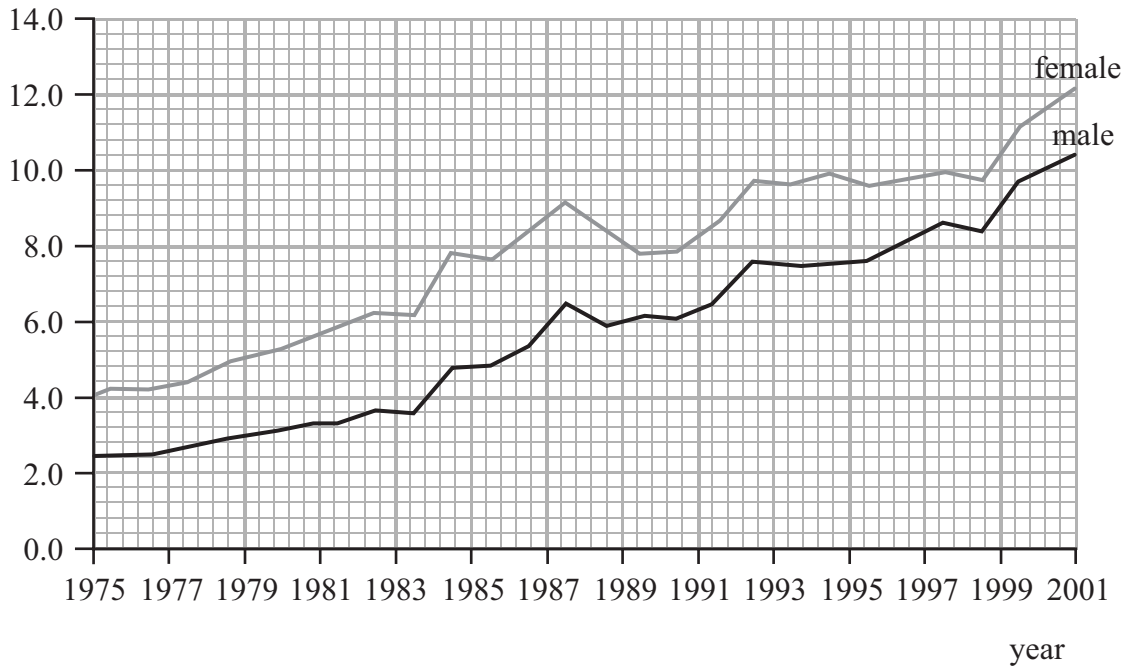


1. The graph shows changes in the number of cases of skin cancer in males and females from 1975 to 2001.

skin cancer cases per 100 000 population



(a) Compare the pattern of skin cancer cases in males and females from 1975 to 2001.

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(2)

(b) The occurrence of skin cancer is a living indicator.
State another example of a living indicator that could be used to monitor air pollution.

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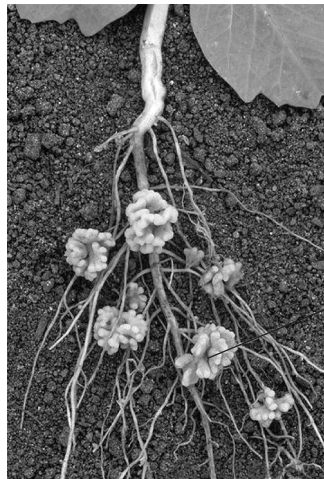
(1)

(Total 3 marks)

Q1



2. Pea plants have root nodules that contain bacteria.



root nodules

Wally Eberhart, Visuals Unlimited/Science Photo Library

(a) Explain how the root nodules help the pea plant to grow.

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

(2)

(b) When the pea plant dies, compounds containing nitrogen are released into the soil. Explain how these compounds containing nitrogen are cycled through the environment.

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.....

(2)



(c) Farmers use compounds containing nitrogen as fertilisers.
Describe the effects of overuse of these fertilisers on rivers.

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(3)

(Total 7 marks)

Q2

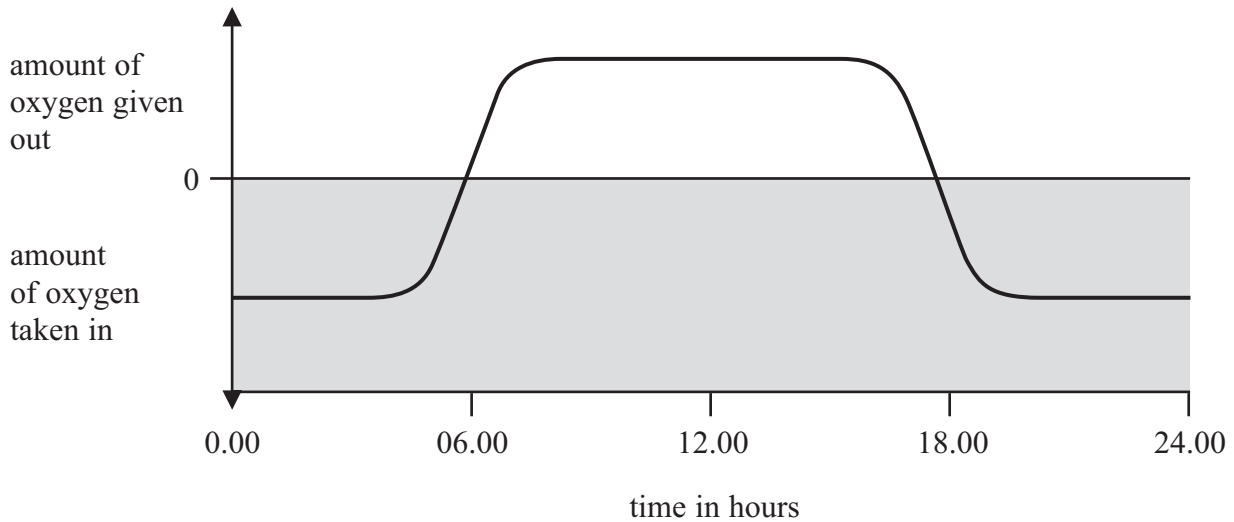


3. Plants carry out both photosynthesis and respiration in the daytime.

(a) Write the word equation for photosynthesis.

.....
(2)

The line on the graph shows the changes in the amount of oxygen given out and taken in by a plant in one day.



(b) For how many hours does the amount of oxygen given out exceed the amount of oxygen taken in?

.....
(1)

(c) State one limiting factor affecting oxygen production at 06.00 hours.

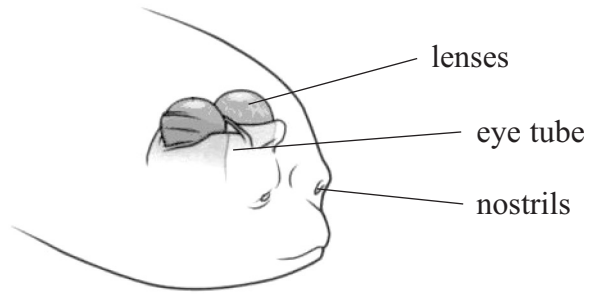
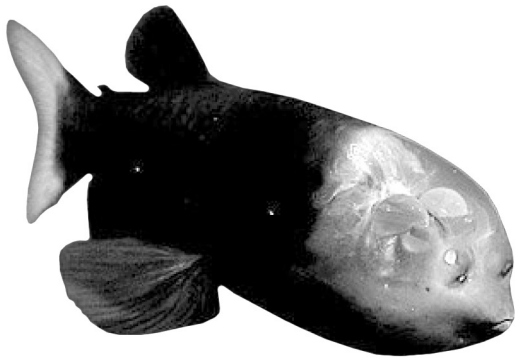
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(1)

(Total 4 marks)

Q3



4. The barreleye fish lives in the deep ocean.
It has a transparent head with tube shaped eyes which face upwards.



- (a) State **two** conditions in very deep seas that make it difficult for some organisms to survive.

1

.....

2

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(2)

- (b) Most of the time, the barreleye fish remains motionless in the water.
Its eyes always look upward.

Suggest how these adaptations help the barreleye to survive at extreme depths in the deep seas.

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(2)

(Total 4 marks)

Q4



5. A mammal has 38 chromosomes in each of its body cells.

(a) How many chromosomes would each daughter cell have after one of these body cells has divided by

(i) mitosis (1)

(ii) meiosis (1)

(b) State the purpose of mitosis and meiosis in a mammal.

Mitosis
.....
.....

Meiosis
.....
..... (2)

(Total 4 marks)

Q5



6. Some runners take deep breaths before the start of a sprint race but do not breathe while running.



- (a) Describe how ventilation moves air into the lungs.

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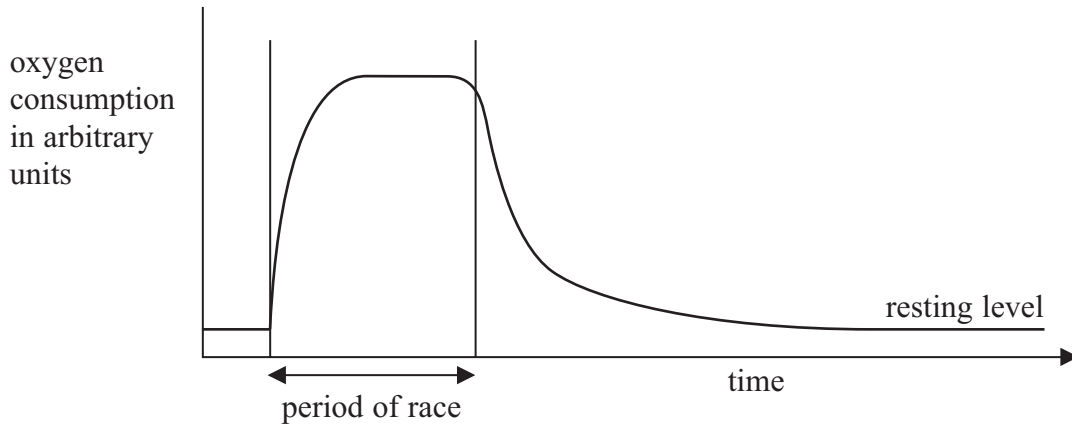
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(3)



(b) The graph shows how oxygen consumption changes before, during and after the sprint race.



Use scientific principles to explain the changes in oxygen consumption shown in the graph.

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(5)

Q6

(Total 8 marks)

TOTAL FOR PAPER: 30 MARKS

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