

MARK SCHEME for the October/November 2013 series

9694 THINKING SKILLS

9694/42

Paper 4 (Applied Reasoning), maximum raw mark 50

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 will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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1 Suggest five criticisms of the statistics presented in the passage below and/or the inferences drawn from them. [5]

- None of the first three proportional statistics is attached to a year, making comparison with the others difficult.
- Definition of “smoke” is unclear. (Regular? Number per day?)
- The first piece of information (about the proportion of British adults who smoke) is irrelevant to the question of how risky smoking may be.
- Significance of 90% is unclear and misleading without knowing the numbers of deaths from lung cancer.
- The third sentence is about men and the other sentences are about adults.
- The inference that giving up smoking saves lives cannot be drawn from the apparent correlation in the last two sentences **because** of:
 - Differences in population (men/adults);
 - Changes in overall population (number);
 - Different starting points (50% decrease has variable implications depending on starting point);
 - Alternative possible causes of the decline in lung cancer deaths.
- The percentage of lung cancer victims who were smokers is confused with the percentage of smokers that developed lung cancer.
- None of the data presented are about giving up smoking.
- Saving lives is not the same as extending lives.

2 Briefly analyse G9’s argument in Document 1: *Science and society*, by identifying its main conclusion and main reasons, as well as any intermediate conclusions and counter-arguments. [6]

MR/IC – The role of science in society is being undermined by scientific illiteracy that permeates the world.

CA – the two great areas of human intellectual activity, ‘science’ and ‘the arts’ (or the study of humanities), should have dialogue with each other and build bridges to further the progress of human knowledge and to benefit society.

IC – In reality few efforts have been made in this direction.

MR/IC – What is very clear is that the stand-off between science and the arts is set to continue.

IC – The importance of science in society is further threatened by introducing discussions on the relationship between science and religion at such important events as the World Science Festival.

IC – So science is consistent only with a God that does not intervene in the daily operations of the cosmos.

MR/IC – Attempts at dialogue between science and other disciplines up till now have been unhelpful.

MC – We should accept the world as it is, and reject beliefs that distort our understanding of the world.

MR – If we do not, we will not be ready to meet the urgent technological challenges facing the world community.

Marks

1 mark for each element (maximum 4 marks if MC not identified).

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- 3 Give a critical evaluation of the strength of G9's argument in Document 1: *Science and society*, by identifying and explaining any flaws, implicit assumptions and other weaknesses. [9]

Para 2

Restricting the options: "the two great areas of human intellectual activity".

Very weak response to the counter-argument: just because "few efforts have been made" in the past does not mean that none should be made in the future.

Assumption that literary aids would improve the communication of scientists' work.

Para 4

Assumption that only things that are equal should be discussed.

Equivocation: Equal footing in subject matter stretched to include equal footing in importance.

Para 5

non sequitur: IC in second sentence does not follow from R in first.

Irrelevance/ad hominem: "In any case, most people who tend to call themselves religious only adhere to those parts of scripture that appeal to them."

Slippery slope: "If we give undue respect to ancient religious beliefs we will end up overthrowing conclusions drawn from centuries of rational empirical investigations."

Contradiction: Age used as justification for dismissing religious beliefs, then immediately as justification for endorsing empirical investigations.

Contradiction: Claim that it is not religion that makes people ignorant contradicts much of the rest of the passage.

ad hominem: The gist of the final sentence is "not accepting my argument entails that you are not intelligent".

Assumption that we can analyse how we live our lives using the same tools as those we use to analyse the laws of nature.

Para 6

Just because past attempts at dialogue have not been successful does not mean that we should not make any more attempts.

Contradiction: Para 2 says dialogue "would be a worthwhile enterprise" but para 6 suggests it would not be worthwhile.

Circularity: "the world as it is" and "our understanding of the world" assume a scientific view of the world.

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Invalid deduction: “If we do not, we will not be ready to meet the urgent technological challenges facing the world community.” Author implies that if we do accept the world as it is then we will be ready.

Overall Evaluation

The argument is rather circular – the superiority of the scientific viewpoint is assumed throughout such that the reasons against alternative viewpoints are tantamount to saying that they are not the scientific one. There is a confusion of ‘religion’ and ‘the arts’, making the reasoning unclear. So the reasons only weakly support the main conclusion, which is overdrawn. There is a fair amount of rhetorical language, e.g. “proudly proclaim”, “so ignorant”, “critically intelligent inquirer”. The final reason seems to be very important, yet is unsupported.

Marks

For each sound evaluative point 1 mark and 2 marks for a developed point, to a maximum of 8 marks.

Up to 2 marks for an overall judgment on the argument.

(Maximum 9 marks.)

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4 'Religious convictions ought not to enter discussions about scientific claims.'

To what extent do you agree with this statement? Construct a well-reasoned argument in support of your view, commenting critically on some or all of Documents 1 to 5, and introducing ideas of your own. [30]

Level	Structure	Max 8	Quality of argument	Max 8	Use of documents	Max 8	Treatment of counter positions	Max 6
4	<p>Precise conclusion and accomplished argument structure with consistent use of intermediate conclusions. Likely to include more than two of the following:</p> <ul style="list-style-type: none"> • strands of reasoning • suppositional reasoning • analogy • evidence • examples <p>Argument is structured so the thought process is made clear. Uses vocabulary of reasoning appropriately and effectively to support argument.</p>	7–8	<p>Cogent and convincing reasoning which answers the question which was asked. Subtle thinking about the issue. Use of relevant own ideas and ideas from documents. Questioning of key terms, which informs the argument. Very few significant gaps or flaws.</p>	7–8	<p>Perceptive, relevant and accurate use of documents to support reasoning. Sustained and confident evaluation of documents to support reasoning. (More than 2 evaluative references to documents or nuanced evaluation). Able to combine information from two or more documents and draw a precise inference.</p>	7–8	<p>Anticipation of key counter arguments and effective response to these. Use of valid critical tools to respond to counter arguments. Frequent effective use of appropriate terminology.</p>	5–6
3	<p>Clear conclusion and clear argument structure, which may be simple and precise or attempt complexity with some success. Appropriate use of intermediate conclusions. Use of other argument elements to support reasoning. Generally makes thinking clear. Use of vocabulary of reasoning appropriately.</p>	5–6	<p>Effective and persuasive reasoning which answers the question which was asked. (Although there may be some irrelevance or reliance on dubious assumptions.) Use of own ideas and ideas from documents. Some questioning of key terms. Few significant gaps or flaws.</p>	5–6	<p>Relevant and accurate use of documents which supports reasoning. (Must reference 3+ documents.) Some evaluation of documents to support reasoning. Compares and contrasts documents explicitly.</p>	5–6	<p>Anticipation of relevant counter arguments and some response to these. Attempt to use critical tools to respond to counter arguments. Some use of appropriate terminology.</p>	3–4

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2	<p>Clear, straightforward argument or a discourse at length with a focus on the ideas and content but only a basic structure.</p> <p>Conclusion stated or clearly implied. May be multiple conclusions.</p> <p>Uses reasons.</p> <p>Limited ability to combine different points of view in reasoning.</p> <p>Sufficient clarity for meaning to be clear.</p> <p>Some appropriate use of vocabulary of reasoning.</p>	3–4	<p>A reasoned stance which answers the general thrust of the question which was asked.</p> <p>Some support for the conclusion. (Although there may be considerable irrelevance or reliance on dubious assumptions.)</p> <p>Some thinking/own ideas about the issue.</p> <p>Use of rhetorical questions and emotive language.</p> <p>Some significant gaps or flaws.</p>	3–4	<p>Some relevant and accurate use of documents, but some documents used indiscriminately.</p> <p>Implicit comparison of documents.</p> <p>No critical evaluation of documents.</p>	3–4	<p>Inclusion of counter argument or counter assertion but response to this is ineffective.</p>	1–2
1	<p>Attempt to construct and argument.</p> <p>Unclear or no conclusion.</p> <p>Disjointed, incoherent reasoning.</p> <p>Use of examples in place of reasoning.</p> <p>Possibly a discourse or a rant.</p> <p>Reasons presented with no logical connection.</p> <p>Substantial irrelevant material.</p>	1–2	<p>Attempt to answer the general thrust of the question.</p> <p>Attempt to support their view.</p> <p>Excessive use of rhetorical questions and emotive language.</p> <p>Ideas which are contradictory.</p>	1–2	<p>Very limited, perhaps implicit, use of documents.</p>	1–2	<p>Counter argument or assertion not included.</p>	0