



## Cambridge International AS & A Level

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THINKING SKILLS

9694/22

Paper 2 Critical Thinking

May/June 2022

MARK SCHEME

Maximum Mark: 50

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**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 May/June 2022 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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This document consists of **12** printed pages.

**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 descriptors 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**

	In Qs 1, 3 and 4 use to indicate where marks have been awarded.
	Use to indicate an answer or element that is wrong.
	Not good enough.
	Benefit of doubt.
	In Q5 use to indicate creditworthy other argument element. In Q3 use to indicate 'significant additional element'.
	In Qs 2 and 5 use to indicate 'conclusion'.
	In Qs 2 and 5 and in short questions where indicated, use to indicate that marks have been capped because an essential element of the answer is absent.
	In Q2 use to indicate creditworthy evaluation of a source.
	In Q5 use to indicate creditworthy intermediate conclusion.
	In Q2 use to indicate creditworthy personal thinking. In Q3 use to indicate paraphrase.
	In Q2 use to indicate creditworthy inferential reasoning. In Q5 use to indicate creditworthy reason used to support a conclusion.
	In Q2 use to indicate creditworthy use of a source. In Q5 use to indicate distinct strand of reasoning.
	In appropriate cases, use to indicate significant omission. In Q3 use to indicate 'significant omission'.
	Use in answers when no other annotations have been used. Use on blank pages.
<b>Highlight</b>	Use to draw attention to part of an answer.

There must be at least one annotation on each page of the answer booklet.

Question	Answer	Marks
1(a)(i)	It is from an expert source/source with ability to see which increases its reliability [1]. However, as it comes from the nuclear power industry, its reliability is weakened by vested interest to promote their industry [1] and is biased, making it likely to disregard more significant problems [1].	2
1(a)(ii)	<p><i>1 mark for any of the following:</i></p> <ul style="list-style-type: none"> <li>• The solutions are not explained/specified/no examples given.</li> <li>• There is no comment on the effectiveness of these solutions/the time scale is not assessed.</li> <li>• There may problems other than waste disposal associated with nuclear power.</li> </ul>	1
1(b)	To a limited/no extent [1]. Whilst making a general point about the possibility of accidents [1] it does not specify whether the accidents at the nuclear power plants have been related to nuclear waste disposal/the accidents were not related to waste disposal [1]. If they are related to a different issue, the accidents have no specific relevance to the question of the safety of methods of nuclear waste disposal [1].	3
1(c)	<p><i>One mark for each valid explanation</i> <i>Examples of valid answers:</i></p> <ul style="list-style-type: none"> <li>• Nuclear power may be the main source of power in some countries making it unfeasible to phase nuclear power out/countries phasing it out have only a small amount of energy generated through nuclear power.</li> <li>• Export of nuclear energy may be vital to the economy.</li> <li>• Those countries where nuclear power is being phased out may be more environmentally conscious.</li> <li>• It may be politically expedient to phase out nuclear power in those countries that are planning to. (e.g. population of country fear it)</li> <li>• Countries where nuclear power is being phased out may have abundant sources of 'green' sources of energy e.g. solar power/those countries where nuclear power is not being phased out do not have alternative sources of green power.</li> <li>• Vested interests in the nuclear power industry may have more influence in countries where nuclear power is not being phased out.</li> </ul>	3
1(d)	Source A states that present technology does not offer a viable way of producing nuclear fusion [1]. This is because the amount of energy needed to produce it is greater than the energy produced [1]. This means that the problem is not solely whether it is affordable [1]. The authors in Source B are entirely missing this point by assuming that the ability to produce fusion opens up an automatic pathway to producing viable fusion [1].	3

Question	Answer	Marks
1(e)	<p><i>2 marks for a correct answer with accurate explanation</i>  <i>1 mark for a correct answer with vague, incomplete or generic explanation</i>  <i>0 marks for a correct answer without explanation</i>  <i>0 marks for an incorrect answer with or without explanation</i></p> <p><i>2-mark answer</i>            Source E is an argument. The main conclusion is 'Nuclear power is a vital source of green energy'. Green energy is defined, and the conclusion supported by reasoning about the advantages it has over solar and wind power, a counter argument against critics who raise the problem of nuclear waste and a second line of reasoning which explains why nuclear fission is the only form of nuclear power available that will be relevant to combating global warming.</p> <p><i>If candidates identify the main conclusion and one of the above aspects of the reasoning they should get 2 marks.</i></p> <p><i>1-mark answer</i>            Source E is an argument, because it includes a persuasive conclusion supported by reasons.</p>	<b>2</b>

Question	Answer	Marks										
2	<table border="1" data-bbox="304 244 1321 808"> <tr> <td data-bbox="304 244 555 344"><b>Conclusion</b></td> <td data-bbox="555 244 1321 344">1 mark for an explicit supported conclusion <i>Cap at 7 if conclusion is absent or implicit</i></td> </tr> <tr> <td data-bbox="304 344 555 445"><b>Use of sources</b></td> <td data-bbox="555 344 1321 445">2 marks for use of at least 4 sources 1 mark for use of at least 1 source</td> </tr> <tr> <td data-bbox="304 445 555 577"><b>Evaluation of sources</b></td> <td data-bbox="555 445 1321 577">1 mark for each valid evaluation of the credibility or quality of reasoning in sources <i>Maximum 3 marks</i></td> </tr> <tr> <td data-bbox="304 577 555 710"><b>Inferential reasoning from sources</b></td> <td data-bbox="555 577 1321 710">1 mark each <i>Maximum 3 marks</i></td> </tr> <tr> <td data-bbox="304 710 555 808"><b>Personal thinking</b></td> <td data-bbox="555 710 1321 808">1 mark each <i>Maximum 2 marks</i></td> </tr> </table> <p data-bbox="304 842 724 875"><b>Annotate answers as follows:</b></p> <p data-bbox="304 909 754 949"><b>CON</b> To indicate ‘conclusion’.</p> <p data-bbox="304 954 944 994"><b>S</b> To indicate creditworthy use of source.</p> <p data-bbox="304 999 1032 1039"><b>EVAL</b> To indicate creditworthy evaluation of source.</p> <p data-bbox="304 1043 1032 1084"><b>R</b> To indicate creditworthy inferential reasoning.</p> <p data-bbox="304 1088 991 1128"><b>P</b> To indicate creditworthy personal thinking.</p> <p data-bbox="304 1133 959 1173"><b>E</b> To indicate that mark has been capped.</p> <p data-bbox="304 1196 561 1229"><b>Indicative content</b></p> <ul data-bbox="304 1263 1315 1957" style="list-style-type: none"> <li>• Source A explains problems with both methods of generating nuclear energy.</li> <li>• But it is not clear that uneasiness about methods of disposing of nuclear waste are justified</li> <li>• Or that there is no possible solution to the problem of nuclear fusion as a source of energy- it is not clear if this is a technical problem or one which has no solution in principle going on the laws of physics.</li> <li>• Source B shows that a number of scientists see hot nuclear fusion as a viable option.</li> <li>• However, the source does not answer the question of whether the problem of the amount of energy needed can be overcome in principle.</li> <li>• Source C suggests two scientists managed to achieve cold fusion</li> <li>• However, nobody has replicated this, and most scientists have abandoned the idea.</li> <li>• Source D shows considerable differences in European countries policies on nuclear power.</li> <li>• However, we cannot assume those continuing with nuclear power necessarily see it as a good option.</li> <li>• Source E is a defence of nuclear fission as a source of green energy</li> <li>• but only if you take a very narrow definition of ‘green energy’.</li> </ul>	<b>Conclusion</b>	1 mark for an explicit supported conclusion <i>Cap at 7 if conclusion is absent or implicit</i>	<b>Use of sources</b>	2 marks for use of at least 4 sources 1 mark for use of at least 1 source	<b>Evaluation of sources</b>	1 mark for each valid evaluation of the credibility or quality of reasoning in sources <i>Maximum 3 marks</i>	<b>Inferential reasoning from sources</b>	1 mark each <i>Maximum 3 marks</i>	<b>Personal thinking</b>	1 mark each <i>Maximum 2 marks</i>	8
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<b>Personal thinking</b>	1 mark each <i>Maximum 2 marks</i>											

Question	Answer	Marks
2	<ul style="list-style-type: none"><li>• It makes the key point that nuclear fusion is unlikely to be developed quickly enough to combat global warming</li><li>• though both the survey and the claims are unreliable because of the vested interest of the source.</li><li>• It does not specify what the solution to the problem of nuclear waste is so this solution cannot be evaluated. If it is burying waste at sea, then Source A shows a great deal of concern about this solution.</li></ul>	

Question	Answer	Marks
<p><b>In Q3, annotate as follows:</b></p> <p><b>AE</b> Significant additional element  <b>A</b> Significant omission  <b>P</b> Paraphrase</p> <p><i>In Q3(a), (c), (d) and (e), if two answers are given, one of which is correct, award 1 mark.</i></p> <p><i>In all parts of Q3, apply guidance relating to additional material <b>only</b> if it constitutes an additional part of an answer or an alternative answer.</i></p>		
3(a)	<p><i>2 marks for an exact answer 1 mark for a paraphrase, or for <b>one</b> additional element or omission</i></p> <p>Travel must cease to be a central feature of modern life.</p>	<b>2</b>
3(b)	<p><i>For up to 2 of the following: 2 marks for an exact answer 1 mark for a paraphrase, or for <b>one</b> additional element or omission If more than two answers given, mark the first three only</i></p> <ul style="list-style-type: none"> <li>• (So) not travelling would make a major contribution to avoiding such devastating pandemics in the future.</li> <li>• The pace of global warming would slow significantly if people travelled less.</li> <li>• A massive decrease in the amount of travel would prevent such environmental and social damage.</li> <li>• we must not let the vanity projects of overambitious politicians destroy our heritage</li> </ul>	<b>4</b>
3(c)	<p><i>2 marks for an exact answer 1 mark for a paraphrase or for <b>one</b> additional element or omission</i></p> <p>(such as) the coronavirus in 2020</p>	<b>2</b>
3(d)	<p><i>For up to 2 of the following: 2 marks each for an exact version of any of the following 1 mark each for an incomplete or vague version of any of the following</i></p> <ul style="list-style-type: none"> <li>• Meetings held by video are not significantly less effective than face to face meetings/face to face meetings provide no additional benefits</li> <li>• The technical problems are not currently significantly bad / people are already sufficiently adjusted to working with remote meetings.</li> <li>• 'Meeting' someone amounts to no more than seeing and hearing them.</li> <li>• All meetings have the same characteristics as work meetings/non-work meetings do not require face to face contact.</li> <li>• No meetings require face to face contact</li> <li>• <i>Allow:</i> One should only travel when necessary. Meeting people is only done for reasons of work</li> </ul>	<b>4</b>



Question	Answer	Marks
4(a)	The second sentence is an appeal to authority//emotion/fear [1]. It is a relevant appeal, because the scientists have expertise [1], and a proportionate one, because they are agreed on the matter [1]. It is a proportionate appeal to fear as the dangers are realistically assessed [1].	3
4(b)	The reference to ‘vanity projects of overambitious politicians’ is a personal attack [1], but it does not weaken the reasoning in the argument because it is not clear what counter-argument these politicians are making [1]. Also, the author states that infrastructure projects are necessary and so they cannot be caused simply by the vanity of overambitious politicians [1]. However, by claiming these infrastructure projects are ‘vanity projects’, the author undermines his claim that they are necessary to modern travel systems [1].  <i>1 mark for identifying, 1 mark for assessing impact.</i>	2
4(c)	The IC is that ‘enormous amounts of time are wasted through travelling’ [1]. However, the counter-argument that people can work on trains and planes is not effectively responded to [1] as the author irrelevantly refers to a mode of travel where one cannot work [1]. The author therefore fails to offer any convincing reason why time is necessarily wasted when travelling [1]. The only conclusion one could draw from the counter argument is that one should travel by train or plane rather than car if one wants to be able to work whilst travelling [1]. This would not support the main conclusion of the argument [1]. Even if it is the case that long journeys are not unusual it could still be the case that most work-connected journeys are short/not involving an overnight stay [1].	3

Question	Answer		Marks
5	<b>Reasons</b>	2 marks for three or more reasons supporting conclusions 1 mark for one or two reasons supporting conclusions	8
	<b>Inferential reasoning</b>	1 mark for each use of an intermediate conclusion or chain of intermediate conclusions <i>Maximum 3 marks</i>	
	<b>Argument elements</b>	1 mark for each use of other argument elements that strengthens the reasoning: counter with response, example, evidence, analogy, hypothetical reasoning <i>Credit each type only once per strand of reasoning</i> <i>Maximum 3 marks</i>	
	<b>Structure</b>	1 mark for two or more distinct strands of reasoning	
<p><i>Each component of a candidate response may score only once. Where there is more than one possibility, use the classification which leads to the higher total mark.</i></p> <p><i>Maximum 6 marks for no conclusion or wrong conclusion, or a conclusion that does not follow from the reasoning.</i></p> <p><i>If a candidate argues for both sides of the question, do not give credit for the side which is ultimately rejected; if the candidate does not choose between the sides, credit the stronger side (to a maximum of 6 marks).</i></p> <p><i>No credit for material unrelated to the claim given on the question paper.</i> <i>No credit for material merely reproduced from the passage.</i></p> <p><b>Annotate answers as follows:</b></p> <p><b>CON</b> To indicate main conclusion.</p> <p><b>R</b> To indicate creditworthy reason used to support a conclusion.</p> <p><b>I</b> To indicate creditworthy intermediate conclusion.</p> <p><b>AE</b> To indicate creditworthy other argument element.</p> <p><b>S</b> To indicate distinct strand of reasoning.</p> <p><b>E</b> To indicate that mark has been capped.</p>			

Question	Answer	Marks
5	<p><b>Example 8-mark answers</b></p> <p><i>Support (123 words)</i></p> <p>It is <b>I</b> important that a clear separation is maintained between work and home. Without <b>AE</b> such a clear separation, people find it difficult to relax and <b>R</b> can remain preoccupied with work in what should be their leisure time. This <b>AE</b> can have a negative effect on mental health and lead to problems such as <b>R</b> anxiety and insomnia. Working from home <b>R</b> makes it difficult to maintain such a separation.</p> <p><b>S</b> Whilst <b>AE</b> going to work <b>R</b> can mean a stressful commute, there <b>AE</b> are ways this can be avoided, for example <b>R</b> by cycling to one's workplace. Getting to work in this way also <b>R</b> provides exercise, which <b>I</b> contributes to both physical and mental health.</p> <p><b>CON</b> Therefore, it is good for people to have to leave their home to go to their workplace.</p> <p><i>Challenge (158 words)</i></p> <p>Working from home <b>I</b> is much more productive. Time that would have been wasted in travelling to work <b>R</b> can be used to deal with work tasks. Not having to travel to work also <b>R</b> avoids what for most people is a stressful start to the day. This means that one <b>I</b> is in a more relaxed and positive state of mind when one starts the working day.</p> <p><b>S</b> Whilst <b>AE</b> some would argue that it can be difficult to keep a clear separation between work and leisure if one works from home, this <b>R</b> can be easily resolved if one follows a few simple rules. For example, <b>AE</b> one should <b>I</b> have a definite space which is reserved exclusively for work. This <b>R</b> gives a clear definition to working hours. Breaks from work should be clearly defined and one should <b>R</b> leave this space when having a coffee or lunch.</p> <p><b>CON</b> Therefore, it is <b>CON</b> not good for people to have to leave their home to go to their workplace.</p>	

Question	Answer	Marks
5	<i>Acceptable ‘challenge’ conclusions:</i> <ul style="list-style-type: none"><li>• It is not good for people to have to leave their home to go to their workplace.</li><li>• It is good for people to be able to work from home.</li></ul>	