CAMBRIDGE
International Education

Cambridge International AS & A Level

THINKING SKILLS **9694/42**

Paper 4 Applied Reasoning **October/November 2025**

MARK SCHEME

Maximum Mark: 50

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

PUBLISHED

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	Correct response. Use when a mark has been achieved in **Q1**, **2** and **3**.
	Incorrect (part of a) response
NGE	Not good enough. Use wherever such a judgment has been made.
BOD	Benefit of doubt
S	Strand of reasoning
CON	Main Conclusion
I	Intermediate Conclusion
AE	Additional argument element in **Q1** / Argument Element in **Q4**
U	Creditworthy material in the Use of Documents skill
3	Use stamps 1–5 alongside U to indicate which document has been referenced

Annotation	Meaning
EVAL	Evaluation of documents
C	Comparison of or inference from documents
Q	Creditworthy material in the Quality of Argument skill
T	Treatment of counter-position
L2	Level achieved. Add annotation at the end of **Question 4** in the order of S, U, Q from left to right.
	Strong demonstration of a skill Higher mark within a level awarded
	Minor demonstration of a skill Flaw or weakness Lower mark within a level awarded
SEEN	Examiner has seen that the page contains no creditworthy material Use to annotate blank pages
Highlighter	Use to draw attention to part of an answer

Question	Answer	Marks
1(a)	***State the main conclusion of the argument.*** We ought to limit the development of AI.	**1**
1(b)	***Identify two intermediate conclusions in paragraphs 3 to 4.*** *1 mark for each correctly identified IC (max 2)* *Mark only the first three answers given* • AI is not safe. • The rise of driverless cars will increase the number of road accidents. • Our future safety is at risk from AI	**2**

Question	Answer	Marks
1(c)	***Analyse the structure of the reasoning in paragraph 2.*** *Award 1 mark for each of the following [max 3]:* R1/Ev Many workers lost their jobs with the introduction of steam-powered machinery during the industrial revolution. IC/R1 So the AI revolution will cause many people to be out of work. R2 Long-term unemployment leads to poverty R3 poverty results in starvation and civil unrest. C (So) AI will cause starvation and civil unrest. A1 that the effect of AI on jobs will be similar to that of steam-powered machinery A2 that people who lose their jobs remain unemployed for a long time *Award 1r mark for identifying two relationships between elements,* *or 2r marks for identifying three relationships between elements, e.g.* • R1 supports IC • IC supports C • R2 and R3 and IC support C (jointly) • A1 is needed in order for R1 to support IC • A2 is needed in order for IC to support C *Reference to start and end of elements must be unambiguous* *Sample 5-mark answer* 'The whole of the first sentence is a reason **[1]** that supports the IC 'So the AI revolution… work.' **[r] [1]**. This IC supports the conclusion of the paragraph 'So AI will cause starvation and civil unrest.' **[1r] [1]**, but only in combination with the assumption that people who become unemployed remain so for a long time **[1] [1r]**.	**5**

Question	Answer	Marks
1(d)	***Identify one counter-assertion.*** *1 mark for either of the following* *Mark only the first answer given* • (It is often said that) AI does, or will, solve many of the world's problems, (like climate change). • Some dismiss this [the idea that machines will become too clever, take over the world and declare war on humanity] as Hollywood fantasy	**1**

Question	Answer	Marks
2	***Identify and explain four flaws and/or weaknesses in the reasoning in paragraphs 3 to 5.*** *2 marks for a developed version of any of the following points* *1 mark for a weak or incomplete version of any of the following points [max 6]* *Paragraph 3:* • *Reliance on questionable assumption* – that a computer's camera would not be at least as good as a human eye • *Rash generalisation* – the claim 'we cannot trust these machines with our lives' does not follow from a single fatality in 2018 • *Reliance on questionable assumption* – that the technology has not or will not become safer since 2018 • *(Allow) Causal flaw* – the single fatality in 2018 might have been unrelated to the driverless aspect of the vehicle *Paragraph 4:* • *Illegitimate appeal* – to history: the continued rapid development of AI does not necessarily follow from a historical trend • *Slippery slope* – from surpassing human intelligence to attacking humanity *Paragraph 5:* • *Equivocation* – the meaning of 'problems' shifts from major world issues to individual thought-based tasks • *Inadequate response to counter* – that humans enjoy problem-solving does not mean that they will succeed • *Conflation* – of 'creativity' with 'art' • *Reliance on questionable assumption* – that lack of opportunity for humans to solve problems would completely stifle art and new ideas • *Reliance on questionable assumption* – that AI would not be able to produce art or generate new ideas • *Circular reasoning* – concluding that the rise of intelligent machines is dangerous because it puts us at risk is tautologous • *Irrelevant appeal* – to the authority of several film stars • *(Allow) Slippery slope* – from not doing problem solving to a very bleak future.	**8**

Question	Answer	Marks
3(a)	***'The rise of artificial intelligence will certainly have a negative effect on the total number of jobs.'*** ***Identify three weaknesses in the support given to this claim.*** *1 mark each for any of the following points [max 3]* • The answers represent people's opinions, which are not evidence in this case • The respondents may have interpreted the question in various ways – jobs in their area or jobs globally? • The data is only from some European countries – respondents from other areas might have given a different result • It is unlikely that a significant proportion of a random group of working-age adults have much expertise that is relevant to the prediction of future working patterns (a notion that is supported by the mismatch between the pie chart and the 3% statistic below it) • The absence of a 'neither agree or disagree' option in the first survey could lead people to select one of the positive answers rather than 'don't know' • Not all respondents chose a version of agree, so 'certainly' is overstated	**3**
3(b)	***Make one criticism of the way in which the chart has been presented.*** *1 mark each for any of the following points [max 1]* • The perspective of the chart exaggerates the 'agree' categories. • No numbers are given (and are harder to estimate, given the 3D perspective).	**1**
3(c)	***'By 2030 AI will account for a large proportion of the world's economy.'*** ***Identify two weaknesses in the support given to this claim by the graph.*** *1 mark each for any of the following points* • The last 5 years (at least) on the graph must be extrapolations, with unexplained methodology, not 'data' • The graph shows the $ value of AI, not the 'proportion of the world's economy' (so there is no way to judge how large a proportion the figure for 2030 is) (*Allow*: We don't know the size of other sectors.)	**2**

Question	Answer	Marks
4	***'The rise of artificial intelligence should be restricted.'*** ***Example high-scoring answers*** *Argument to support (730 words)* All the documents seem to agree that artificial intelligence (AI) is on the rise. It undoubtedly brings many benefits, some of which are listed in Docs 1 and 2, and currently contributes to the quality of life of many people. However, the rise of AI brings with it problems, some old and some new, and we should be concerned. Both Docs 1 and 2 are fairly clear that many jobs will be lost as the use of AI technology increases. One can tell from the tone of Doc 1, and the use of slippery slope reasoning, that the author of Doc 1 is biased. However, Doc 2 appears to be a more balanced report, it seems free of ranting and appeals to fear, and so can be taken more seriously. The data in Doc 4 are open to interpretation but Doc 4's existence seems to corroborate the idea of job loss as a real concern and common sense suggests that it is. The apparent mismatch between the graph and the quoted figure in Doc 4 is likely to be because many people think that the jobs of others are at risk but that their own jobs are too important or complex to be replaced by a machine. This interpretation is illustrated by the example of Nick Cave, who clearly thinks that a songwriting bot could never match the skill of a human songwriter. (Although the evidence from the lyric extract offers some support to his claim, technological advances mean that we could soon see some better examples.) Overoptimistic estimates about the scale of job losses in Doc 5, from an organisation that is likely to have some pro-business bias, are just that – estimates – that are likely to look favourably on AI technology. We can be reasonably confident that there will be many job losses. Some, including Doc 2 and Doc 5, might suggest that these job losses are no big concern. New technology has always led to job losses, Docs 1 and 2 both reference the industrial revolution, but, as Doc 2 states, systems reset – it all works out fine in the end. Except it doesn't for millions of unemployed people and their families. Many died of starvation and from other poverty-related issues during the industrial revolution. The 'temporary' nature of unemployment mentioned by Doc 2 is disingenuous. Twenty years 200 years ago seems temporary, twenty years at the time is not. Mass unemployment causes a lot of misery.	**27**

Question	Answer	Marks
4	Even more importantly, what makes the rise of AI more worrying than previous technological revolutions is the fact that it could redefine what it means to be human. The straightforward safety issues of, for example, driverless cars, that have been quoted in Docs 1, 2 and 3, could probably be overcome with some thought and some laws that are not wholly different from some existing laws. However, the issue of whether the AI in a driverless car is a sentient being that has rights and deserves to be treated as such will not be so easily solved. This issue is raised in Doc 3 and alluded to in paragraph 2 of Doc 2. These moral issues were not a feature of any previous technological revolution, such as the wheel, steam power or television. Appeals to celebrity posing as expertise, such as the 'several film stars' in Doc 1, do not carry much weight, but the quote from Stephen Hawking in Doc 2 is more difficult to explain away on the grounds of a lack of credibility and so cannot be dismissed as lightly. The consequences of AI technology are so unknown it sets them apart from innovative technologies of the past. If we had been more concerned about some existing technologies when they were first introduced, we might have avoided some of today's problems. The classic example of this is the use of fossil-fuel driven technology over the last 200 years. For most of that time we voraciously embraced planes, trains and automobiles. We enthusiastically mined coal, oil and gas to power these devices and to heat our homes and buildings. The consequence has been a threat to our entire existence from global climate change. With a more cautious approach to fossil fuel use, we might have avoided some of these problems. A more cautions approach to AI could have long-term benefits. Therefore, the rise of artificial intelligence should be restricted. *Argument to challenge (758 words)* Humans are a curious species, and we have, for millennia, used innovative technology, from the wheel to electric guitars, to improve our lives. The current uses of artificial intelligence, some of which are listed in the documents, make life much easier for many, and Docs 2, 3, and even 1 (the ranting tone of which suggests a good deal of anti-AI bias) seems to acknowledge some positives of AI. But the advantages of AI go way beyond convenience: Doc 2 mentions faster medical diagnosis, and even a digital personal assistant can be life changing for someone who is visually impaired or has mobility problems. The current uses of AI are likely to be merely the tip of the metaphorical iceberg. The potential of this technology is vast, and some people are worried about this. However, worries about new tech are not new, working patterns have always changed and new technology always comes with problems. There are negative aspects to the introduction of all new technology. Documents 1 and 2 both mention concerns about the introduction of machines in the nineteenth century and people were worried about the advent of, for example, television and genetic modification. The public opinion poll in Doc 4 can be dismissed as an appeal to popularity among a group of people who are not likely to have much expertise in predicting the impact of artificial intelligence.	

Question	Answer	Marks
4	One of the biggest areas of concern is about job losses. The concern over loss of jobs due to the introduction of steam power is cited by Doc 1 and Doc 2. However, these examples show that job losses due to the introduction of new technology are temporary and can be overcome. As is stated in Doc 2, which appears to be a reasonably balanced article, systems tend to reset. This claim is supported by evidence from Doc 5, in which figures from the World Economic Forum, who sound like they ought to have some expertise in this area, suggest that more jobs would be created than lost due to AI advances. Therefore, although concerns cannot be entirely dismissed, they are overstated. Concerns about the danger of AI to our future existence are also exaggerated. The celebrity quotes in Doc 1 can be dismissed as irrelevant appeals to authority and the significance of the Stephen Hawking quote in Doc 2 is unknown without the context – it might have been a throwaway counter assertion in a longer piece dismissing concerns about AI. Doc 1's frequent slippery slopes and allusion to *The Terminator* seem intended to appeal to the reader's fear. However, the slippery slopes rely on a lot of questionable assumptions and one only needs to counter D1's fictional Hollywood example with a reference to another – *Star Trek* envisages a harmonious and peaceful Earth where AI has enhanced the lives of humans and playing chess with an intelligent computer is often an important plot point. More realistically, any dangers presented by AI can be guarded against. Cars are pretty dangerous things, but we have laws about how they should be used to minimise that danger. In fact, Doc 1's leap from a single driverless vehicle accident to a conclusion that AI is not safe seems all the more ridiculous as soon as you consider the number of fatalities resulting from human-driven cars. The moral issue raised in Doc 3 about the programming of AI devices, and who is ultimately responsible if they go wrong, are no different from issues raised by the introduction of other new technologies. We have laws about motor vehicles and aircraft, and about other technologies, such as genetic modification and cloning. It seems unlikely that we would not be able to come up with a workable (if not perfect) set of laws to cover AI technology. The theoretical driverless-vehicle problem raised in Doc 3 is analogous to the classic 'trolley dilemma' and yet we do not worry unduly about the existence of trolley cars (or their modern equivalent). Concerns about boredom are also rather silly. Much of the AI with which we are familiar (including the Holodeck in *Star Trek*) is all about entertainment and the relief of boredom. The songwriting chatbot discussed in Doc 4 seems nothing to worry about – if the songs are good ones, surely that is a good thing? If they are not, then there is no need to worry. Technology will progress as it always has and our lives have, on average, improved because of it. Therefore, the rise of artificial intelligence should not be restricted.	

Level	Structure*	Use of documents	Quality of argument
	• Conclusion (MC) • Intermediate conclusions (ICs) • Strands of reasoning • Examples or evidence • Original analogy • Hypothetical reasoning	• Reference to documents • Evaluation of documents • Comparison of documents (corroboration or contradiction) • Inference from documents	• Comprehensive and persuasive argument • Logical order of reasoning • Relevant material • Treatment of counter-positions • Absence of flaws and weaknesses • Non-reliance on rhetorical devices
3	Excellent use of structural elements: 7–9 • Precise conclusion • Multiple valid explicit ICs that support the MC • Multiple clear strands of reasoning • Some effective use of other argument elements to support reasoning	Excellent use of documents: 7–9 • Judicious reference to at least three documents • Multiple valid evaluative points, clearly expressed and used to support reasoning • Some comparison of or inference from documents	Excellent quality of argument: 7–9 • Sustained persuasive reasoning • Highly effective order of reasoning • Very little irrelevant material • Key counter-position(s) considered with effective response • Very few flaws or weaknesses • No gratuitous rhetorical devices
2	Good use of structural elements: 4–6 • Clear conclusion • More than one valid IC (may be implied) • Some strands of reasoning • Some use of other argument elements	Good use of documents: 4–6 • Relevant reference to at least two documents • At least two evaluative points used to support reasoning • May be some comparison of or inference from documents	Good quality of argument: 4–6 • Reasonably persuasive reasoning • Unconfused order of reasoning • Not much irrelevant material • Some counter-position(s) considered with some response • Not many flaws or weaknesses • May be some reliance on rhetorical devices
1	Some use of structural elements: 1–3 *There may be:* • Conclusion • Implied ICs • Some strands of reasoning • Some use of other argument elements	Some use of documents: 1–3 *There may be:* • Reference, perhaps implicit, to a document • Some evaluation of a document • Some comparison of or inference from documents	Some quality of argument: 1–3 *There may be:* • Some support for the conclusion • Some order to the reasoning • Some relevant material • Some counter-position(s) considered with some response
0	No creditable response 0	No creditable response 0	No creditable response 0

*Cap mark for Structure at 6 if no conclusion given