

1. Stem cells can be collected from embryos.

(a) State why stem cells are so useful in scientific research.

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

(1)

(b) Suggest **two** possible benefits of stem cell research.

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

(2)

(Total 3 marks)

Q1



2. Complete the following table by writing **yes** or **no** in each box.

process	animals		plants	
	day (light)	night (dark)	day (light)	night (dark)
use oxygen in cells				
produce oxygen in cells				
use carbon dioxide in cells				
produce carbon dioxide in cells				

(Total 3 marks)

Q2



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3. In England, it is illegal to terminate a pregnancy later than 24 weeks unless there are special circumstances.

The table shows the percentage chance of survival for the age of the fetus at birth

age of fetus at birth (weeks)	percentage survival rate
21 and less	0
22	0–10
23	10–40
24	40–70
25	50–80
26	80–90
27	more than 90
30	more than 95
34	more than 98

(a) What is the minimum age of the fetus at birth when 50% might be expected to survive?

.....
(1)

(b) Suggest **one** reason why the chances of survival are 0% at 21 weeks and less.

.....

(1)

(c) Explain why some groups of people are opposed to the termination of a fetus of any age.

.....

(1)

(d) Give **one** reason why it might be legal to terminate a fetus after 24 weeks in England.

.....

(1)

(Total 4 marks)

Q3



4. In 2008 Usain Bolt achieved the world 100 m sprint record with a time of 9.72 seconds.



(a) Several seconds after the start of the race Usain's muscles respire anaerobically. Explain why.

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

(2)

(b) Energy is released in his muscle cells during anaerobic respiration. Name the source of this energy in the cell.

.....

(1)

(c) Lactic acid builds up in his muscle cells as a result of anaerobic respiration. What effect does this have on his body?

.....
.....

(1)



(d) During the race Usain’s cells also respire aerobically.
Aerobic respiration does not produce lactic acid.
What is another benefit of respiring aerobically?

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

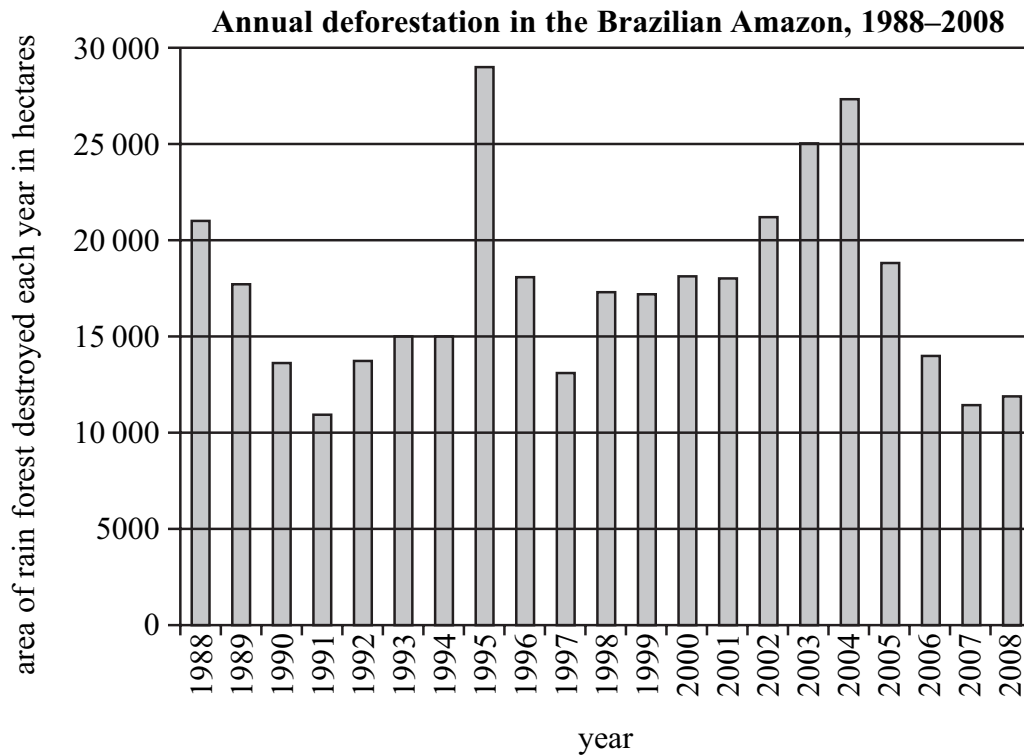
(1)

Q4

(Total 5 marks)



5. This graph shows the number of hectares of Amazon rain forest destroyed each year in Brazil.



(a) Estimate the area of rain forest destroyed in 2008.

..... (1)

(b) How does the area destroyed in 2008 compare with the trend from 2004 to 2007?

.....

 (2)

(c) Suggest **two** reasons why this deforestation is taking place.

1

 2
 (2)



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(d) Suggest **one** environmental impact that this deforestation may have.

.....

.....

(1)

Q5

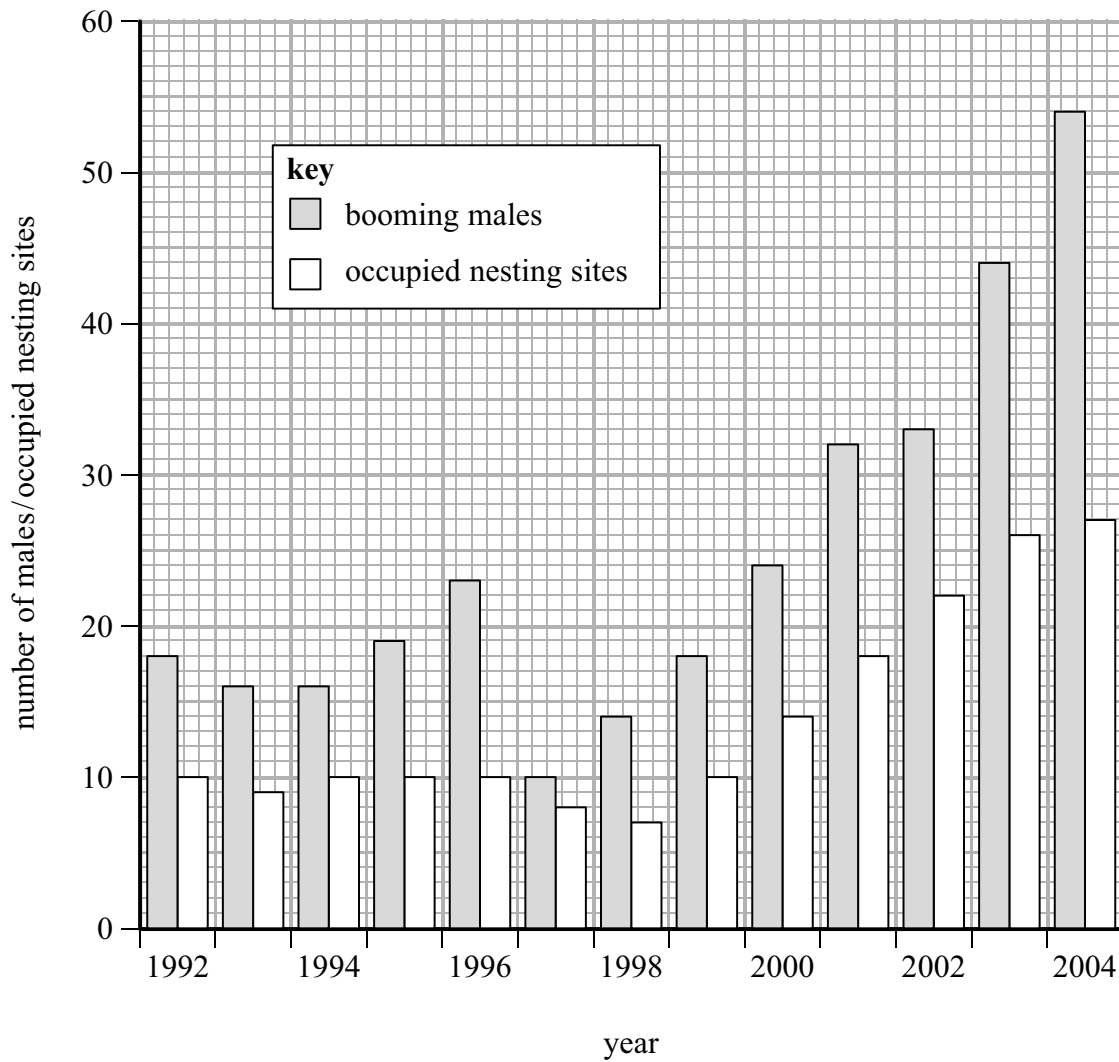
(Total 6 marks)



6. The bittern is one of Britain's rarest birds. Bitterns build their nests in reed beds and they need areas of open water to catch fish. Many reed beds had dried up by 1997 resulting in only 10 males being left in Britain.



This graph shows changes in the population of bitterns from 1992 to 2004. Booming refers to the sound that males make to attract females.



(a) Compare the trends in the number of booming males to the trends in the number of occupied nesting sites from 1997 to 2004.

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

(2)

(b) (i) In 1997, 80% of booming males successfully occupied a nesting site. Calculate the percentage of booming males that successfully occupied a nesting site in 2004.

Answer %
(2)

(ii) Suggest a reason for the difference in these percentages.

.....
.....

(1)

(Total 5 marks)

Q6



