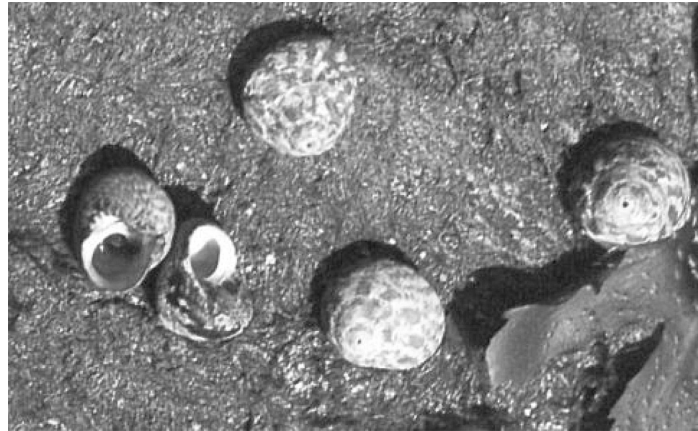
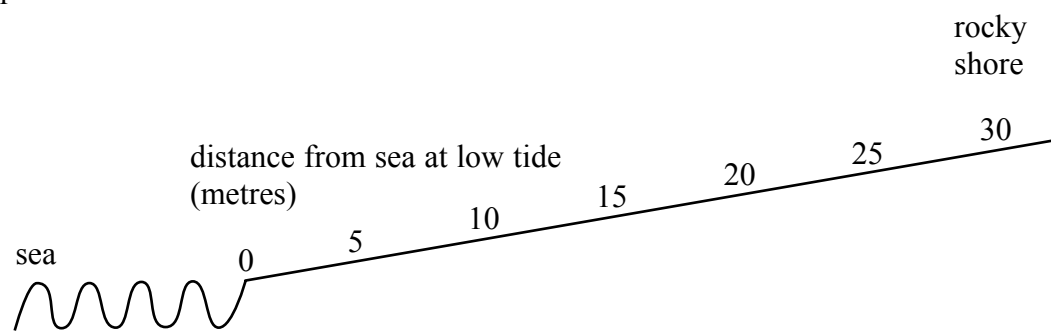




1. Purple topshells and grey topshells are snails that are found on rocky sea shores.



Robert walked up the shore away from the sea.  
 Robert stopped every five metres and put down a 1 metre square quadrat.  
 He recorded the number of purple topshells and the number of grey topshells in each quadrat.



Here are Robert's results.

|   |   |   |    |    |    |    |    |
|---|---|---|----|----|----|----|----|
| distance from the sea at low tide (metres)  | 0 | 5 | 10 | 15 | 20 | 25 | 30 |
| number of purple topshells per square metre | 7 | 9 | 14 | 20 | 7  | 1  | 0  |
| number of grey topshells per square metre   | 0 | 0 | 0  | 0  | 8  | 10 | 4  |



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blank

(a) Describe the distribution of purple topshells from 0 to 30 m.

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.....  
.....

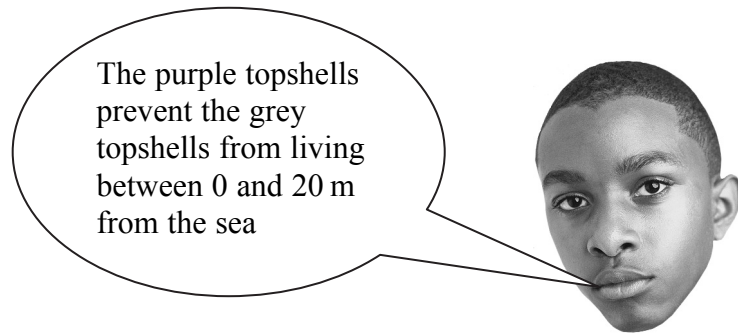
(1)

(b) Suggest one reason why the number of grey topshells decreases between 25 and 30 m from the sea.

.....  
.....  
.....

(1)

(c) Robert makes the following statement:



Purple topshells and grey topshells are both herbivores.

Explain one way that the purple topshells may prevent the grey topshells living between 0 and 20 m from the sea.

.....  
.....  
.....  
.....

(2)

Q1

(Total 4 marks)





|   |             |
|---|-------------|
| <p>2. Describe what happens to cells for growth and development to occur in an organism.</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>(Total 3 marks)</p> | Leave blank |
|   | Q2          |



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blank

3. Deep sea vents are areas of the sea bed where superheated water is released from under the earth's crust. They are often described as extreme environments.



- (a) State a condition, other than high temperature, which makes deep sea vents extreme environments.

.....  
.....  
.....

(1)

- (b) Organisms that live near these deep sea vents have special adaptations to help them survive.

State one adaptation of an organism which lives near deep sea vents and explain how this helps it to survive.

Adaptation .....

.....

Explanation .....

.....

.....

.....

(2)

Q3

(Total 3 marks)



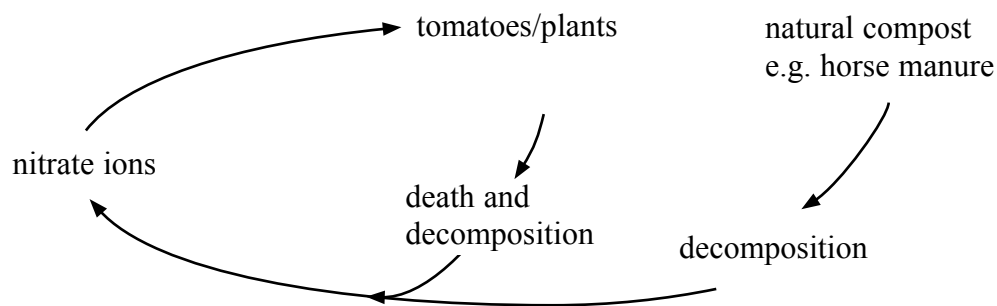
4. In Britain, tomatoes can be grown earlier in the year using greenhouses.

(a) State how a greenhouse allows tomatoes to be grown earlier in the year.

.....  
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.....

(1)

The diagram shows part of the nitrogen cycle in the greenhouse.



(b) (i) Explain how the proteins in dead, decomposing tomato plant leaves are changed into nitrate ions.

.....  
.....  
.....  
.....

(2)

(ii) Explain why compost has to be added to help keep the nitrate levels in the soil high.

.....  
.....  
.....  
.....

(2)

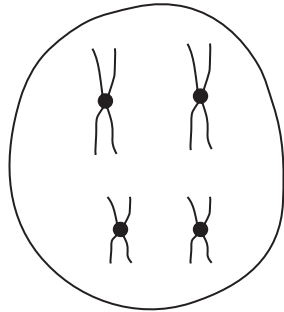
Q4

(Total 5 marks)

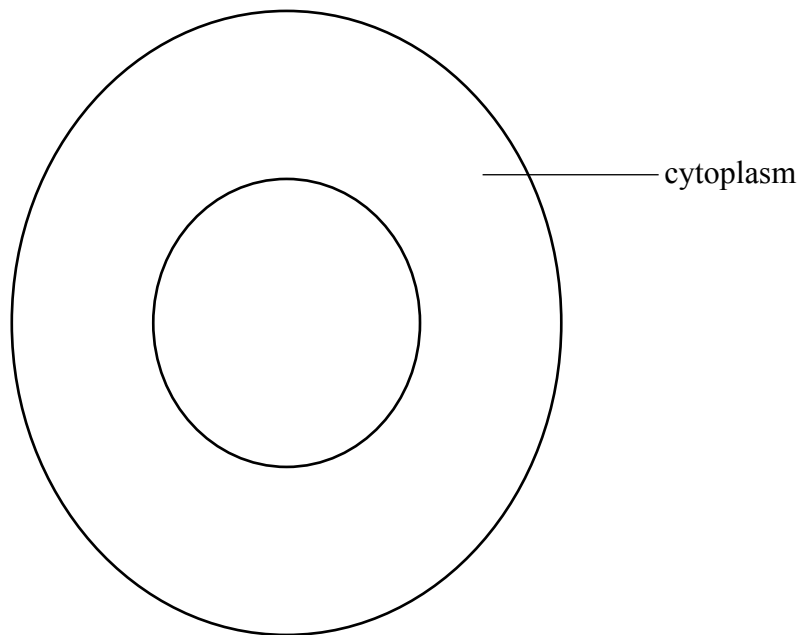


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5. The diagram shows a cell in an ovary at the end of the first stage of meiosis.



(a) Complete the drawing of the egg cell, produced from the cell above, by drawing in the chromosomes.



(2)

(b) Meiosis produces gametes.  
Mitosis produces body cells.  
State **two** other ways in which meiosis differs from mitosis.

1 .....

.....

.....

2 .....

.....

.....

(2)

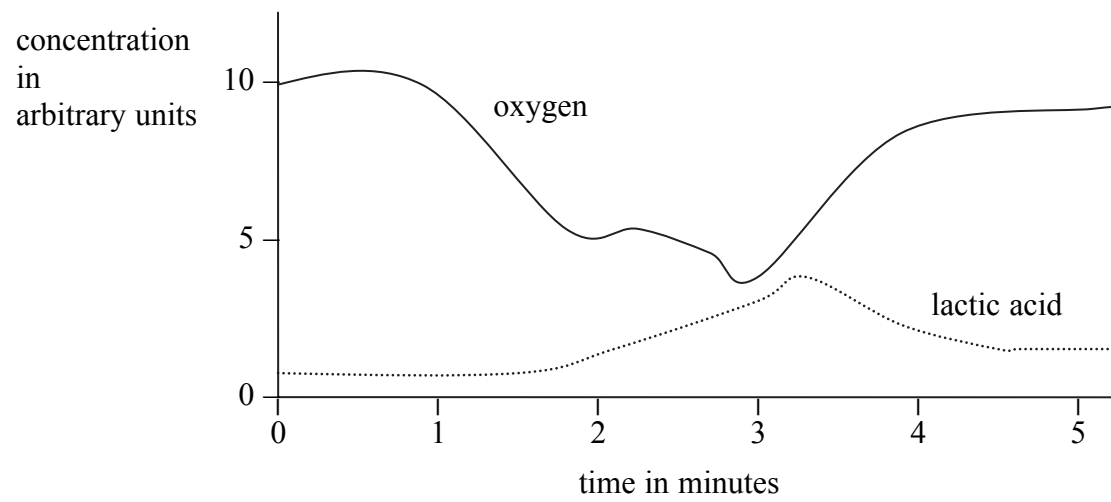
Q5

(Total 4 marks)



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6. The graph shows how the oxygen concentration and the lactic acid concentration changed in some muscle tissue during a period of 5 minutes.



(a) Suggest why the concentration of oxygen fell between 1 and 3 minutes.

.....  
.....  
.....  
.....

(2)

(b) After three minutes, the concentration of lactic acid started to fall. Explain what happens to this lactic acid.

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.....  
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.....  
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(3)

Q6

(Total 5 marks)





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