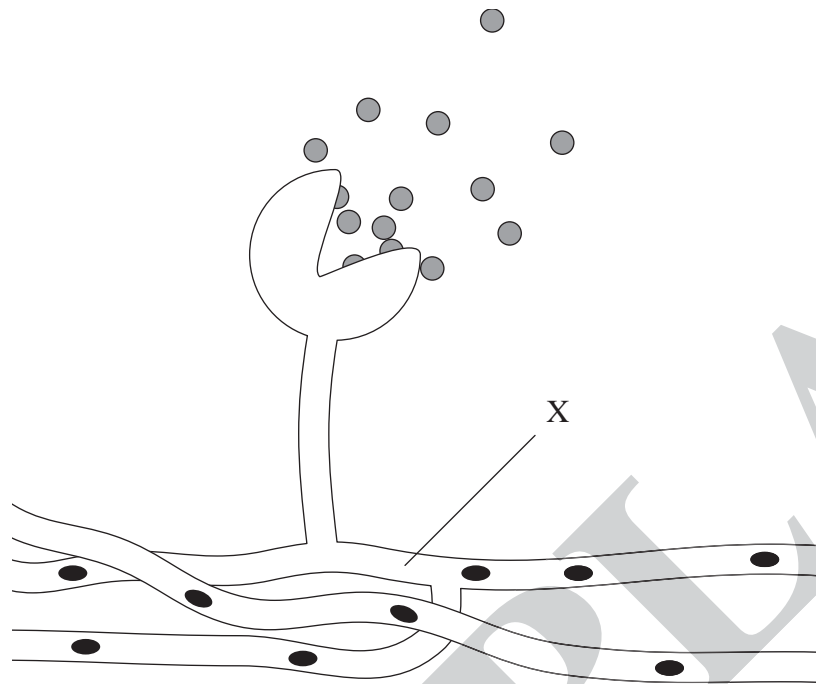


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Answer ALL the questions. Write your answers in the spaces provided.

1. The diagram shows a fungus called *Mucor*.



(a) Name structure X.

..... (1)

(b) Use evidence from the diagram to help explain how *Mucor* reproduces.

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

(c) State **two** conditions that encourage rapid growth in *Mucor*.

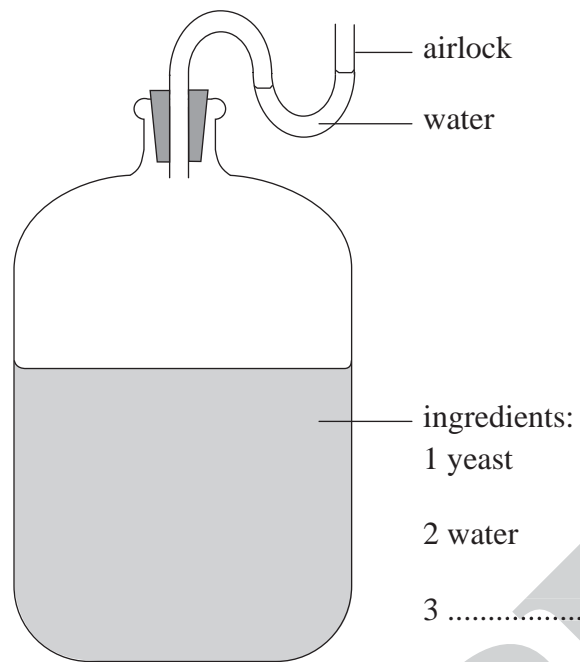
1
2 (2)

(Total 5 marks)

Q1



2. Apparatus used in fermentation is shown in the diagram.



(a) On the diagram, complete label 3 by writing in a missing ingredient.

(1)

(b) The yeast cells respire.

At first, respiration in the container is mostly aerobic.
Later, all the respiration is anaerobic.
Finally, respiration stops.

Explain this sequence.



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

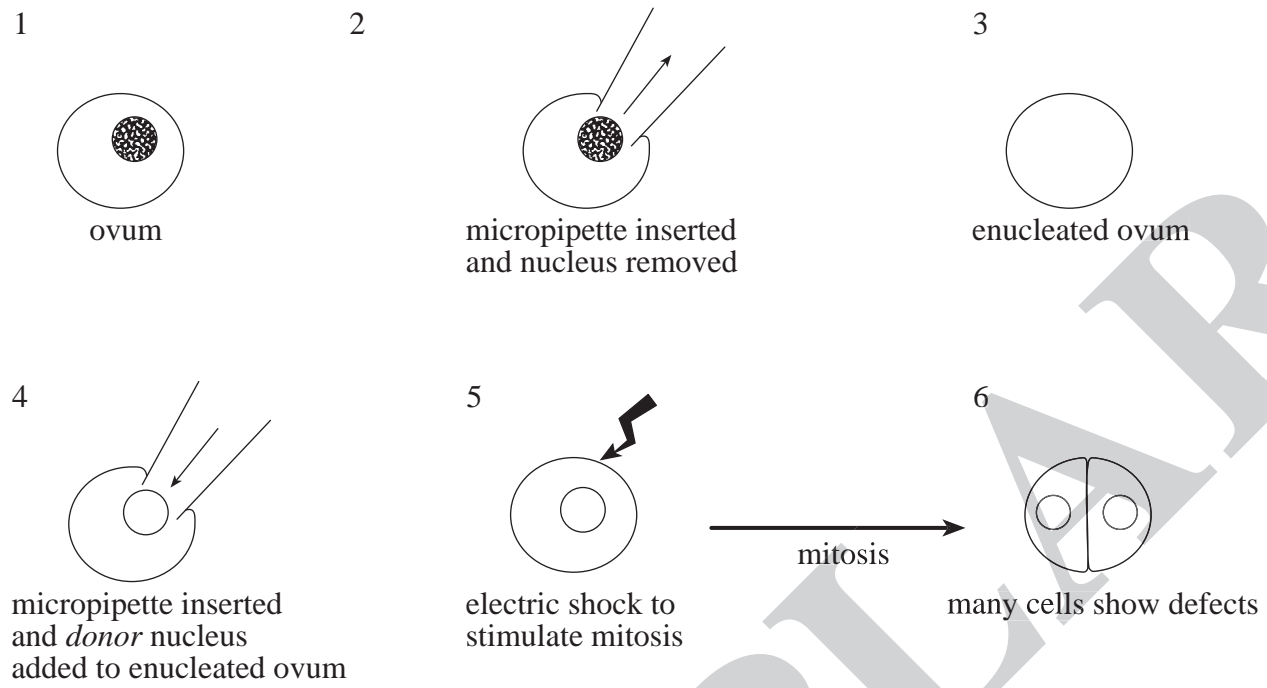
(4)

Q2

(Total 5 marks)



3. Early stages in the cloning of animals are shown below.



Cloning often produces cells with defects. Scientists did an experiment to find out what causes the defects. They used the same stages as shown above but this time at stage 4 they reinserted the original nucleus rather than a donor nucleus.

This experiment also produced cells with defects.

(a) Use this information to make conclusions about the cause of the defects.

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

(b) Some defects may not appear until an embryo is fully grown.

Suggest **two** problems for scientists caused by the late appearance of defects.

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

(Total 4 marks)

Q3



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blank

4. (a) Viral infections weaken the body's defences against other pathogens.

Explain why antibiotics are sometimes prescribed to a person with a viral infection.

.....

.....

.....

.....

(2)

QUESTION 4 CONTINUES ON THE NEXT PAGE

EXEMPLAR

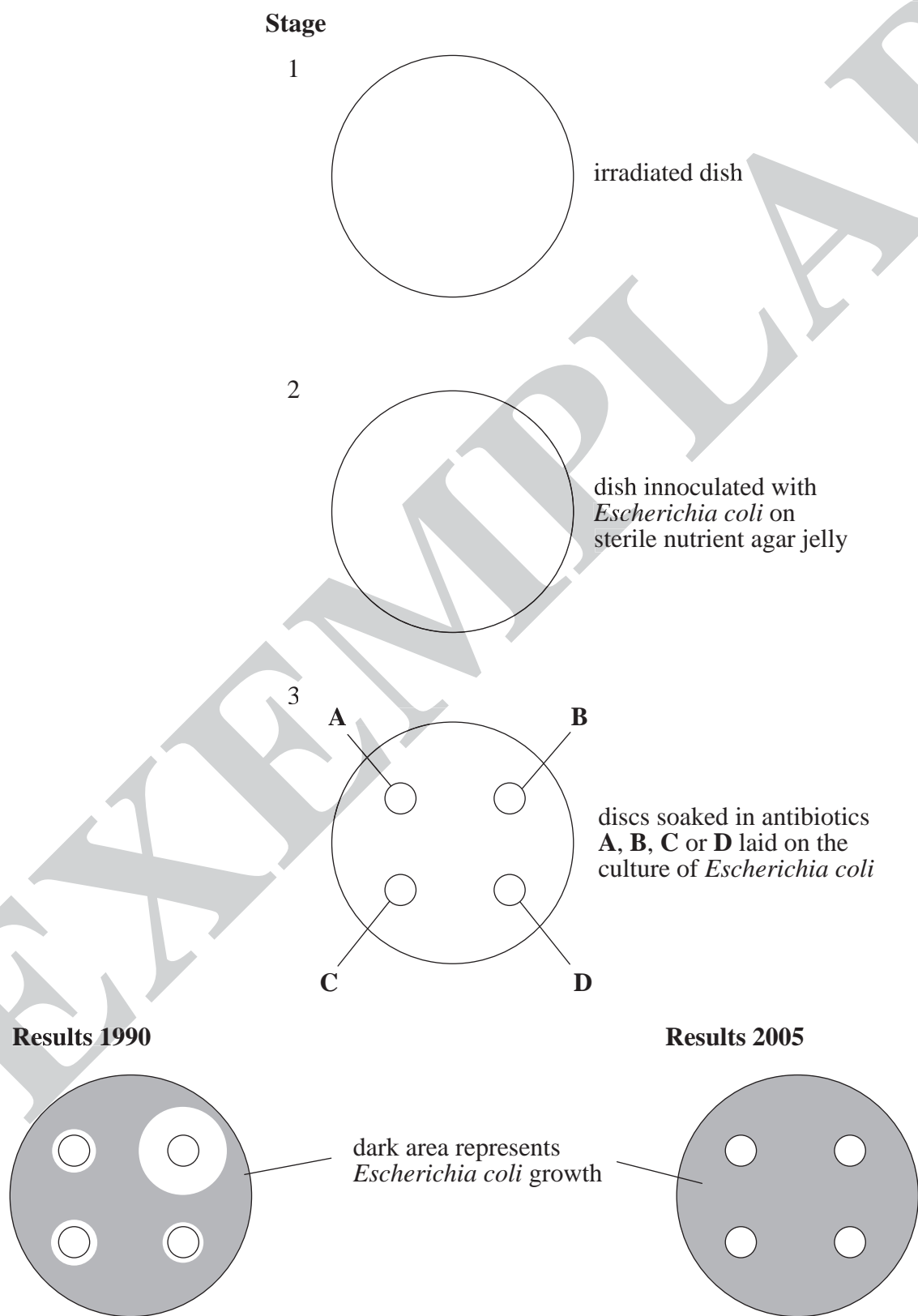


N 2 7 9 8 2 A 0 5 1 2

(b) The effectiveness of four antibiotics, **A**, **B**, **C** and **D** was tested on a strain of *Escherichia coli*.

The tests were done in 1990 and again in 2005.

The diagram shows the experiment and the results for both years.



Leave
blank

(i) State why the dishes were irradiated at stage 1.

.....
(1)

(ii) Which antibiotic, **A**, **B**, **C** or **D** was the most effective in the results for 1990?

Explain your answer.

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

(c) The results for 2005 indicate that the antibiotics have been ineffective. Explain this conclusion in terms of natural selection.

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

(Total 8 marks)

Q4



5. Read the article.

“Golden rice” trials questioned by Greenpeace

A variety of rice has been genetically modified to increase vitamin A content. The environmental organisation Greenpeace is against field trials of this rice. A spokesperson said: “The environmental safety issues remain unanswered for this rice. Releasing the crop into the environment could cause problems.”

(a) Explain **one** problem that could be caused by releasing the crop into the environment.

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

(2)

(b) The genetic modification results in the production of an enzyme which is involved in vitamin A formation. Enzymes are made of one or more polypeptides.

(i) Where, precisely, in a cell are polypeptides made?

.....

(1)

(ii) Name the molecule that carries coded information for the polypeptide from the nucleus.

.....

(1)



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(c) Vitamin A deficiency affects 800 million children worldwide.

Vitamin A can be given in tablets.

(i) Suggest **two** reasons why giving vitamin A in tablets might be better than in the diet using the genetically modified rice.

1

2

(2)

(ii) Suggest **two** reasons why using genetically modified rice in the diet to supply vitamin A might be better than using tablets.

1

2

(2)

Q5

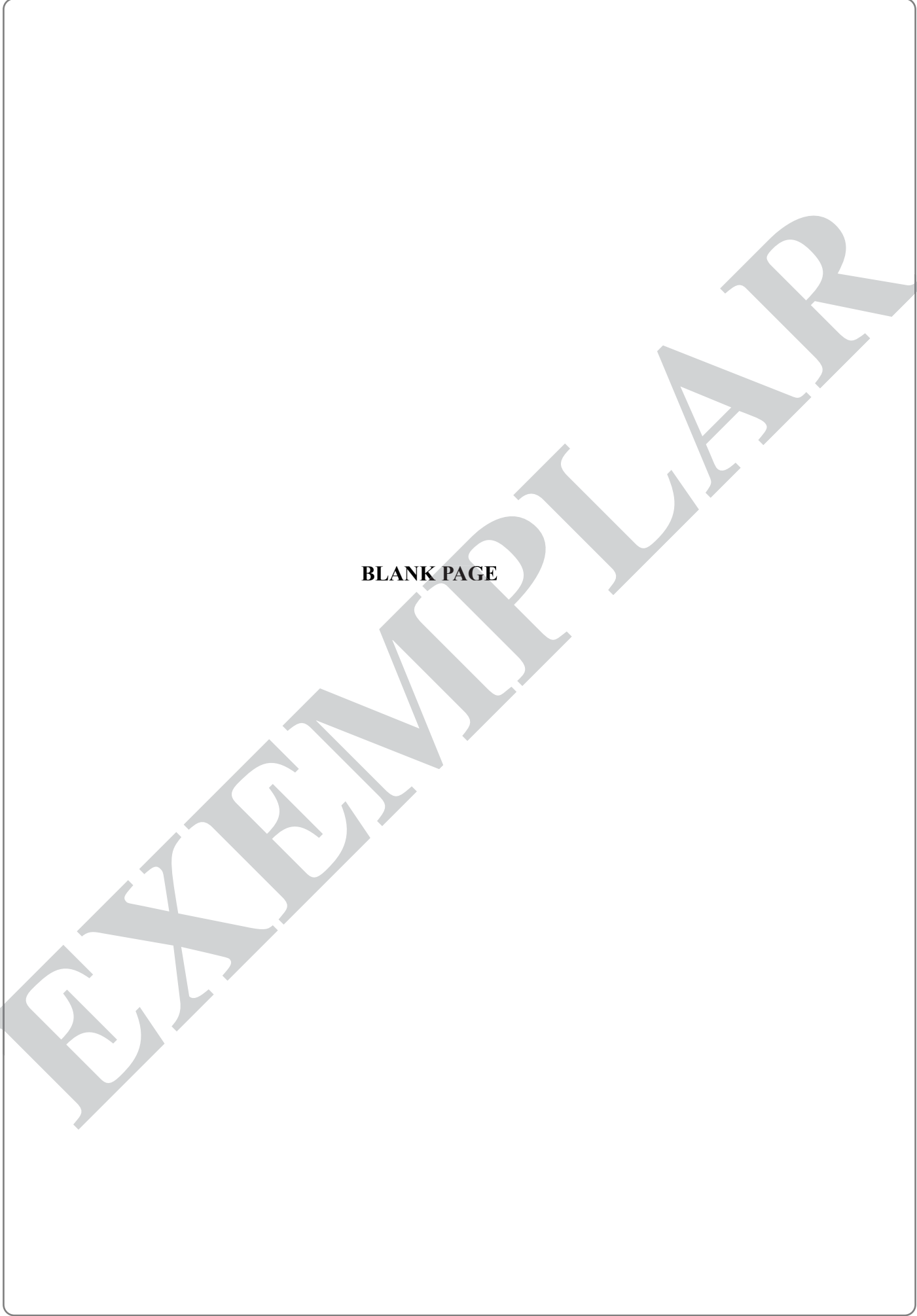
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TOTAL FOR PAPER: 30 MARKS

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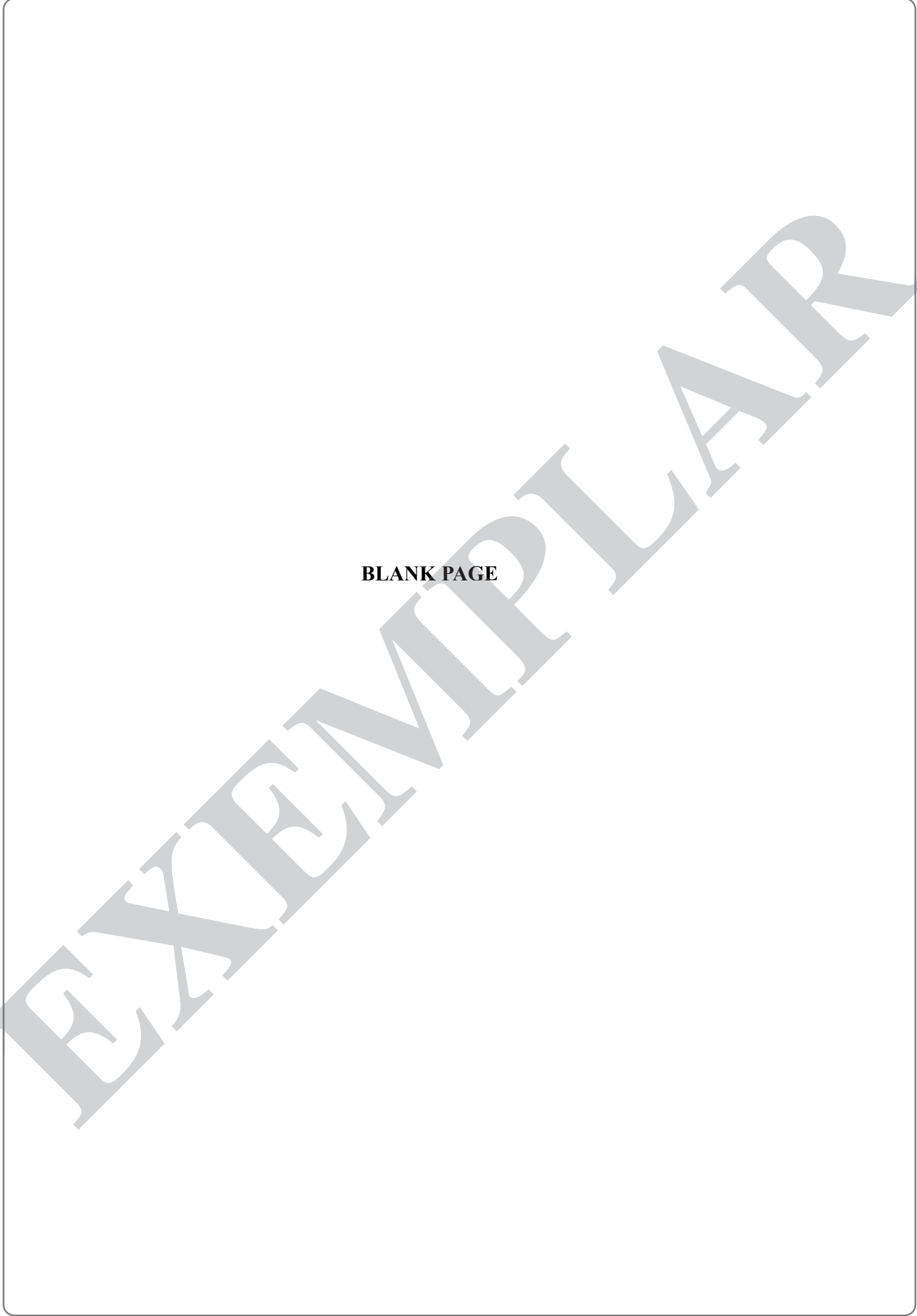
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EXEMPLAR



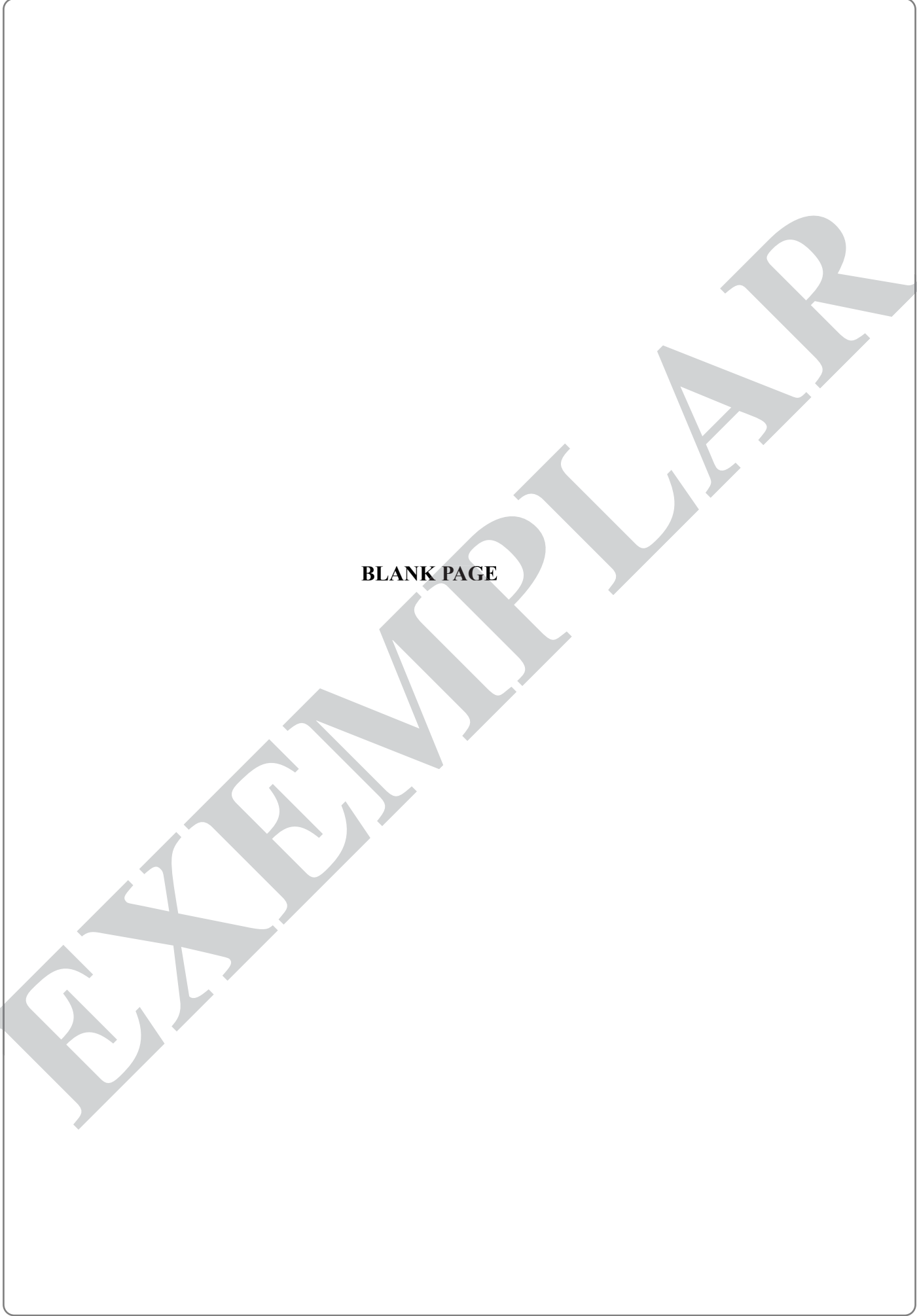


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EXEMPLAR



N 2 7 9 8 2 A 0 1 1 1 2



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EXEMPLAR

