

Surname	Initial(s)
Signature	

Paper Reference(s)

XXXX

Edexcel GCSE Science

Biology topic B3

Specimen structured paper

DATE

Time: 1 hour

Materials required for examination

Pen

Items included with question papers

None

Instructions to Candidates

In the boxes above, write your Centre number and Candidate number, your surname, initial(s) and signature.

Use a pen. Do not open this booklet until you are told to do so.

Write your answers in this booklet

All candidates are to answer all questions

Show all the steps in any calculations and state the units.

You must not take this booklet out of the examination room.

Information for Candidates

The total mark for this paper is 60. The marks for the various parts of questions are shown in round brackets, e.g.: (2).

You may use a calculator.

Advice to Candidates

You are reminded of the importance of clear English and careful presentation in your answers.

Do any necessary calculations and rough work in this booklet.

1. (a) Below is a wildebeest which is part of a herd, feeding on grass
Lions are also found in this area.



(source: www.kenyabeasts.org.uk)

- (i) Give **two** advantages to the wildebeest of living in herds.

1

2

(2)

- (ii) Give **one** disadvantage of living in a herd.

.....

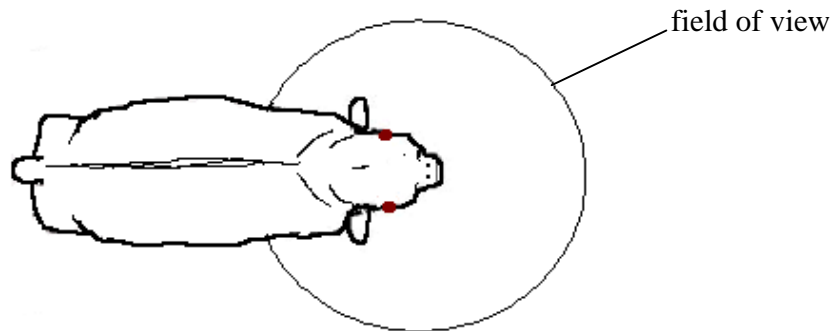
(1)

- (b) Explain why it is more efficient for lions to hunt as a group rather than on their own.

.....

(2)

(c) The diagram shows a wildebeest from above. The circular line shows the field of view of this herbivore.



(i) Suggest an advantage of wildebeest having this large field of view.

.....
.....
(1)

(ii) Suggest how the field of view of a lion differs from the field of view of a wildebeest.

.....
.....
(1)

(iii) What advantage does the lion field have from its field of view?

.....
.....
(1)

Total 8 marks

2. This is part of the press release which told the world about the birth of Dolly the sheep.

News Release
EMBARGOED UNTIL 19.00 HRS GMT, 26 February 1997
released 24 February 1997

Scientists at the Roslin Institute Publish Scientific Breakthrough
in the ability to clone sheep through nuclear transfer from somatic cells

Roslin, Midlothian, UK... The Roslin Institute and PPL Therapeutics have published in *Nature* the successful breeding of cloned sheep through nuclear transfer from differentiated foetal and adult cells. This is a major scientific breakthrough as it is the first time that any mammal has been derived from foetal or adult cells.

© *The Roslin Institute*

(a) Give two ways in which a press release might differ from the report in a scientific journal.

1).....

.....

2).....

.....

(2)

(b) One newspaper reported the cloning of Dolly the sheep with the following headline:

‘Monster or miracle’

(i) Suggest a reason for the newspaper using such a heading.

.....
.....

(1)

(ii) Explain why some people might think cloning of humans is unethical.

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(2)

(c) Stem cells have been used in the treatment of Parkinson's disease.

(i) What are stem cells?

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.....

(1)

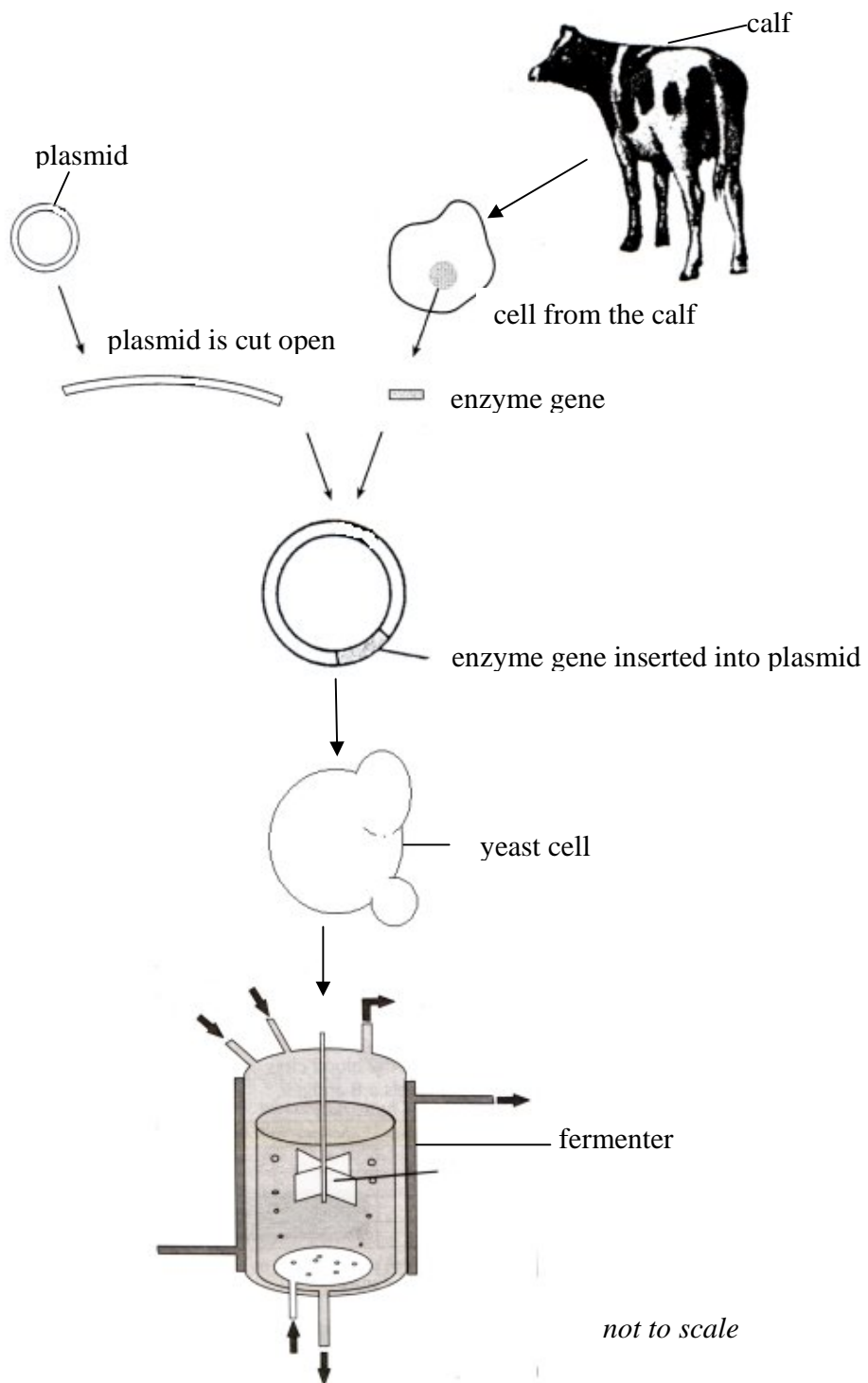
(ii) Explain the role of stem cells in this treatment.

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.....

(2)

Total 8 marks

3. The diagram shows stages in producing a genetically altered yeast cell.



(a) (i) What type of enzyme is used to cut the plasmid open?
..... (1)

(ii) Explain why the plasmid is put into the yeast cell after the gene is inserted.
..... (1)

(iii) Explain why the yeast cells are put into a fermenter.
.....
.....
.....
..... (2)

(b) The yeast cells have been genetically altered to make vegetarian cheese.

(i) Name the enzyme used to make vegetarian cheese.
..... (1)

(ii) Vegetarian cheese is made from milk.
Explain how the manufacture of vegetarian cheese is different to non-vegetarian
cheese.
.....
..... (1)

Total 6 marks

4. The willow tree has useful medicinal uses.



(a) In medieval times people sometimes chewed willow bark.
Explain why.

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.....
.....

(3)

(b) What name describes the role of biotechnology in developing new medicines?

.....

(1)

(c) Explain how biotechnology has improved the treatment of diabetes.

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.....
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(3)

Total 7 marks

5. Breeding pairs of robins live in territories. Other robins who come into the territory will be attacked. It is estimated that this behaviour is responsible for the death of up to 10% of all adult robins in some populations.

(a) Give **two** reasons why it is important for a breeding pair of robins to have their own territory.

- 1
- 2

(2)

(b) (i) Robins will attack a piece of red cloth found in their territory.
Explain why robins show this kind of behaviour.

.....
.....

(1)

(ii) A weaker robin may be killed when defending its territory.
What is the possible advantage of this behaviour to robins as a species?

.....
.....

(1)

(c) The female robin hatches the eggs, and the chicks are fed by both parents. The chicks leave the nest after two weeks, but are cared for by their parents for a further three weeks. Why is parental care by both parents necessary for the first five weeks of the chick's lives?

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(3)

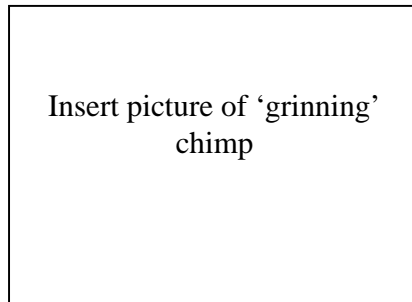
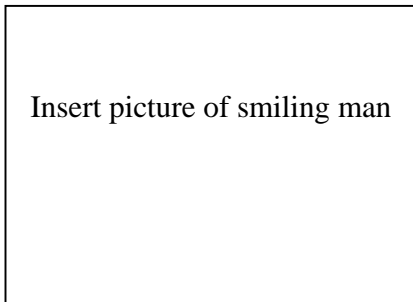
(d) In winter, the pairs split up, and each robin defends its own territory.
Suggest a reason why the robins have individual territories in winter.

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.....

(1)

Total 8 marks

6. The two pictures show a human and a chimpanzee grinning. They are both communicating with others.



(i) Children at a zoo often laugh and grin back at a chimpanzee saying “Look, it’s happy”.

Suggest why it is a mistake to assume the chimpanzee is happy when it is grinning.

.....
.....
(1)

(ii) Give **two** other forms of communication, other than using facial expression, that humans and chimpanzees have in common.

1.....
.....
2.....
.....
(2)

(b) Scientists now have evidence that pheromones can be used for communication between animals.

(i) What is a pheromone?

.....
(1)

- (ii) Pheromones were first discovered in silkworm moths.
Suggest why silkworm moths use pheromones for communication.

.....
.....
(1)

Total 5 marks

A company called 'Biocom' specialises in producing herbicide-resistant plants.

- (a) Describe how plants can be made herbicide-resistant.

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.....
(3)

- (b) Explain why it is important that 'Biocom' grows 'experimental' herbicide-resistant crops before releasing them for sale.

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(2)

(c) 'Biocom' has an area of land where they grow the experimental herbicide-resistant plants.

Discuss the advantages and disadvantages of growing plants that are herbicide-resistant.

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(4)

Total 9 marks

7 (a) It is believed that humans may have first domesticated reindeer about five thousand years ago. The Lapp people in Scandinavia still keep reindeer as domestic animals.

(i) Suggest **two** ways in which the Lapps use reindeer.

1
.....
2
.....

(2)

(ii) Suggest **one** reason why some animals are not suitable for domestication.

.....

(1)

(b) (i) Suggest **two** reasons why humans keep animals as pets.

1
.....
2
.....
(2)

(ii) Suggest **two** of the basic rights some people believe that animals should have.

1
.....
2
.....
(2)

(c) Give an example to explain what is meant by anthropomorphism.

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(2)

Total 9 marks

TOTAL FOR PAPER: 60 MARKS

End of paper