

Critical Thinking

Advanced GCE **A2 H450**

Advanced Subsidiary GCE **AS H050**

Combined Mark Schemes And Report on the Units

January 2006

H050/H450/MS/R/06J

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Advanced Subsidiary GCE Critical Thinking (H050)

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**Mark Scheme F491
January 2006**

SECTION A

- 1 Credit 1 mark for a correctly identified point in (a), (b) and (c).
Forward slashes indicate alternatives.
Examples of correct answers:

In the context of space exploration

- **There are motives/vested interest to misrepresent the truth**
By the government
to interpret events favourably/suppress the truth/falsify the events – for political gain/to boost national morale.
By the space agency
to interpret favourably/suppress the truth/falsify events – to attract funding for their programmes
By the media/authors
to distort the significance of the event to attract readership
to selectively report/interpret events to support particular readership beliefs.
- **There are difficulties in perceiving the truth of the events.**
The tension/pace of the events may distort perception/interpretation.
Lack of technical understanding by the media/authors may lead to superficial judgements.
- **There are difficulties in judging the truth of the reports.**
Limited possibility of corroboration of information in a remote situation
Difficulty of resolving conflicting claims/interpretations

Candidates may be credited for more than one point in each section provided this is not simply different exemplification.

[AO3 3] 3 X 1 mark [3]

- 2 Credit 1 mark for a weakness clearly identified, for example:

Claim: The Apollo 1 astronauts walked on the moon.

The footprint	
Significance	The close up of a footprint gives no indication of the context of either the person making the print or where it was made.
Reasonableness	It would be difficult to know what a footprint on the moon would look like because of the lack of experience of this.
The rocks	
Significance	It may be difficult to assess the authenticity of the rocks. If these were not lunar rocks, they would not provide evidence for a walk on the moon.
Relevance	Even if it was established that these were lunar rocks, they do not provide evidence for a lunar walk. The rocks could have been collected mechanically by a computerised lunar probe (as in the Russian missions).

[AO2 4] 4 X 1 mark [4]

3 Credit

1 mark	for each relevant point of credibility
a second mark	if this is used to correctly to assess the document
an additional mark	If it is correctly supported from the text – <i>italicised below</i> .
	The same reference can be used for both assessments.

History Channel	Ability to Observe	This is secondary information depending on the credibility of the NASA televised report of Armstrong's word ' <i>That's one small step ... mankind,</i> '
	Vested Interest	to represent the events correctly to maintain its credibility as an archivist and its claim ' <i>the best search in history</i> './ However:
	Bias	if it has presented a one sided view of events of the moon walk as an accepted fact. <i>Absence of another viewpoint in the text.</i>
	Reputation	' <i>the best search in history</i> ' is self acclaimed and without any context.
	Expertise	The website address: ' <i>.com/speeches/archive/speech</i> ' may suggest that the History Channel may have expertise in its access to archive material.
American Patriotic Friends Network	Ability to observe	(JS)'s related comments are from a ' <i>private party</i> ' which gives restricted opportunity for corroboration from anyone present However (RR) and (DP) comment directly on NASA photographs and video footage which are public information, (RR) reported as ' <i>scouring every NASA film, photo and report</i> '.
	Vested interest	Possible VI to misrepresent the facts to encourage support from APFN readers – their stated aims are that they are ' <i>anti corrupt government</i> '
	Biased	The two main sources (RR) and (DP) question the authenticity of the evidence, to persuade the reader that the evidence is ' <i>fake</i> ' and (JS) raises the question. There is no attempt to represent both sides of the dispute.
	Expertise	Technical expertise is limited. (RR) is a ' <i>self-taught engineer</i> ', however (DP) is claimed to be an ' <i>award winning photographer</i> ', and (JS) as a ' <i>public affairs officer</i> ' may have the detailed knowledge to demonstrate correlation between a film set and the lunar landscape.

Science@ NASA	Ability to observe	Accessibility of primary evidence claimed, (DM) <i>'There are plenty of museums ..., where members of the public can touch and examine rocks from the Moon'</i>
	Vested interest	Possible VI to misrepresent the facts to support its aim, <i>'to help the public understand how exciting NASA research is and ...'</i>
	Reputation	VI to tell the truth to maintain the credibility of the NASA sponsored website, <i>'NASA's Marshall Space flight Center sponsors the Science@NASA web sites'</i> .
	Biased	No attempt to represent both sides of the dispute. (TP) gives a rebuttal of criticisms. (M) dismisses criticism with, <i>'Not a single paper challenges their origin'</i> , which may be biased if challenges do exist.
	Expertise	Some level of expertise, (DM) is <i>'Chief Scientist for Planetary Science and Exploration at NASA's Johnson Space Center'</i> . However (TP)'s expertise is unstated and questionable, if his claim <i>'This could only happen to rock from a planet with little or no atmosphere, like the Moon.'</i> is referring to the moon as a planet.

2 x 3 marks as above for each of the 3 documents [AO2 18] [18]

Total Marks for Section A AO2 [22] AO3 [3] [25]

SECTION B

4 Credit as follows:

(a) (J)'s demonstration:

The film set may have had a valid use for example by NASA/a TV network to advertise/introduce a documentary. (Accept alternative explanations.)

'almost to the point of deception' might imply that deception was not quite possible.

(b) Photographic oddity inference:

NASA's claim that Armstrong was the first man on the moon must be false.

Alternative explanation:

A camera attached to the outside of the lunar lander may have been programmed to record the event.

This may have been a reconstruction i.e. not the first step.

[AO1 1 AO2 2] 3 x 1 mark [3]

5 (a) **Credit 2 marks for a developed point as in the examples below or credit 1 mark for up to two correctly identified points.**

The tent post:

The comparison is relevant and feasible, as the same twisting action could be used to penetrate many surfaces, which might account for the rippling of the flag.

However this action may not have been suitable for penetrating dust or rock on the lunar surface, in which case it would not be adequate to account for the rippling of the flag.

Scientist may have designed a more ergonomic flag pole to penetrate the surface more efficiently, without the need for this action, again undermining the explanation of the rippling flag.

(b) Credit 2 marks for a developed point as in the examples below or credit 1 mark for up to two correctly identified points.

Christopher Columbus and the natives:

The analogy is relevant in that both the natives and the moon rocks looked unfamiliar and therefore could be taken as evidence of coming from elsewhere.

However, the evidence of the natives is stronger, as the lunar rocks may have an alternative explanation in that they may have been gathered mechanically. Their presence does not testify to the astronauts having walked on the moon.

Also the natives might be able to corroborate Columbus' discovery, whereas the rocks are inanimate.

On the other hand experts could test the rocks to demonstrate their origin, whereas DNA testing was not available at the time of Columbus to demonstrate the precise origin of the natives.

[AO2 4] 4 x 1 mark [4]

6 Credit

1 mark	for a relevant claim – <i>italicised below</i> . This may be paraphrased but should be accurate. The same claim can be used for both points of assessment.
Plus 1 mark	for correctly identifying whether this is strengthened or weakened by a relevant criterion.
Plus up to two marks	for stating what is supposed to be true to make this assessment.

Ralph Rene (RR)	Ability to Observe	s	If the APFN claim is correct that (RR) had been, 'scouring every NASA film, photo and report' then their claim, ' <i>Rene believes they're fake</i> ', would be based on a wide range of primary source material.
	Vested interest Bias	w w	If (RR) was motivated by financial gain from the sales of his book, he might have a VI to interpret the evidence selectively to reach his reported claim, ' <i>America had never put a man on the Moon. The giant leap for mankind was fake.</i> '
	Expertise	w	As a 'self taught engineer' (RR) might not have the technical expertise to appreciate why things happened as they did, hence his challenge, " <i>How can the flag be fluttering?</i> "
	Reputation	w	If the claims are lacking expertise, there is reduced liability and loss of reputation by publishing his book himself and distributing it by mail order. He does not have the credibility/reputation of a publisher to maintain when making the reported claims, ' <i>The cameras had no [light] meters or view [finders], so the astronauts achieved this feat without being able to see what they were doing.</i> '

Dr David McKay (DM)	Ability to observe	s	If his role, as 'a member of the group that oversees the Lunar Sample Laboratory Facility as JSC where most of the Moon rocks are stored', involved close observation of the rocks, this would strengthen his claim that <i>'Moon rocks are absolutely unique'</i> .
	Vested interest	w	Even if the evidence was not conclusive, he might have a vested interest to draw the conclusion, <i>"The body of physical evidence that humans did walk on the Moon is simply overwhelming."</i> in order to keep his position as NASA employee/support the Administration.
	Reputation	s	However, if the conclusion the <i>'The body of physical evidence that humans did walk on the Moon is simply overwhelming.'</i> could not be supported, he would also have a vested interest not to claim this to avoid the risk of diminishing his reputation amongst researchers.
	Expertise	s	If his role as the <i>'Chief Scientist for Planetary Science and Exploration at NASA's Johnson Space Center (JSC)'</i> , was directly related to the rocks, he would have hands on expertise in the field of judging their origin, to make the comment, <i>"Moon rocks are absolutely unique"</i>
	Bias	w	If his collection of books and papers is selective in that it supports his own beliefs, his claim <i>"Not a single paper challenges their origin!"</i> may reflect this bias.

s – strengthens w - weakens credibility

[AO2 16] 4 x 4 marks [16]

7

Credit 2 marks for one criterion applied to both participants eg Dr David MacKay has greater technical expertise to assess the evidence first hand in a more informed manner than Ralph Rene who is self taught.

Credit one mark for each correct supporting reason, up to two marks, eg Dr David MacKay has a greater reputation to risk (as a chief scientist) by making false claims.

[AO2 2] 2 x 1 mark [2]

Total marks for Section B AO1 [1], AO2 [24]

25 marks

SECTION C

8 Credit the following points as they occur.

Corroboration

Credit 1 mark for a correct but unsupported point.

Credit 2 marks for a correct point that is accurately supported by one quote.

Credit 3 marks for a correct point that is accurately supported by two quotes.

e.g. The photographs were faked (1 mark)

'Rene believes they're fake' APFN (second mark)

'David Persey is convinced the pictures are fake' APFN (third mark)

Where 2 relevant quotes are given without an explicitly made point of corroboration, credit 2 marks.

Other points that could be supported:

Both (H) and (M) claim that men walked on the moon.

Both the NASA Press Office and (T) defend the photographs.

Both (M) and scientific books defend the authenticity of the lunar rocks.

2 x 3 marks or 3 x 2 marks

Conflict

Credit 1 mark for a correct but unsupported point.

Credit 2 marks for a correct point that is accurately supported by one quote.

Credit 3 marks for a correct point that is accurately supported by two quotes.

e.g. There is conflict as to whether the astronauts walked on the moon (1 mark)

(M) claims, 'The body of physical evidence that humans did walk on the Moon is simply overwhelming.' (second mark)

APFN reports (R)'s claim 'America had never put a man on the Moon. The giant leap for mankind was fake. (third mark)

Where two relevant quotes are given without an explicit point of conflict, credit 2 marks.

Other points that could be supported:

Conflicting reports over: the authenticity of the photographs (R)/(P) v NASA press office

the authenticity of the lunar rocks (M) v (R)

2 x 3 or 3 x 2 marks

Balance of evidence

Credit as follows:

A limited assessment

1 mark

A thorough assessment

2 mark

plus 1 mark for relating the sources to the sides of the dispute

plus 1 mark for discussion of problem sources

Apollo 11 astronauts walked on the moon and collected rocks		the moon walk was not authentic
Neil Armstrong The History Channel The NASA Press Office Dr Tony Phillips A 'stack of scientific books' (rocks only) Science@NASA	v	Ralph Rene David Persey (by inference) Dr David McKay APFN

Julian Scheer raises the question.

The photographs are
intended to support both sides (footprint and rocks for, first step against)

4 marks**Weight of evidence**

Numerically, the weight of evidence lies with **claims that the moon walk and lunar rocks** are authentic

1 mark

with up to seven sources supporting this, three opposing and two raising the question

1 mark

2 marks**Quality of evidence**

Award 1 mark for each correct assessment, up to 3 marks for each side e.g.

Greater access to technical expertise to be able to interpret the findings correctly e.g. (DM) as a chief scientist and scientific texts 1 mark	v	layman's criticism of evidence, lacking in appreciation of how apparatus and tasks might have worked 1 mark
--	---	---

2 x 3 marks**Judgement**

Award the judgement mark only if it links with the evidence given.

More likelihood of the claims that the moon walk and the lunar rocks are authentic.

1 mark

(Credit the judgement mark if the opposite is successfully argued.)

SECTION C TOTAL: [25]**A03 [25]**

Quality of Written Communication

Credit as follows across all answers
5 marks

Level	Errors in spelling punctuation and grammar	Use of specialist vocabulary	Expression	Marks
1	Errors are intrusive	Little use of specialist vocabulary	Order and expression impede understanding	(1-2)
2	Errors are occasional	Occasional use of specialist vocabulary	Points exhibit some order	(3)
3	Errors are few, if any	Specialist vocabulary used where appropriate	Well ordered and fluent	(4-5)

PAPER TOTAL**AO1 [1], AO2 [46], AO3 [33]****[80]**

**Mark Scheme F492
January 2006**

Section A – Multiple choice

1	D	AO1 [1]
2	D	AO1 [1]
3	B	AO1 [1]
4	C	AO1 [1]
5	B	AO1 [1]
6	A	AO1 [1]
7	B	AO1 [1]
8	A	AO1 [1]
9	C	AO1 [1]
10	B	AO1 [1]
11	D	AO1 [1]
12	A	AO1 [1]
13	C	AO1 [1]
14	B	AO1 [1]
15	A	AO1 [1]
16	D	AO1 [1]
17	D	AO1 [1]
18	D	AO1 [1]
19	A	AO1 [1]
20	B	AO1 [1]

1 mark for each correct answer. Total mark to be doubled.

Total marks for questions 1 – 20 AO1 [40]

Section B

Where the mark scheme offers two marks for each accurately made relevant point. A comment that has the correct meaning, but lacks precision and/or detail would attract 1 mark. Example comments for 1 mark have been given but are for illustration only.

21 (There are now many reasons why) Degree level qualifications are of very little value and are not worth having. **AO1 [1]**

22 For each precisely identified reason or equivalent paraphrase **2 marks**
Where individual reasons have been correctly identified but the expression is less specific or includes a minor reference to support evidence **1 mark**

The reasons given to support the conclusion are:

- Graduate salaries no longer match the crippling costs of getting a degree
- Degrees do not lead to better employment prospects
- Degrees do not reflect the needs of the economy
- The lowering of entrance standards has devalued degrees
- Vocational degrees have been given the 'thumbs down' by some employers
- Breaking the link with higher level research will erode the academic rigour of our degree courses

AO1 [10]

Example of answers that would attract 1 mark would be:

- Graduate salaries of £17,000 do not match debts of up to £15,000
- Graduate salaries do not lead to better employment prospects because only one third of graduates expect to get a job
- More students are going to university, resulting in lower standards that has devalued degrees
- Employers don't want vocational degrees because the graduates are not good enough at their jobs

23 The counter argument is:
Reason: Vocational graduates are currently less likely to be unemployed than graduates from academic degrees **(2)**
Conclusion: Therefore, the planned increase in vocational degrees will lead to higher status for degrees **(2)** **AO1 [4]**

1 mark would be achieved by comments that hold some of the meaning, but lack the precision, e.g.

- Reason: Vocational graduates are more likely to get a job
- Conclusion: Increases in vocational degrees will make the situation better

24

- An average salary would suggest that at least a significant minority are earning more than this, so meeting the costs of university debts.
- Debts of 'up to' £15,000 suggests that this would be the maximum debt incurred. The majority of students will therefore have smaller debts that may be met by the average salary.
- The author refers to 'starting salaries'. It may be that although graduate salaries are initially lower, the increases over the years may be significant justifying the debts incurred.
- There is no suggestion that all or any of these debts have to be paid immediately. So that graduate salaries may meet the debt over a period of years.

Any precise, relevant point **(2)**
(2x2 marks)

AO2 [4]

1 mark answers would lack the precision and accuracy of the above. For example:

- Some students might be earning more than £17,000/£17,900.
- Not every student runs up such a big debt.
- The graduates may get more money over the years.
- By giving averages the author is generalising.

25

- (a)** The candidates could refer to the very large sample used in the survey which increases the chance of the results representing the views/outcomes for all students. **(1)**

The fact that the survey shows only a third expecting to get a job is also strong since this is a very clear minority of students, showing that degrees are not successful in attracting jobs. **(1)**

The fact that 26% is an all time high shows that the numbers not expecting to get a job has got worse **(1)**

AO2 [1+1]

25

- (b)** The figures show that only a third expected to get or look for job. We do not know what has happened to those, therefore, in the majority two thirds who have decided not to look for a job as soon as they left university. It could be that these graduates decided to put off employment whilst they travelled, gained work experience etc. Thus, the figures may give a distorted view of graduate employment/unemployment. **(2)**

16,000 may only be a very small percentage of the total number of students at degree level.

The expectations of degree level students may be very different to what actually happens (when they leave/apply for jobs). / Their expectations may be a very unreliable guide to what happens in the future.

A correct but less well developed point **(1)** For example:

We are not given enough information about the other two thirds.

AO2 [2]

26

Identify: This is a slippery slope/too big a jump. **(1)**

Explain: The author cannot argue that 11% of graduates working in wide areas of sales and customer support to the very specific example of all supermarket checkouts operated by graduates.

AO2 [2]

- 27 (a) The author seems to think that the reason for the increase in postgraduates is because they **know/think** that they will not get a job/are not likely to get a job / get a better job / get a higher paid job / when they leave University as a graduate. **(1)**
Having a postgraduate degree would give them an advantage over the competition (students with first degrees only)/make them stand out more. **(1)**
AO1 [1] AO2 [1]
- 27 (b) Candidates could argue that :
Funding for students on postgraduate courses has increased.
The increase reflects a genuine academic interest
Some careers, like teaching, need postgraduate qualifications.
Postgraduate salaries could be significantly higher
Increases in university funding for postgraduate courses
Easier to get on to postgraduate course
Students can more easily afford the costs of postgraduate courses
Postgraduate courses lead to even better opportunities
There are more postgraduate courses on offer
(2x1 marks) AO2 [1+1]
- 28 Identify: Over generalisation/hasty generalisation/arguing from issue to a different, separate issue. **(1)**
Explain: Evidence that there is a skills shortage in one area cannot be used as evidence that degrees are not successfully meeting demands in other areas. Candidates might like to refer to specific industries – perhaps silicon valley in Cambridge or businesses managed by graduates etc. **(2)**
Basic comment that the two issues are separate **(1)** AO1 [1] AO2 [2]
- 29 The author must assume that the **entrance** qualifications for management degrees are lower than for Physics and/or Chemistry. **(2)**
An answer that refers to lower grades only would be awarded **(1 mark) E.g**
Management courses have lower entry requirements than other courses (ie no mention of traditional courses or physics/chemistry).
Management courses are easier to get on. AO2 [2]
- 30 The author cannot generalise from a very limited range of vocational degree courses, based entirely on alternative therapies, to all vocational degree courses. The fact that the author only says ‘some’ employers have given them the thumbs down suggests that other employers have welcomed them. It may be that the employers who have not welcomed them are the employers who would normally recruit from established academic degree courses. On the basis of these two points the author has only limited success in establishing their point.
A correct but less well developed point **(1)** Examples would be:
 - The author over generalises
 - Other employers might like vocational degrees.
AO3 [2]
- 31 The dismissal is based on a presumption of a vested interest on the part of the Principals/it is an attack on the person or ad hominem and does not consider the reason why the Principals would favour the new policy, or give any reason why their view is incorrect. **(2)**
Simply stating ad hominem or similar without extension **(1)** AO2 [2]

- 32** The author's suggestion that degrees do not lead to better employment prospects is, in part, contradicted by the graduates of Newcastle University, 96% of whom find a job within 6 months of graduation.
The author's suggestion that degrees are not worth having is contradicted by the rise in the number of students taking degrees – from 1 in 8 to 1 in 3. (It is not contradicted by the 1 in 3 – it is the rise that is relevant.) AO1 [1]
- 33** If we want our young people to go on to have marketable skills, (then) we must ensure that we give them all the information they need about future employment prospects. (2)
An incomplete version (1) AO1 [2]
- The author cannot generalise from past experience to the future. The recent closures may have been enough and there is now a match between places available and the number who want to study chemistry.
 - It is not possible to judge the significance of these closures as we do not know the total number of chemistry departments.
 - Other departments may have opened or expanded over the same time period so that the closures may not have affected the total number of students taking chemistry.
- (2)
A less well developed point that distinguishes past and future eg
We do not know the significance of the figures/closures.
May not have affected the total number of students.
(1 mark) AO2 [2]
- 35** To make chemistry (science) a more attractive subject, we should either:
- Make sure that TV schedules contain successful programmes that include chemists (scientists) in leading roles/make programmes that show chemists (scientists) in an exciting light. (2)
 - Counter the 'disasters' by giving evidence of chemistry (scientific) successes like discovery of drugs/fertilizer etc. (2)
 - Counter the disasters by explaining that disasters were not, in fact, a result of chemists (scientists) /would have been worse without chemists (scientists).
- Correct, but less well developed point (1) Examples would be:
Make programmes about chemistry (science).
Show that GM crops are a good thing.
Decrease the number of forensic science programmes shown on television. AO3 [2]
- 36** The low chance of sales of chemistry sets leading to more chemistry graduates is compared to the lack of Hell's Angels resulting from the sale of Harley Davidson Biker Dolls. (2)
An answer that just involves the chemistry sets and the Barbie dolls would be awarded 1 mark AO [2]

37 Possible strength

- The analogy works in that both toys represent the target adult behaviour at a much lower scale and they are probably aimed at much the same age group.

Possible weaknesses

- The two cannot be compared as the desirability of the outcome is very different; although chemistry degrees may not be popular, they are high status. Very few parents or youngsters are likely to consider the Hell's Angels as a career choice.
- There is a difference in the two toys in that chemistry sets do perform real experiments, however simple, whereas a Barbie doll cannot in any way be like a real biker.
- There is a gender problem: the majority of Barbie dolls would be given to girls whilst chemistry sets may appeal to a better balance of gender.
- The increase in chemistry set sales is mentioned. We are only told about high sales of Barbie dolls, not an increase. It may be the increase that is significant rather than the total sales.
- Chemistry sets may be for slightly older children who have more idea of what they want to do whereas Barbie dolls are likely to be for very young children with little idea ie the opposite of the strength in some ways.
- The chemistry set must be used for chemistry whereas the Harley Davidson Barbie may be popular just for the Barbie and not the bike.
- The increase in sales of chemistry sets may be driven by parental aspirations, whereas sales of Barbie dolls might be driven by children's desires affecting the outcome in terms of career.

Any precise, relevant points **(2)**

Adequate, but imprecise points **(1)** Examples would be:

Children do play with both toys

Becoming a biker may not be a good thing, getting a degree is.

AO2 **[2+2]**

SECTION C

- 38** (a) The university would have to choose between vocational degrees and traditional academic degrees, (both of which would serve the needs of students, but in different ways) **(1)** AO3 **[1]**
- (b) Vocational degrees may have the advantage of offering students better employments prospects. **(1)**
Academic degrees would be seen as higher status and more rigorous – and therefore more worthwhile. **(1)** AO3 **[1+1]**
- 39 For 2 marks:**
- The author uses a general principle that academic qualifications are only worth having if they are financially good sense/profitable or if they improve employment prospects.
 - The author uses a general principle that graduates should not be working in non-degree level jobs (like sales/checkouts).
 - Worth/value is measured financially.
 - The purpose of education is economic (rather than personal pleasure or fulfilment).
 - The value of a degree (something) is lowered / is always lowered by more people having it/them.
 - Only colleges with high level research should be offering degree courses.
 - Universities should only take the most able.
 - Universities should only offer courses that lead to employment.
 - Universities should only offer courses that are academically rigorous.
 - Any of these answers in the negative eg universities should not offer courses that are not academically rigorous / universities should not lower entrance standards.
- Any precise relevant point **(2)**
Adequate, but imprecise points **(1)** Examples would be:
Getting a job makes a degree worthwhile
Graduates shouldn't be working on checkouts
Degrees should be harder
Further education colleges should not offer degrees AO2 **[2+2]**

Performance descriptions for questions 40 and 41**Performance descriptions for 7-9 marks:**

Candidates present their own relevant further argument with a clear structure that includes at least two reasons supporting an intermediate conclusion. The argument is persuasive and relies only on one or two reasonable assumptions. The argument will also contain a further reason or reasons/examples/evidence/counter-examples that support the argument. The final conclusion is precisely stated.

Performance descriptions for 4-6 marks:

Candidates present an argument that contains several reasons and there is an attempt to form an intermediate conclusion. The argument may be persuasive and relies more heavily on assumptions so that the link between reasons and conclusion is less clear. The argument may contain an example/evidence that has less relevance to the overall argument. The main conclusion is clearly stated.

Performance descriptions for 1-3 marks:

Candidates present an argument that contains one or more reasons of limited relevance to the main conclusion. There is no intermediate conclusion and use of examples is limited. The argument is unlikely to be persuasive without including several assumptions and the use of examples is very limited. Conclusions are imprecise and unclear.

40 An argument to counter the belief that the greater number of students studying at degree level has been achieved by lowering standards.

R1 There have been great improvements in the grades achieved by students at A level over the past 10 years

R2 (and) There are also now far more students studying at A level/post 16 than 10 years ago

EV demonstrated by expanding sixth forms/Government statistics on results etc.

IC Therefore, the pool of potential, able applicants for degree level study, has increased.

R3 Many/a high proportion of these students will continue to want to go to University having completed A levels successfully

C Therefore, the increase in numbers studying at degree level is a reflection of the increase in quantity of suitably qualified candidates AO3 [9]

41 An argument to challenge the conclusion of the passage 'Degrees of value?'

R1 Degree courses enable students to engage in cultural and social activities through which they acquire vital skills such as tolerance and citizenship.

R2 These skills are highly valued/useful to society.

EV Government's commitment to teaching citizenship etc

IC Therefore, the value of a degree is not limited to the purely academic learning and qualification

R3 These skills are also valued by employers.

EV There is an ever increasing demand for networking/team work in modern businesses

C Degrees will continue to be highly valued/students should be encouraged to take them

An argument to support the conclusion of the passage 'Degrees of value?'

- CA Many would argue that degree courses may offer students a wide range of cultural, social and sporting experiences
- R1 (However) These experience could be gained just as well outside of University
- EV There are many sports clubs and interest groups in most towns and cities
- R2 It would be better financial sense to gain these experiences whilst living at home/working
- IC Therefore, the high costs of going to University cannot be justified by the extra curricular benefits
- R3 No student will want to be burdened by debt
- IC Therefore degrees are not worth having

AO3 [9]

Quality of Written Communication

Credit quality of written communication as follows across Section B and C answers.

	Errors in punctuation and grammar	Use of specialist vocabulary	Expression	Marks
Level 1	Errors are intrusive	Little use of specialist vocabulary	Points tersely expressed	1 – 2
Level 2	Errors are occasional	Occasional use of specialist vocabulary	Points exhibit some order	3
Level 3	Errors are few, if any	Specialist vocabulary used where appropriate	Well ordered and fluent	4 - 5

Section A Total Marks [40]

Section B Total Marks [50]

Section C Total Marks [25]

Quality of written communication [5]

Total [120]

Assessment objectives breakdown

Question	AO1	AO2	AO3	Total
Section A				
1 - 20	26	14		40
Section B				
21	1			1
22	10			10
23	4			4
24		4		4
25a		2		2
25b		2		2
26	1	1		2
27a		1		1
27b		2		2
28	1	2		3
29		2		2
30			2	2
31		2		2
32	1			1
33	2			2
34		2		2
35			2	2
36		2		2
37		4		4
Total for section B				50
Section C				
38a and 38b			3	3
39			4	4
40			9	9
41			9	9
Total for section C				
Quality of written communication			5	5
Total	60	26	34	120
%	50	22	28	100

Report on the Units January 2006

Chief Examiner's Report

There are many positive outcomes to report from the first sitting on the new AS Critical Thinking examinations. The overall level of candidate performance was good, particularly as Centres would have only had one term to prepare their candidates for the January examinations. The high levels of performance are reflected in a very pleasing pass rate and the percentage of A grades awarded. Candidates clearly have a good understanding of many of the technical terms that are used in Critical Thinking and were able to display their skills across all parts of the papers. The introduction of answer booklets has helped students to write more focussed answers and eliminated many of the over-long, irrelevant answers that were often submitted for the old specification.

It was always expected that centres would tackle Unit 1 (F491) first and this was reflected in the much higher entry for this unit. Not surprisingly, the overall performance on this unit was higher than for Unit 2 (F492), reflecting the fact that candidates had less time to prepare for the second unit. However, the performance on the multiple choice questions was very good but less so on Unit 2 Section B.

Feedback from Centres and comments on candidate scripts suggested that some candidates found it difficult to finish the tasks set within the time available and that in one or two areas more space for candidate answers was required. These concerns will be considered in the preparation of future question papers. Some candidates tried to write far more than was required, reducing the time available for remaining questions. This was most noticeable in Unit 1 and the 'further argument' questions (Questions 40 and 41) in Unit 2. Centres would be well advised to remind their students that the space available is a very clear guide to the length of answer needed to gain all the marks available.

It is recognised that a first session of a new specification may be daunting for teachers and candidates. However, Centres are advised to make good use of these two question papers and associated mark schemes in order to prepare their candidates for the June session.

F491 Critical Thinking Unit 1 Credibility of Evidence

General comments:

It was most pleasing that there were in excess of 6,000 candidates for the first session of Unit 1, and that the full mark range was accessed. A significant number of candidates gained full marks in one of the three sections, typically Section A.

Candidates engaged well with the topic producing thoughtful answers. There appeared to be no discernible difference in gender response. Spirited judgements were made both for and against the reality of man having walked on the moon, although the majority judged that it did occur.

The strongest candidates gave focused, succinct answers, gaining similar marks for each Section, whereas weaker candidates performed better in Sections A and C than in Section B. It was disappointing where candidates were not able to identify credibility criteria and perhaps telling that the comment, 'never heard of it' was written in one answer booklet next to 'credibility criterion' in Question 3 and Question 6. Others also questioned the meaning of 'corroboration' in Question 8.

Many candidates wrote succinct answers which targeted the marks available. Those candidates, who were guided by the number of lines in the answer booklet, made a good attempt at completing the paper. Where candidates presented extensive answers, writing between the lines and in the margin, they rarely completed the paper, typically finishing half way through Section C.

Whilst a minority took a fragmented approach, it was very encouraging that most candidates followed the paper through to reach their own conclusion, appearing to perceive a cohesive, coherent picture. This resulted in very strong answers in Section C. The new specification therefore seems to have afforded the opportunity for candidates to evidence a greater variety of skills and to present these in a reasoned on going judgement

Comments on individual questions

Section A

- 1 Encouragingly, many candidates gained full marks. The strongest responses made specific reference to space reports and made full use of credibility criteria. Weaker candidates restricted their marks through repetition, such as 'Countries would have a vested interest to exaggerate their exploits in space' followed by 'Governments might lie to outdo other national space events.' The weakest responses tended to refer to the claims of the documents provided, rather than to the general context of space exploration. Others made general assessments about reporting without referring to the context of space.
- 2 The majority of candidates gained at least two marks. Many identified both the lack of lunar context and the possibility of 'faking' this evidence. Stronger candidates went on to assess authentication. Some failed to be directed by the question and assessed the photograph in Document 2, whilst others attempted to assess the main text without any reference to the photographs.
- 3 The strongest candidates adeptly gained full marks, usually focusing upon vested interest/ neutrality and relevant expertise to drive their assessment. They gave a relevant but quick reference to the text in support of their assessment, such as the stated aim of the documents. Weaker candidates often quoted a claim that was irrelevant to their assessment. The weakest candidates failed to apply credibility

Report on the Units taken in January 2006

criteria, but rather cited a claim and attempted to challenge it. Some went on to reach an assessment almost by accident, by including an acceptable paraphrase of a credibility criterion embedded within the challenge. Others focused upon particular people within the document without any reference to the document itself, thus gaining no marks.

Section B

- 4(a)** Most candidates made a reasonable attempt at this question, the strongest finding a variety of other uses for the footage. A double bluff or simply entertainment value were also accepted. Weaker candidates pointed to the fact that Scheer did not actually say that it was a fake and gained no marks.
- (b)** The strongest candidates distinguished between an inference that the landing was faked and the photograph being a reconstruction. The weakest did not appear to understand the term 'inference' and simply paraphrased the criticism in the text. Almost all managed to suggest an alternative explanation, the majority being that a mechanical device had been used.
- 5(a)** Stronger candidates discussed the limited relevance of the comparison, identifying the difference in lunar soil and the lack of atmosphere, usually gaining two marks for a developed argument. Weaker candidates referred to the similar motion, gaining one mark. The weakest responses simply stated that it was a helpful comparison, both 'things' being similar without any explanation, thus gaining no marks.
- (b)** Responses that successfully identified the difference between the evidence of people and inanimate objects gained two marks. Weaker responses that identified the similarity of bringing back supporting evidence gained one mark. The weakest candidates appeared not to understand the term 'analogy' and focused upon the evidence, gaining no marks.
- 6** A significant number demonstrated proficient skills and pleasingly gained full marks. The strongest candidates correctly identified the assumptions related to their assessment criterion, whilst weaker answers identified assumptions related to additional criteria, for example: 'David McKay's claim that....is strengthened by his relevant expertise, if we assume that he had no vested interest to lie'. Most correctly identified the claims, although some gave an inaccurate paraphrase and a minority attributed to David McKay claims that had been made by Tony Phillips. The weakest candidates failed to use credibility criteria, but attempted to evaluate the reasoning of the claims and gained no marks. There was evidence in responses to this question that no candidates from some Centres were aware of credibility criteria; others wrongly perceived suppositional reasoning.
- 7** Whilst the majority gained two very accessible marks, a significant minority accessed only one mark because they used a different criterion for each source preventing a direct comparison. Others failed to draw a conclusion about which source was more credible. The weakest candidates assessed only one source.

Section C

- 8(a)** Many candidates adeptly gained four or more marks. Some did not state the point of agreement, but simply gave two quotations. Others did state the point of agreement, but supported it with only one reference to the text. The weakest stated the point of agreement, but did not support it with any textual reference. Some candidates sought to find corroboration between references in Documents 2 and 3, even though Document 2 was refuting this evidence. Such answers claimed that there was corroboration that the flag waved or that astronauts took photographs. A minority of candidates simply made a list of three things that would support the moon event.
- 8(b)** This question was more successfully answered than (a) with many candidates gaining full marks. However a minority of candidates simply gave a list of three things against the moon event.
- 8(c)** At this point, it appeared that those who had engaged with the documents had a clear understanding of the dispute and were able to answer the remaining questions extremely well. Many made a diagram which identified each side of the dispute and placed the supporting sources under these, together with an explanation about why Scheer's evidence supported neither side. Weaker candidates appeared to miss the reference to 'individual sources' in this question and simply identified the documents, whilst a few failed to identify the stance of each side.
- 8(d)** This question was well answered, apart from the weakest candidates who referred to the documents rather than individual sources. A minority calculated the ratio, but neglected to explain the greater weight of evidence.
- 8(e)** Many answers were curtailed, indicating that candidates had run out of time at this point. However some accessed the six marks very quickly by making a table of both sides of the dispute, taking three credibility criteria and comparing the quality of evidence on both sides in relation to these. Weaker candidates talked about the documents rather than individual sources, usually confining their discussion to a single criterion.
- 9** Most candidates attempted Question 9 even if they had not completed Question 8(e), the majority concluding that the moon event was a reality. The weakest asked the question 'Who are we to believe?' or claimed that the evidence was equally balanced so they could not make a judgement and therefore gained no mark.

Quality of Written Communication

It was very pleasing that a large number gained 4 or 5 marks for well ordered reasoning, using specialist vocabulary to direct their assessments. A significant number disappointingly made no or little use of this, despite writing fluent answers and so could not access more than two marks. It was very rare that expression impeded understanding and errors in spelling were few, apart from 'astronaut', which was not infrequently represented as 'astronaught'.

F492 01 and 02 Assessing and Developing Argument

General Comments

This was the first sitting of the new F492 and it was pleasing to see a good general level of performance from candidates, particularly on the multiple choice questions. The majority of candidates were able to finish the paper and there was no pattern of particular questions being consistently missed out or left unfinished. However, there were indications that candidates did not have a great deal of time.

Candidates' answers were often well-phrased and accurate; the number of lines available helped candidates know how much to write for each question. There were few irrelevant or unfocussed answers. Some of the new types of question set worked particularly well and elicited a wide range of answers from candidates. This was particularly true of the further argument questions which proved to differentiate well. The number of top band answers was heartening.

There were questions that were answered less well in general, particularly those on analogies, general principles and flaws. The relatively low performance on these questions resulted in a somewhat low overall mark range for Section B of the question paper. However, it may well have been early in the teaching course and these are likely to be topics taught later on in the course. Clearly, Centres may wish to pay particular attention to these areas. It was a little disappointing to see candidates misunderstand the meaning of the word flaw. Many answers to these questions offered alternative explanations, rather than depicting the problem with the reasoning presented in the passage.

Comments on individual questions

Section A Multiple Choice

The general performance on the multiple choice section was very good and candidates coped well with a wide range of material and tasks. Wrong answers were spread across all distracters. In almost all questions, the right answer was picked far more often than the wrong ones. The later questions tended to be the ones that were answered incorrectly.

Section B

21

The vast majority of candidates were able to accurately recognise the conclusion.

22

This question was well answered. Some candidates included extraneous information or evidence and so were only awarded 1 mark. There seemed to be a good understanding that this type of question requires accurate selection of the appropriate text without manipulation or paraphrasing.

23

Many candidates found this question challenging and some of those who had identified the counter argument transposed the reason and conclusion. Counter arguments are not always followed by 'however' but this could be included in a list of indicator words to help candidates with this concept.

24

Some candidates did not focus enough on the evidence and gave general comments or alternative explanations (such as 'parents might help pay off the debt') as their answers. Those who did pick up on the 'average salary' or 'debts up to' did not always show how this

might mean that graduate salaries would pay back the debt and thus only achieved 1 mark rather than 2.

25(a)

Candidates tended to repeat the evidence in the passage, rather than making an assessment of the evidence. However, there were many good answers pointing out such a large sample would be more likely to be representative of all candidates.

25(b)

This was a challenging question with very few candidates picking up on the lack of information about the other two-thirds of graduates. A number of candidates were able to latch on to the possibility that 16,000 was not a large enough sample, given the 100,000s who attend university, to be representative.

26 and 28

In both cases, the majority of candidates offered alternative explanations (such as graduates would not want jobs on the checkouts; perhaps degrees in construction are not popular) rather than showing the problem with the reasoning presented. More candidates spotted that 26 was an example of a 'slippery slope', but very few saw the generalisation involved in 28. Hopefully, candidates will become more familiar with the range of flaws listed in the specification, and will not be limited to seeing only the 'post hoc' or 'causation flaw', which was the most common incorrect flaw chosen in Q28.

27(a) and 27(b)

Both parts were well answered with many candidates understanding the role of the extra qualification.

29

It was pleasing to see many candidates correctly identifying the assumption accurately. Some candidates were only awarded 1 mark as they failed to make the comparison – entry qualifications are lower **than** for physics/chemistry/traditional subjects.

30

Many candidates appeared to have misunderstood the question and repeated the counter argument. Many described the fact that the author had generalised from a limited range of courses, achieving 1 mark, rather than the 2 marks, for saying that it was not possible to generalise/cannot generalise from a limited range of courses because the examples chosen were so specific.

31

A common mistake was to repeat the original text rather than making some assessment of the dismissal. A surprisingly few candidates spotted the 'ad hominem' flaw and the lack of reasoning put forward in the passage for the dismissal, although many saw that the dismissal was somehow unfair.

32

Candidates often did not see this question as referring to the whole passage having gone through several questions that were focussed on individual paragraphs. Candidates often gave answers that highlighted inconsistencies, rather than a direct contradiction.

33

It was perhaps not surprising that early in the course few candidates were able to answer this question correctly. Those that did, phrased it exactly as in the text and scored 2 marks. Some tried to turn other parts of text into the 'if... then' format of hypothetical reasoning rather than looking for 'if...then' in the text. Others suggested that anything that was uncertain or not yet known was hypothetical and thus missed the very precise way this term is used in critical thinking.

34

As with other questions, some candidates wanted to explain the closures rather than assessing the evidence. 'They could have closed due a lack of money' was a common answer. Better candidates saw the closures in terms of all chemistry departments. Very few candidates saw how the evidence did not support the idea that departments would continue to close in the future, based on only what had happened in the past.

35

Most candidates saw the problem but did not counter the 'popularity' of the forensic science programmes, saying only that chemistry based programmes should be made. Two mark answers contained a sense of exciting or popular or successful chemistry programmes or wonderful/amazing discoveries.

36

The majority of candidates saw the analogy but did not fully recognise the way that the 'low chance/unlikeness' of the two outcomes was at the heart of the analogy and thus only achieved 1 mark.

37

The key here was for candidates to focus on relevant differences and similarities. General answers such as 'they are both toys' did not gain credit. However, many candidates picked up on the desirability of the two outcomes being very different and clearly understood that to evaluate an analogy it is necessary to look for similarities and differences in the things being compared. It was also good to see that many candidates understood that a chemistry set was much more like chemistry that a doll was like being a biker and therefore that an increase in chemistry set sales might lead to there being more chemists.

Section C

38

There were lots of good responses, although there was a tendency to make general comments, rather than sticking with the issues presented in the text, such as worth/employment prospects, etc.

39

This was perhaps the most challenging question on the paper. Many candidates did not understand what a general principle is and gave answers that were statements of fact from the passage. Others gave general principles that were not needed for this particular argument. Good candidates often chose to explain how the value of something is diminished by greater numbers of it or the idea that degrees are only worth doing if they are high status/financially worthwhile.

40

Candidates submitted a very good range of excellent arguments, most centring around improvements in school standards. It was good to see so many well structured arguments that included evidence and examples in addition to clearly stated intermediate and main conclusions. A minority of candidates did not understand the term 'counter' and wrote arguments that supported the idea of the greater number of candidates having been achieved by lowered entry standards.

41

Candidates submitted a good range of answers but this question was perhaps not as well done as question 40. Candidates too often repeated what had been argued in the passage and accordingly failed to achieve marks. However, it was good to see some candidates taking evidence from the passage and challenging to produce a different conclusion.

**Advanced GCE Critical Thinking (H450/H050)
January 2006 Assessment Session**

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
F491	Raw	80	54	46	38	30	22	0
	UMS	120	96	84	72	60	48	0
F492	Raw	120	73	63	54	45	36	0
	UMS	180	144	126	108	90	72	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
H050	300	240	210	180	150	120	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
H050	12.2	29.7	46.0	61.9	80.2	100.0	519

519 candidates aggregated this session.

For a description of how UMS marks are calculated see;
www.ocr.org.uk/OCR/WebSite/docroot/understand/ums.jsp

Statistics are correct at the time of publication.

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