

Write your name here	
Surname	Other names
Centre Number	Candidate Number
Edexcel GCE	
<h1>General Studies</h1> <h2>Advanced Subsidiary</h2> <h3>Unit 1: Challenges for Society</h3>	
Thursday 8 January 2009 – Afternoon Time: 1 hour 30 minutes	Paper Reference 6GS01/01
You do not need any other materials.	Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Quality of written communication will be taken into account in the marking of your answers.
– *you should take particular care with your spelling, punctuation and grammar, as well as the clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

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SECTION A

Answer ALL questions.
You should aim to spend no more than 20 minutes on this section.

Choose an answer A, B, C or D, and put a cross in the box ☒.
If you change your mind, put a line through the box ~~☒~~
and then mark your new answer with a cross ☒.

Read the passage 'Black Swans' and answer questions 1 to 3.

Black Swans

In the 16th century, all the swans observed in Europe were white. Perhaps it seemed obvious for Europeans to conclude that all swans everywhere were white. Who would have predicted that Dutch explorers would discover black swans in Australia in the 17th century? The phrase "Black Swan" is now sometimes used to describe an unpredictable event.

1 'All the swans observed in Europe were white' is best described as

- A** coincidence
- B** fact
- C** opinion
- D** generalisation

(Total for Question 1 = 1 mark)

2 'Perhaps it seemed obvious...' is best described as

- A** coincidence
- B** fact
- C** opinion
- D** generalisation

(Total for Question 2 = 1 mark)

3 The original conclusion that... 'all swans everywhere were white' is a result of an argument by

- A** cause
- B** coincidence
- C** deduction
- D** induction

(Total for Question 3 = 1 mark)



4 Which **one** of these describes the correct sequence of activities in the development of a scientific theory?

- A testing → hypothesis → observation → theory
- B observation → testing → hypothesis → theory
- C testing → observation → hypothesis → theory
- D observation → hypothesis → testing → theory

(Total for Question 4 = 1 mark)

5 Occam's Razor (the principle of simplicity) can be used to

- A select the equipment used in a scientific experiment
- B decide what measurements to make in a scientific experiment
- C keep experimental procedures as uncomplicated as possible
- D choose between rival scientific theories

(Total for Question 5 = 1 mark)

6 Which **one** of these would be a suitable topic for scientific investigation?

- A Is a cure for AIDS possible?
- B Should we spend more money on health services?
- C Are biological weapons immoral?
- D Is space exploration a waste of money?

(Total for Question 6 = 1 mark)

7 Early opponents of the Copernican theory rejected it because

- A it was too complicated
- B the predictions for planetary orbits were inaccurate
- C it challenged religious beliefs
- D it was not based on observations

(Total for Question 7 = 1 mark)



8 A problem associated with nuclear power generation, but not with other forms of power generation, is

- A the need to import raw materials
- B the large amount of waste produced
- C the effect on local wildlife
- D the long half-life of the waste produced

(Total for Question 8 = 1 mark)

9 Which **one** of these areas of scientific research does **not** receive financial support from charities?

- A nuclear fusion
- B renewable energy
- C hereditary disease
- D animal welfare

(Total for Question 9 = 1 mark)

10 Carbon capture can prevent an increase of carbon dioxide in the atmosphere. Carbon capture means

- A planting more trees to absorb carbon dioxide from the atmosphere
- B reducing the amount of carbon dioxide produced from fossil fuels
- C storing carbon dioxide emitted from burning hydrocarbons
- D using more renewable energy sources

(Total for Question 10 = 1 mark)

11 Creationism is opposed to scientific theory about

- A atomic structure
- B genetics
- C evolution
- D global warming

(Total for Question 11 = 1 mark)



12 The main purpose of Utilitarianism is to work out

- A whether an action will be useful
- B what the benefit of an action will be
- C whether an action is right or wrong
- D who will benefit most from an action

(Total for Question 12 = 1 mark)

13 Which **one** of these procedures for testing drugs does **not** raise ethical issues?

- A Testing on animals
- B Testing on humans
- C Testing on computer models
- D Testing on cloned cells

(Total for Question 13 = 1 mark)

14 In the UK, having a criminal record can affect a person's

- A freedom to travel overseas
- B entitlement to social security benefit
- C access to medical services
- D legal rights

(Total for Question 14 = 1 mark)

15 The most likely form of punishment for manslaughter in the UK is

- A community service
- B probation
- C a fine
- D imprisonment

(Total for Question 15 = 1 mark)

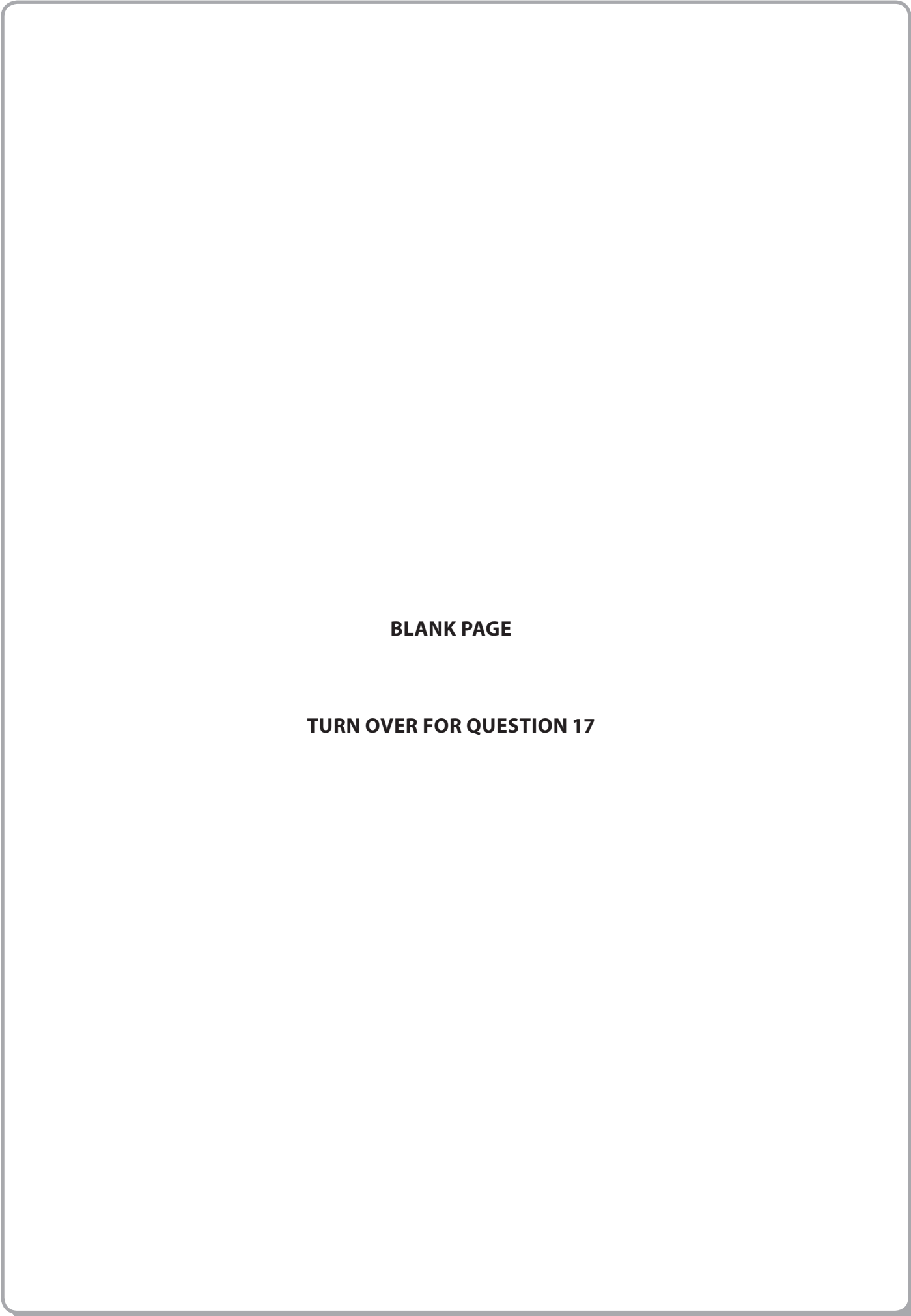


16 Which of these statements about crime and imprisonment over the last ten years is true?

- A Levels of recorded crime have decreased and the number of prisoners has decreased.
- B Levels of recorded crime have decreased and the number of prisoners has increased.
- C Levels of recorded crime have increased and the number of prisoners has decreased.
- D Levels of recorded crime have increased and the number of prisoners has increased.

(Total for Question 16 = 1 mark)





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Read the passage "Researchers see bias in private-funded studies" and answer questions 17 to 20.

Researchers see bias in private-funded studies

Research into the benefits of drinks, including fizzy pop and milk, may be severely biased. A group led by David Ludwig reviewed 206 articles about the nutritional effects of drinks and found a "significant" bias towards positive results in the research funded by the food industry. David Ludwig said "We found that the industry-funded studies were up to eight times more likely to be positive than the publicly funded ones. We now have evidence of a bias and that bias could have a substantial impact on human health."

But other scientists said that the high incidence of positive results in industry-funded research was because industry was more likely to fund research that was useful to its aims. Susan Jebb, a senior scientist at Cambridge University, said that industry funding was "essential" as long as there was a strong understanding that it did not influence the outcomes of the research. "There isn't enough public funding around so we welcome industry funding to help. The public should be able to have faith in the scientists to do research properly and fairly," she added.

(Source: adapted from an article by Polly Curtis, Health Correspondent, *The Guardian*)

17 For scientists testing the nutritional benefits of food and drink, the report suggests that

- A scientists working for the government produce more positive results
- B scientists working for industry produce more positive results
- C scientists working for industry produce more negative results
- D scientists working for the government produce more negative results

(Total for Question 17 = 1 mark)

18 Susan Jebb's claim that '...industry funding was "essential"...' is an example of

- A an argument by analogy
- B an argument from cause
- C a deductive argument
- D an argument from authority

(Total for Question 18 = 1 mark)



19 Which **one** of these statements from the passage is factual?

- A 'The researchers reviewed 206 articles...'
- B 'Bias could have a substantial impact on human health...'
- C 'There isn't enough public funding around...'
- D 'The public should be able to have faith in the scientists...'

(Total for Question 19 = 1 mark)

20 The statement '...the high incidence of positive results in industry-funded research was because industry was more likely to fund research that was useful to its aims...' contains:

- A fact only
- B opinion only
- C a mixture of fact and opinion
- D no facts or opinions

(Total for Question 20 = 1 mark)

TOTAL FOR SECTION A = 20 MARKS



SECTION B

Answer ALL questions.
You should aim to spend no more than 30 minutes on this section.

Read the passage "DNA Profiling and Crime Detection" and answer questions 21 to 29.

DNA Profiling and Crime Detection

Crime detection is increasingly dependent on modern forensic science. Many more crimes can now be solved using DNA profiles as the figures illustrate (see table).

Impact of DNA recovery on crime detection 2004 to 2005

Crime category	Non-DNA detection rate	DNA detection rate
Domestic burglary	16%	42%
Non-domestic burglary	11%	50%
Theft of vehicle	15%	24%
Theft from vehicle	9%	63%
Criminal damage	14%	51%

Modern techniques allow DNA profiling to be used even for crimes committed many years ago, providing suitable forensic samples were taken at the time. Recent developments also enable samples to be used where crime scene DNA has been contaminated by DNA from other people, although cross-contamination during analysis is still a possibility. Even if a DNA profile cannot be matched to an individual, it can sometimes be used to identify relatives who may match some but not all of the DNA profile. This is called familial searching.

But DNA profiles are only useful if they can be matched with the information held about individuals and this is where problems arise. Familial searching may reveal unknown family connections which people have kept hidden. Nor is building up the National DNA Database (NDNAD) without controversy. Police in England can collect DNA samples from anyone arrested in connection with a recordable offence and profiles can be retained and put in the NDNAD, even when suspects are shown to be innocent. The use of statistics and probabilities by expert witnesses can also hide uncertainties when DNA samples are presented as evidence in court. How do we know that there is a one in ten million probability of a DNA match by chance alone unless we have compared samples with tens of millions of records and not just the far more limited number of records we actually have?

Civil rights campaigners say that we are sleepwalking towards a "Big Brother" society where privacy will be a thing of the past and DNA profiles will be misused in ways we are only just beginning to understand. The Government's record on the protection of personal financial data does not bode well for the care it will show with DNA profiles. But others argue that the benefits of such a system far outweigh any disadvantages. Independent statistical research shows that increased detection rates deter further crime as well as helping to catch criminals. Increased deterrence will also help to reduce the cost of a large prison population. The innocent have nothing to fear and we must use all available weapons in the fight against crime.



Questions 21 to 29 are based on the information contained in the passage and the table.

21 The information in the table could be presented in the form of a bar chart.

Give **one** advantage and **one** disadvantage of a bar chart compared to a data table.

Advantage

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Disadvantage

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(Total for Question 21 = 2 marks)

22 For which crime category does DNA profiling have the greatest effect?

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(Total for Question 22 = 1 mark)

23 For which crime category does DNA profiling have the least effect?

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(Total for Question 23 = 1 mark)

24 The Non-DNA detection rate for "Theft of Vehicle" is 15%. If this refers to solving the theft of 30 vehicles, how many vehicles were stolen altogether?

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(Total for Question 24 = 2 marks)



25 The figures in the table have a limited value because they do not show a trend over time.
State **three** other factors which limit the validity of the figures.

- 1
- 2
- 3

(Total for Question 25 = 3 marks)

26 From the passage, identify **four** potential benefits associated with the use of DNA profiling in crime detection.

- 1
- 2
- 3
- 4

(Total for Question 26 = 4 marks)

27 From the passage, identify and assess the problems associated with the use of DNA profiling in crime detection.

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Quality of Written Communication = 3 marks
(Total for Question 27 = 8 marks)



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28 From the passage, identify **two** conditions that allow the police to take a DNA sample from a suspect.

1

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2

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(Total for Question 28 = 2 marks)

29 Examine the strength of the evidence given to support the conclusion that we “have nothing to fear” from DNA profiling.

Relate your answer to the passage. Apply thinking and analytical skills to evaluate the strengths and weaknesses of the evidence and arguments used by the writer. You are not being asked to give your own opinion on the issues raised.

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Quality of Written Communication = 3 marks

(Total for Question 29 = 7 marks)

TOTAL FOR SECTION B = 30 MARKS



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SECTION C

Answer ALL questions.

You should aim to spend no more than 40 minutes on this section.

30 The Stern report of 2006 on the economic effects of climate change raises the possibility of people having a personal carbon allowance of approximately 1 tonne (1000 kg) per year. At the time the report was written, the world population stood at 6 billion. With that population, the report suggests, greenhouse gases could be stabilised at acceptable levels.

What are the possible benefits and difficulties associated with a system of personal carbon allowances for UK citizens?

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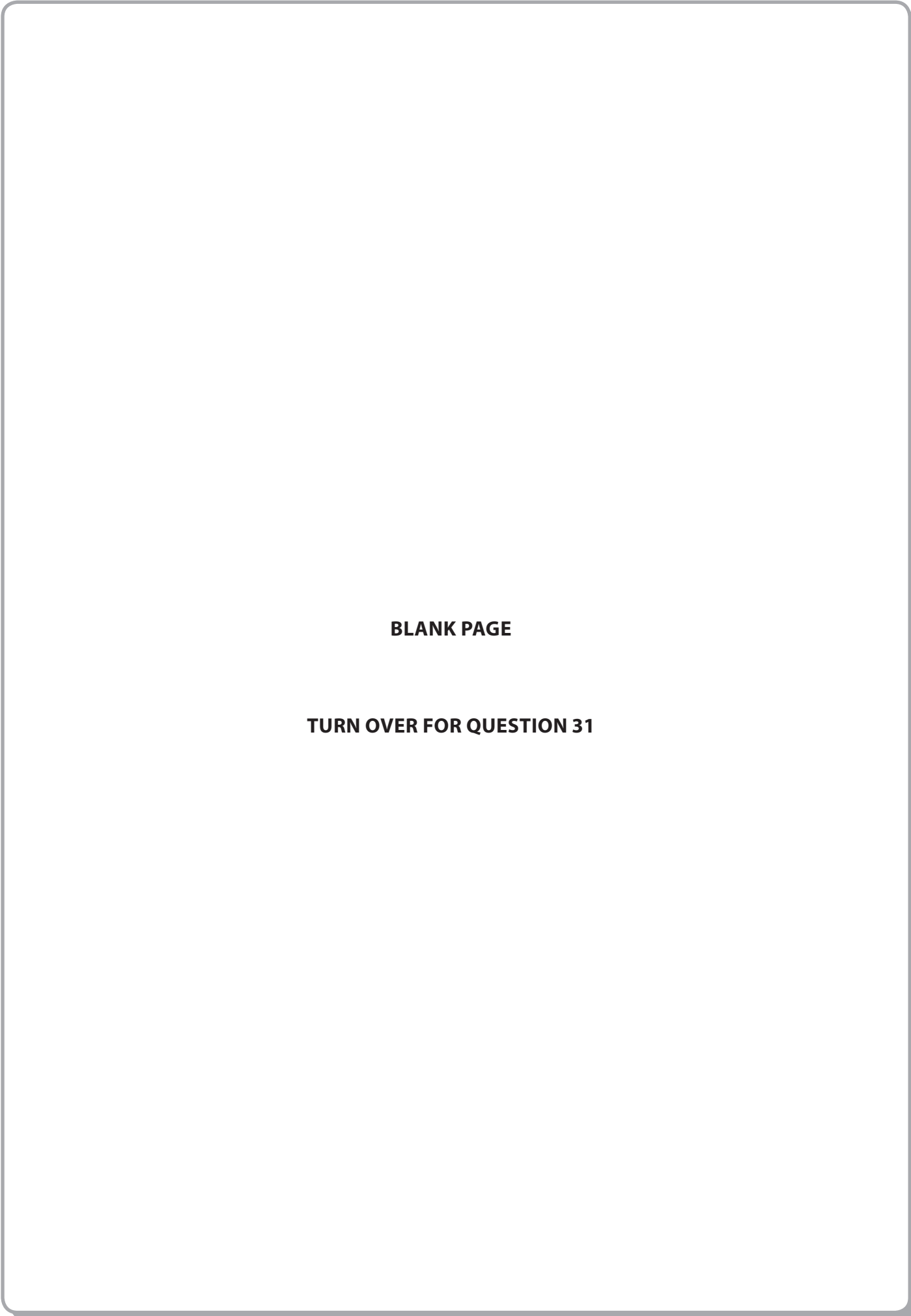
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Quality of Written Communication = 4 marks

(Total for Question 30 = 20 marks)



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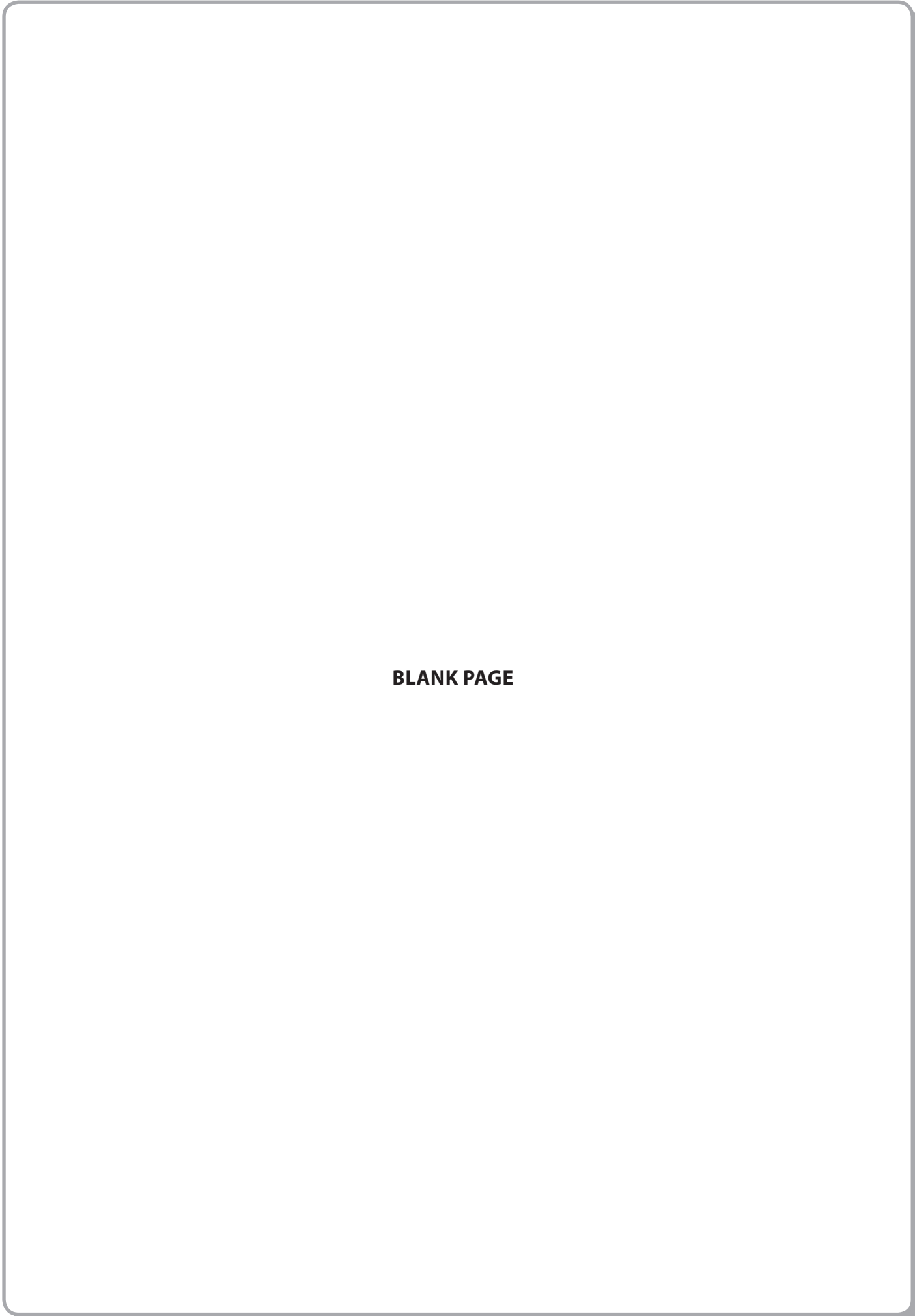
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