Cambridge Assessment International Education

Cambridge International AS & A Level

THINKING SKILLS **9694/41**

Paper 4 Applied Reasoning **May/June 2021**

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 May/June 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

[Turn over

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

Annotation Qs 1 to 3	Meaning and use
	Correct response. Use when a mark has been achieved in Q1, 2 and 3.
NGE	Not good enough. Use in Q1, 2 and 3 when a response is partly correct but is insufficiently creditworthy for a mark to be awarded.
BOD	Benefit of doubt
0	No marks awarded in question
	Underline. For material which prevents a mark from being awarded.

Annotation Q4	Meaning and use
S	Creditworthy material in the Structure skill
CON	Main Conclusion
I	Intermediate Conclusion
AE	Argument Element
U	Creditworthy material in the Use of Documents skill
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.
+	Elevated demonstration of a skill Higher mark within a level awarded
–	Diminutive 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
Highlight	Where helpful, use to identify the part of the answer to which another stamp pertains.

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

Question	Answer	Marks
1(a)	(but) we should strive to make the ban global.	**1**
1(b)	*1 mark for each correctly identified IC (max 3)* *Mark only the first three answers given* • Animal testing is undeniably cruel. • (so) it is hypocritical 'speciesism' to experiment on animals but not humans. • There are ways of testing cosmetics that are increasingly faster, cheaper and more relevant to human reactions (than the animal-based testing they could replace.) • Studying cell cultures in a petri dish can produce more relevant results than animal testing • (The existence of these alternatives means that) testing on animals is no longer necessary.	**3**

Question	Answer	Marks
1(c)	*Award 1 mark for each of the following [max 3]:* R1 We have been using cosmetics for millennia. R2 Many of these were never tested on anything IC1 (so) the need for testing cosmetics at all is questionable. R3 We have, in the last few hundred years, developed enough different cosmetics to satisfy the needs of the most glamour-conscious celebrity. IC2 We have no real need for any new cosmetics, IC3 (so) testing new ones does not justify the slightest suffering to any living thing.	**3**
	Award 1 mark for identifying two relationships between elements, for example • R1 or R2 supports IC1. • R1 and R2 jointly support IC1. • IC1 together with IC2 supports IC3. • R3 supports IC2. • IC2 supports IC3. • IC3 is the conclusion of the paragraph. *Reference to start and end of elements must be unambiguous.* *Sample 4-mark answer* 'We have been… millennia' and 'Many of… on anything' are reasons **[1]** that support '(so) the need for testing cosmetics at all is questionable', which is an IC **[1]**. 'We have, … celebrity' is a reason **[1]** that supports 'We have no … cosmetics', which is a second IC **[1]** that supports 'testing new… living thing', which is the conclusion of the paragraph **[1]** .	**1**

Question	Answer	Marks
2(a)	*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 animal suffering is sufficiently similar to human suffering. • (*Allow: Irrelevant appeal to emotion* – the author uses the image of a child or someone with a mental disability to evoke an emotional response in the reader.) • *Wild analogy* – there are many objective differences between humans and animals that could be used to justify their being treated differently. • *Begging the question* – giving animals a lower moral status than humans is stipulated as 'speciesism', which is assumed to be a bad thing. • *Straw man* – the author is misrepresenting the counter-position by implying that the alternative necessarily involves either no human testing at all or forced testing on children or people with mental disabilities *Paragraph 4:* • *Conflation* – the reasoning treats 'predict' as if it meant 'establish'. • *Reliance on questionable assumption* – that testing the effect on some human cells is a reliable indicator of what the overall effects on a human will be. *Paragraph 5:* • (*Allow: Inconsistency* – the claim that animals are different from humans is inconsistent with the reasoning in paragraph 3 which is based on their similarity.) *Paragraph 6:* • *Appeal to tradition* – not having tested cosmetics in the past is not sufficient justification for not testing them today. • *Reliance on questionable claim* – cosmetics used in earlier times were very likely to have been tested on humans to establish their safety. • *Reliance on questionable assumption* – that cosmetics used in earlier times did not have harmful effects. • *Reliance on questionable assumption* – that modern cosmetics are not more harmful than ones used in the past.	**6**

Question	Answer	Marks
2(b)	*Award marks from any of the following lines of explanation [max 3]* The conclusion of paragraph 7 does offer some support to the main conclusion **[1]**. However, the reasoning offered to support the paragraph's conclusion is weak **[1]**: the relevance of meat consumption is questionable **[1]**, and in any case the animals used for cosmetic testing are unlikely to place a burden upon the environment in the same way that animals farmed for meat consumption do **[1]**. However, the strand of reasoning in this paragraph is independent of the other strands of reasoning, so if the reasoning in this paragraph is rejected it will not weaken the main conclusion much. **[1]**	**3**

Question	Answer	Marks
3(a)	*1 mark each for a version of any of the following points [max 4]:* • Testing may be legal in 80% of countries, but it is not known if any of those actually carry out any testing. • The use of 'up to' means that the actual number could be significantly below 500 000. • The rate 'animals per day' is meaningless • and may be particularly inappropriate if animals are tested on for longer periods of time. • It is not clear whether the numbers given in the second paragraph are global or US-specific • and their significance is difficult to assess – they could be very small compared to, for example, the number of animals treated cruelly in the process of food production. • It is not clear if 'experiments' refers only to cosmetics testing as opposed to, for example, medical testing. • The author has stated the primate and rabbit numbers (the most sympathy-eliciting animals) perhaps to try to exaggerate the importance of the numbers given.	**4**
3(b)	*1 mark each for a version of any of the following points [max 2]:* • The y-axis is truncated to exaggerate how low the 2011 figure is. • The data stops at 2012 so, there is not enough evidence to establish a long-term downward trend / a significant proportion of data relevant to the claim 'since 2010' is missing. (There are only 2 years shown after 2010, including a rise from 2011 to 2012). • The reduction between 2010 and 2012 is not much bigger than previous fluctuations, e.g. the increase between 2000 and 2002. • The graph refers only to tests in the UK, whereas the claim does not; there may have been increases in other countries. • The graph refers to 'non-human primates' whereas the claim refers to 'primates'; there could be a trend towards testing on humans (who are still primates) instead.	**2**

Question	Answer	Marks
4	**'Animals should not be used for experimentation.'** ***Example high-scoring answers*** *Argument to support (756 words)* If you wanted to find out how a car worked, you would not begin dismantling your bicycle in order to find out. The rationale for using animals in research depends on an alleged similarity between animals and humans but, just as bikes are not smaller version of cars, animals are not smaller versions of humans. The many differences between animals and humans, such as walking on four legs, having hairy skin, and having a much smaller brain, mean that, as Docs 1 and 3 both mention, results from animals cannot be generalised to humans. Two different sources within Doc 3 claim that over 90% of animal experiments don't lead to human treatments. Doc 2 and Wendy in Doc 5 try to counter this fact with some examples but Doc 2 is clearly from a biased source and Wendy has a vested interest to justify her job. Many of the claims in Doc 2 are weak: the claim that mice and humans have 95% genetic similarity becomes meaningless when you consider that humans and cabbages share 50% of their genes. Rowena in Doc 5 states that the pro-animal research lobby controls the information the public get to hear about and her view is given credibility by the intervention of the Government spokesman. There is no doubt that these experiments are cruel. Even if they do not all involve substances being dropped into eyes, many of them will involve animals being restrained, injected, operated on and, as over 90% of treatments are rejected, many of them must involve side effects that are far worse than any human would tolerate. Some might argue that we should not worry too much about experiments on, e.g. fish. The statistics in the pro-animal research Doc 2 attempt to hide the fact that many 'procedures' are carried out on our closest relatives – the primates. Both graphs in Doc 4 show that many primates are used; graph A, in particular reveals Doc 2's attempted subterfuge as it uses the same, UK, data set. The global trend appears to be towards moving away from animal experimentation – Doc 1 implies an ever-growing list that includes the EU in 2013. Although this is specifically about cosmetics, rather than testing in general, a wider trend can be inferred. This trend has two explanations. The first is the increasing awareness the rights of other beings. The second is simply the fact that we used animals in the past because there were no alternatives. Now we have alternatives, the need for animal use is no longer there. Alternatives to animal testing exist. Docs 1 and 3 both cite the example of computer modelling, which is more effective than animal testing, according to Doc 3. Doc 1 also cites the breast cancer charity that aims to promote the use of human cells for research. With more effort and investment these alternative treatments can improve and remove any need for using animals.	**27**

Question	Answer	Marks
4	The pro-animal research lobby knows that it is in the wrong. The adoption of the 3 Rs, as mentioned in Doc 5 and 2, is an admission by governments and animal researchers themselves that what they are doing is wrong. If they admit that animal research should be reduced, then they are tacitly admitting that it should be stopped altogether. That said, there is not much evidence of any actual reduction. Graph A in Doc 4 and Rowena in Doc 5 are the only real references to changes over time and Graph A appears to show little change in the use of primates since 1990. Rowena's claim that there has been a 22% increase since 2011 is consistent with what little post-2011 data there are on the graph. Could it be that the mantra of the 3 Rs is just an attempt to keep public opinion quiet while they continue to reap the financial benefits, as Robin Griffiths suggests? Public opinion is sometimes discounted as an appeal to popularity. However, in issues of morality like this one the opinion of the public does matter. Public opinion is clearly against animal testing. Docs 3 and 5 mention two polls in which a large majority of the public are against the use of animals. These polls are from different sources and were presumably conducted using different methods and yet both arrived at the same conclusion. If a government will change the constitution of a country based on the opinion of 52% of the public, we should certainly take notice of between 72% and 80%. Animals should not be used for experimentation. *Argument to challenge (800 words)* Without the use of animals, we would have only a fraction of the treatments that are available today. There is a long list of benefits in Doc 2, such as vaccinations, antibiotics and many of these are corroborated in Doc 5. Both sources are likely to have a lot of expertise and access to facts – the university professor is, presumably, expert in animal research; the detailed list of information in Doc 2 is evidence of access to a large amount of relevant data that has, presumably, been interpreted by university colleagues with some degree of expertise. Animal research is transferrable to humans. Wild claims about research using animals not being applicable to humans, such as those made in Docs 1 and 3, do not stand up to scrutiny. The people making such claims often lack expertise. We are not told anything about the author of Doc 1, but expertise in biomedical research is not a requirement for a professional comedian. So the claim that animal research does not work in Doc 3 does not carry as much weight as the claims that it does in Docs 2 and 5. The credibility of Doc 2 is strengthened by the fact that its statistical evidence is consistent with that in Graph B of Doc 5.	

Question	Answer	Marks
4	It is claimed by Doc 1 and Doc 3 that animal models do not work because animals are different from humans. If you want to find out how an internal combustion engine works, you do not need to dismantle a Ferrari. Any economy brand of car with an internal combustion engine will do. We can, therefore, find out a lot of information about how life in general works from non-human animals. There will be times when a cold-blooded fish will not do – if researching temperature control for example – and a warm-blooded mammal will be needed. The people who make decisions about which animals are needed are likely to have more expertise on the matter than a comedian or a viewer of daytime TV. The cries of 'animal testing does not work' are often contradictory or misleading. The comedian in Doc 3 claims that 'the animal models don't work' and Doc 1 cites examples of how animals are different from humans. However, both Doc 1 and the Doc 3 cite computer models as a suitable alternative. If the case for claiming that animals do not work is because they are different, that same logic must mean that computer models work even less well than animals. If Doc 3's claim that 93% of animal experiments don't lead to human treatments is true, then 7% must be successful. There is no information about the success rate of research and development in other industries but, 7% seems high enough. If using animals for research really did not work, then it would not happen. Claims, like those in Doc 3, that hint at financial incentives for using animals do not make sense. If there was a more effective method, companies would use it. Some might claim that using animals is cheaper than alternatives but, interestingly no documents do, even the anti-animal-use docs 1, 3 and 5. Computers are, presumably, cheaper and there is no mention of the cost of 'human cell cultures in a dish' touted by Docs 1 and 3. If companies could avoid paying $3–4000 a time to dog breeders, then they would. Commercial companies are not going to waste money using animals if a better, possibly cheaper, alternative exists. The net level of suffering is reduced by using animals for research. Claims about animal suffering are exaggerated – the 'dropping something in a rabbit's eye' example is mentioned in 2 documents, but this is likely to be extreme. It is difficult to pin down numbers from the documents, some are UK or EU specific (Docs 2 and 4), Doc 1 seems to be referring to the US, the Doc 5 numbers are of unknown origin. However, it seems likely that the numbers are much less than those used in the food industry and, according to Doc 2, are less than the number of animals killed by household cats. Human suffering will be reduced by using animals for research and there are more humans that would benefit from medicines developed than animals that would be used. The public opinion polls in the Doc 3 and Doc 5 could be dismissed on the basis of the credibility of the documents themselves but they can also be dismissed on the basis that we do know little about the survey, the question or the representativeness of the sample – PETA might be in touch with a more 'anti-animal-testing' demographic.	

Question	Answer	Marks
4	The author of Doc 1 might have a point when questioning the need for any new cosmetics but, if we want to develop new treatments for disease, we will need to continue to use animals. Therefore, we should use animals for experimentation.	

Level	**Structure*** • Conclusion (MC) • Intermediate conclusions (ICs) • Strands of reasoning • Examples or evidence • Original analogy • Hypothetical reasoning		**Use of documents** • Reference to documents • Evaluation of documents • Comparison of documents (corroboration or contradiction) • Inference from documents		**Quality of argument** • 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: • Precise conclusion • Multiple valid clear ICs that support the MC • Multiple clear strands of reasoning • Some effective use of other argument elements to support reasoning	7–9	Excellent use of documents: • 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	7–9	Excellent quality of argument: • 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	7–9
2	Good use of structural elements: • Clear conclusion • More than one valid IC • Some strands of reasoning • Some use of other argument elements	4–6	Good use of documents: • 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	4–6	Good quality of argument: • 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	4–6
1	Some use of structural elements: *There may be:* • Conclusion • Implied ICs • Some strands of reasoning • Some use of other argument elements	1–3	Some use of documents: *There may be:* • Reference, perhaps implicit, to a document • Some evaluation of a document • Some comparison of or inference from documents	1–3	Some quality of argument: *There may be:* • Some support for the conclusion • Some order to the reasoning • Some relevant material • Some counter-position(s) considered with some response	1–3
0	No creditable response	0	No creditable response	0	No creditable response	0

*Cap mark for Structure at 6 if no conclusion given