

Question Number	Acceptable Answer	Additional guidance	Mark
<b>11(a)(i)</b>	because there is environmental gradient (1)		<b>(1)</b>

Question Number	Indicative content	
<b>11(a)(ii)*</b>	<p>Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme.</p> <p>The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant.</p> <ul style="list-style-type: none"> <li>reference to F. spir / F. ves at top and F. serr. at bottom / F. ves distributed from top to bottom / ranges of each of the three species quoted</li> <li>reference to top of shore exposed to different levels of abiotic factors such as {water / temperature} than lower part of shore</li> <li>reference to the F. spir / F. ves able to resist {dehydration / temperature fluctuations} more than F. serr.</li> <li>reference to bare rock as an abiotic factor and that F. serr. {needs solid surface to {grow / attach} / not able to {grow / attach} in sand}</li> <li>reference to competition between {Fucus species / other plants} for {space / light} on rocks in lower shore</li> <li>reference to different distribution of {consumers / animals / limpets} that consume Fucus species /idea that different consumers live on rock than in sand</li> </ul>	
Level	Mark	Descriptor
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<b>Level 1</b>	1-2	<p>An explanation may be attempted but with limited interpretation or analysis of the scientific information with a focus on mainly just one variable.</p> <p>The explanation will contain basic information with some attempt made to link knowledge and understanding to the given context.</p>

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<b>Level 2</b>	3-4	<p>An explanation will be given with occasional evidence of analysis, interpretation and/or evaluation of both variables.</p> <p>The explanation shows some linkages and lines of scientific reasoning with some structure.</p>
<b>Level 3</b>	5-6	<p>An explanation is made which is supported throughout by sustained application of relevant evidence of analysis, interpretation and/or evaluation of both pieces of scientific information.</p> <p>The explanation shows a well-developed and sustained line of scientific reasoning which is clear and logically structured.</p>

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<b>11(b)(i)</b>	<ul style="list-style-type: none"> <li>• <math>N(N-1) = 3540</math> (1)</li> <li>• <math>\sum n(n-1) = 704</math> (1)</li> <li>• <math>= 3540 \div 704 = 5.028 / 5.03</math> (1)</li> </ul>		<b>(3)</b>

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<b>11(b)(ii)</b>	<p>An answer that makes reference to the following:</p> <ul style="list-style-type: none"> <li>• middle shore has higher diversity (1)</li> <li>• even though there are fewer individuals (1)</li> </ul>	Allow converse argument.	<b>(2)</b>

(Total for Question 11 = 12 marks)