9</td> <td>+2 or + [if worm C is > 11.0]</td> <td>10 or 11</td> </tr> <tr> <td>13.0–14.9</td> <td></td> <td>8</td> </tr> <tr> <td>15.0–16.9</td> <td></td> <td>3</td> </tr> </tbody> </table> <p>tally method correct ;</p> <p>frequencies correct ; ;</p>	range of length / cm	tally	freq	5.0–6.9		3	7.0–8.9		9	9.0–10.9	+1 or [if worm C is , 11.0]	7 or 6	11.0–12.9	+2 or + [if worm C is > 11.0]	10 or 11	13.0–14.9		8	15.0–16.9		3	<p>[3]</p>	<p>ecf from (c)(i)</p> <p>Worm C may fall into either of 2 categories.</p> <p>Tally should show the 5 bars correctly i.e. '5 bar gate'.</p>
range of length / cm	tally	freq																						
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<p>(iii)</p>	<p>A – axes label and scale ;</p> <p>S – size to fill at least ½ of grid ;</p> <p>P – plot ;</p> <p>C – columns touching and equal in width ;</p>	<p>[4]</p>	<p>+/- 1 mm</p>																					
<p>(iv)</p>	<p>any suitable suggestion, e.g. sexes are different lengths / different ages ;</p>	<p>Max [1]</p>																						
		<p>[Total: 18]</p>																						

2 (a) (i)	A C	[2]	
(ii)	2 from elongated body shape / eyes / scales / no legs or limbs;;	[2]	
		[Total: 4]	

- 3 (a) (i) red blood cell / erythrocyte;
white blood cell / leucocyte / lymphocyte / phagocyte;;
platelet / thrombocyte; [MAX 3]
- (ii) white blood cells / AW;
plasma / tissue fluid; [2]
- (b) 5 +/- 0.5mm; [1]
- (ii) working measurement from (i); ecf
800
correct answer with units; (*accept units wherever mentioned*)
 $4.5/800 = 0.005625$ or 5.625×10^{-3} or round to 0.0056 or 5.6×10^{-3}
 $5/800 = 0.00625$ or 6.25×10^{-3} or round to 0.006 or 6×10^{-3}
 $5.5/800 = 0.006875$ or 6.875×10^{-3} or round to 0.007 or 7×10^{-3} [2]
- (iii) to carry oxygen / oxyhaemoglobin; [1]
- [Total: 9]

- 4 (a) draw : **S** larger than Fig. 2.1; [**A whole crab (complete)/body with leg attached/body + detached leg**] [**wrong leg drawn = no S mark**] allow antenna as part of body.

O clear outline and no shading;

L three or four joints/parts to limb **X**; [**must have line to 'end' the leg whether leg is attached or not to body**]

labels: eye; [**ignore 'simple' if included in label**] [**if end of eye is shaded in – ignore for O drawing mark**]

jointed limb/segmented limb;
claw/hook/pointed end/sharp end;

[**score as D and L marks 3 + 3 – Accept as a list beside drawing if clear**] [**if no labels on drawing check Fig.2.1**]

[6]

- (b) (Arthropod (a) [**check spelling – if no confusion then accept e.g. arthropods**]

[1]

(ii) exoskeleton/jointed limbs/segmented body; [**ignore antennae**] [**treat as a list**]

[1]

(iii) positive features --

Fig. 2.2	Fig. 2.3	Fig.2.4
wings [ignore number]/3 parts to body (head, thorax and abdomen in correct order)/compound eyes/3 pairs of legs or 6 legs; [ignore antennae]	Many(pairs of) legs/one or two pairs of legs per segment/more than 4 pairs of legs/many segments; [not more than 3 pairs of legs and segmented body] [ignore 'long body' references to eyes and antennae]	8 legs/4 pairs of legs/simple eyes only/2 parts to body/cephalothorax/AVP eg pedipalps, chelicerae; [ignore antennae]

[3]

(iv) Fig.2.2 insect or insecta;

Fig.2.3 myriapod/chilopod; **[not millipede, myriapede or centipede]**

Fig.2.4 arachnid; **[not spider]**

[3]

[Total: 14]