

**MARK SCHEME for the May/June 2009 question paper
for the guidance of teachers**

9694 THINKING SKILLS

9694/04

Paper 4 (Applied Reasoning), maximum raw mark 50

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

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2009 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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- 1 (a) If a cage with dimensions 10m, 11m and 15m was to be constructed, what is the *smallest total area of netting that would be needed?* [2]

Answer: 535 metres² needed (if L = 15)
 if length is 10 metres, 590 metres of netting is needed
 if length is 11 metres, 575 metres of netting is needed
 if length is 15 metres, 535 metres of netting is needed
 One mark for a correct calculation of surface area that is not optimal [590 or 575]

Also one mark available for candidates who state that the sides must be as small as possible (or that the width & height must be as small as possible), if they have not managed to get any of the actual areas correct.

- (b) Consider possible cages which are of the same height as the wall. What is the *maximum length that the cage can be? Justify your answer* [3]

Answer: 13 metres award 1 mark
 Justification: 13 metres gives 582 m² award 1 mark
 14 metres gives 606 m² award 1 mark

If none of the above information is given, award one mark for considering any case involving a height of 15 metres, a width of 9 metres and any length: any attempt to calculate the area of netting.

Full marks for an algebraic justification: equation + length = 13.75 metres seen

- (c) What is the *largest volume cage that can be built, with a height of 14 metres? Justify your answer.* [3]

Answer: 1890 metres³
 Three marks if EITHER the candidates gives this answer and consider the next solution up [14 × 16 × 9]
 OR
 Algebraic justification is given: $252 + 23x < 600$ [one mark if this is sighted (regardless of a correct answer or not)]
 $23x < 348$
 $X = 15.31\dots$

If any of these lines of an algebraic solution are sighted, give a mark for justification.

Two marks if the candidate offers 1890 metres³ as a solution without support.
 One mark if the candidate considers frameworks with dimensions 14 × 9 × ?

- (d) Show that it is possible to fulfil the desired animal welfare outcome of a minimum volume of 1900m³ [2]

Answer: any of the solutions offered in the table (in bold) with a volume of more than 1900 metres³.
 Two marks for a correct solution, in which the dimensions, area of netting and volume are demonstrated.
 If only the dimensions, or only the volume or only the netting area is given the candidate should be given 1 mark.

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- 2 (a) State the arrival times at the Castle bus stop of all the buses that will continue from Linkham to Ferrin on 24 July. (The bus makes the journey whether or not the Castle is open). [2]

Answer: 09:40, 10:45 and 18:45 – award 2 marks

Deduct 1 mark for each missing or extra time (minimum 0 marks).

If a candidate has selected the three correct buses, but consistently given the times for one of the other bus stops (e.g. 09:05, 10:10 and 18:10) award 1 mark.

Possible one mark combinations [any row of this table]

First	Second	Last
09.05	10.10	18.10
09.10	10.15	18.15
09.24	10.29	18.15
09.26	10.31	18.31
09.40	10.45	18.45
10.05	11.05	18.45
10.19	11.19	18.59
10.21	11.21	19.01
10.35	11.35	19.15
10.40	11.40	19.30

- (b) (i) On 20 July, at what time will the Castle open? [1]

Answer: Castle will open at 12:10 – award 1 mark

- (ii) On 20 July, at what time will the Castle close? [1]

Answer: Castle will close at 18:00 – award 1 mark

Skill: Extract relevant data.

- (c) The first date in July when the Castle will be closed all day is 6 July. On what date will the Castle next open? Show clearly how you reach your conclusion. [2]

Answer: July 9th – award 2 marks

If a candidate does not state the correct answer, but shows evidence of having calculated how long the castle is open on July 7th, 8th, 9th or 10th, then award 1 mark:

Working:

Date	Time which the castle could open (given causeway openings)
7 th	2 hours
8 th	2 hours 40 minutes
9 th	3 hours 15 minutes
10 th	3 hours 45 minutes

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- (d) Barry and Clare will be staying in Barwell from 2 July to 12 July. During their holiday they would like to take the bus to Ferrin. However, they will only do so if they will be able to spend at least five hours exploring the Island, including a visit to the Castle. On which date(s) would this be possible? Show all your working, and for each date that is possible state the earliest arrival time at, and the latest departure time from, the Castle bus stop. [4]

Answer: July 4th award 1 mark
Earliest arrival 12:45 and latest departure 18:45 award 1 mark
July 9th award 1 mark
Earliest arrival 09:40 and latest departure 18:45 award 1 mark

Deduct 1 mark for each extra date given in addition to July 4th and July 9th (minimum 0 marks).

If only one correct date is given do not deduct mark unless two or more extra dates are given.

Each of the marks for bus times can only be awarded if linked to a correct date.

If a candidate gives the answer 7th July or 8th July to question (c), then do not deduct marks for these dates appearing in question (d). Just ignore them

Skill: Analyse complex data and draw conclusions.

- 3 (a) Provide a brief analysis of the structure of Loh Kang's argument in Document 1: The Myth of Equality. [6]

Main conclusion: Nature will favour women in tomorrow's world.

Reasoning:

R – Women are better at listening and comprehending than men.

R – Men are competitive but women are co-operative.

R – The challenges of the 21st century requires a co-operative approach to resolve world conflicts.

IC1 – Women are more able to resolve disagreements in a constructive way.

R – Men may be physically stronger but women have greater stamina.

R – Women have a greater capacity for coping with pain.

IC2 – Women have qualities that mark them out as the superior sex.

R – Soon women will be able to conceive babies without men.

IC3 – Men are not needed for the continuance of the human race.

R – Women can multi-task, are more flexible and are good at sense-making.

IC4 – Women can do things better than men.

Therefore (from IC1–4), follows

IC5 – Women are intrinsically superior to men.

CA – Because women have had to devote so much energy to assert themselves and demand equal rights, they can't be naturally superior.

Marks:

Summary or general direction of argument [reasons w/o any ICs] – 1

Conclusion + gist or 1 IC – 2

Conclusion + 2 IC – 3

Conclusion + 3 IC – 4

Conclusion + 4 IC – 5

Conclusion + 5 IC – 6

[treat identification of the CA the same as identification of an IC]

Candidates who misidentify the MC (for instance, using IC5) should be capped at 4 marks [and the other available marks scaled down by 2/3]

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- (b) Give a critical evaluation of Loh Kang's reasoning, assessing any strengths and weaknesses and any implicit assumptions made. [6]

There are several weaknesses which may be discerned in the reasoning. Overall the conclusion is overly strong. It is too one-sided, with very little evidence cited to support the claims. Conclusions are drawn through many generalisations/fallacies/sweeping claims and none of the reasons support the main conclusion with respect to what nature will favour in tomorrow's world.

The conjecture/hypothetical reasoning in paragraph 1 is unrealistic/unsound. **Not all social systems that hold women back have been set up by men** – the fact that there are matriarchal systems in many cultures that bind women to occupy subordinate places in society has not been acknowledged. Unenlightened universal humanity has to take some blame.

None of the social systems of males Loh Kang refers to in the first paragraph are cited in the rest of the argument.

Loh Kang wholly ignores the fact that **many male-dominant government/social agencies have also been fostering womens' rights** e.g. positive discrimination (affirmative action) in work and education sectors, initiating reform of archaic institutions, introducing or enforcing legislation, empowering women's groups etc. Such interventions on women's behalf should give women opportunities to prove if they are intrinsically superior and allow for the conclusion, on evidence, that they indeed are so.

Examples of military force in the world do not rule out a male capacity to attempt to resolve conflict through cooperation.

Gender generalisations throughout the passage e.g. Men tend to set out to win an argument.

Setting out to win an argument and attempting to reach a rational conclusion based on healthy debate are not mutually exclusive.

The dynamics of power and status in the world are understood in narrow terms. **Being intrinsically better human beings does not constitute either a necessary or a sufficient condition to such people having dominance in the world.** The main conclusion that nature will favour women tomorrow is further weakened by the assumption that once social systems that facilitate gender inequalities have been exposed women's superiority will be recognised, whereas there may be other reasons why discrimination may continue e.g. religio-cultural notions, the concept of segregation, political exigencies etc. all of which may put restrictions on women which in actual fact compromise equal status with men.

Unstated assumption: **nature will favour intrinsic superiority.**

The assumption that **tomorrow's world will be significantly different.**

The author does not establish how the **positive qualities of women will be matched to the demands of tomorrow's world.**

The assumption that women do not resort to military force – untenable because history has shown many women leaders from recent past (Mrs Thatcher and Falklands episode, as well as other women world leaders Indira Gandhi, Golda Meir, Bandaranaike, etc.) have sought to resolve conflicts by the use of military force.

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Equivocation – physical strength and stamina – the two are not equivalent for comparison. Further **one example of childbirth does not validate a conclusion that men are not able to withstand pain equally or better than women** (candidates may produce several examples).

Unstated assumption: **stamina is superior/more important than physical strength.**

The comment about women's ability to conceive without men does not survive any scrutiny. Taken seriously it is utterly implausible. You may not need men for the act of conception, but you do need men to create sperm!

5th paragraph – **does not refer to whether men can 'multi-task' or demonstrate any of the other stated qualities.** All of the fifth paragraph can be construed as a Straw man argument.

Equivocation with respect to the definition of equality. [conflating equality of opportunity with the concept of intrinsic equality]

Self-defeating/circularity: The argument is self-defeating. It posits, by implication, that women ought not to campaign for equal rights because they are intrinsically superior. But it does not project any action that women should take to win their case. **It leaves a dilemma behind – if women should do nothing, how will they be able to achieve equality in the future.**

Strength: **The argument is strong in its support of IC5** [women are intrinsically superior to men].

Marks

For each sound evaluative comment: one or two marks available, according to the significance and clarity of the point made. [up to a maximum of 6 marks]

Overall evaluation of the article: 1 mark available

(c) **'Gender equality is possible'**

Commenting critically on some or all of the Documents (1)–(5) and, introducing ideas and arguments of your own, construct a well-reasoned case either for or against the above statement.

You may use examples of gender inequalities from your own country or other countries. [18]

Credit will be given for the **judicious use of the resources in the documents.**

Good answers should select textual data which not only support but challenge their own take on the debate.

Credit will be given for the **assessment and interpretation of evidence** in the sources. A good response should note the variable nature of interpretation i.e. that throughout history at appropriate stages of enlightenment re-interpretation have been going on, e.g. Document 2 v. Document 3. The statistical data in Document 5 can be used to support or challenge arguments or issues arising in the other documents. Higher band responses would have evaluated at least 4 documents.

Credit will be given for the inferences candidates draw from the sources and from other examples or observations they bring to the debate. The critical analysis and evaluation of gender prejudices should lead students to multiple sub arguments and intermediate conclusions, but these should be consistent with the main conclusion. Documents 2, 3 and 4

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focus on religions as agents of gender inequality while Document 1 focuses on social studies. Better answers will register these complexities. Special knowledge in history, religious studies or sociology etc. may be brought to support reasoning (credit being given for the quality of reasoning not the knowledge content, (although this should not be erroneous as far as examiners can determine).

Good to excellent answers will, in varying degrees, desist from seeing the issue in black and white. To obtain higher marks, a candidate should be able to anticipate counter-positions. Perceptive responses would highlight some of the grey areas i.e. complexities raised by the issue of gender with reference to principles – e.g. that some people in some religions/cultures feel certain religious perceptions are 'facts' and to abolish them would take away fundamental life principles or mitigate quality of life for them. They may refer to debates of the tension between faith and reason and draw inferences to support their conclusion. They may discredit feminist movements or reactionary movements as unhelpful (in addition to Document 1), and as ruling out other options for redress. Balanced reasoning would acknowledge that human misconceptions will always remain inherent in human nature.

No marks are reserved for the quality of written English.

Band	Overall	Within	Score
Top	A critical stance: ideally an evaluation of sources, and explicit consideration of counter-arguments (or conflicting sources). Reference to at least 3 documents.	Candidates must introduce their own ideas and arguments.	18 17 16
		Occasional explicit critical comments.	15 14 13
Middle	A reasoned stance: a clear conclusion, supported by reasons clearly expressed/cherry-picked from the sources . Some independent reasoning. Reference to at least 2 documents.	Implicit consideration of counter-arguments. Clear statement of 2/3 reasons in support.	12 11 10
		Cherry-picked reasons. Some irrelevance/deviation from the question. May be multiple conclusions with little support for each one.	09 08 07
Bottom	"pub rhetoric": unclear conclusion, reasoning that goes off at a tangent (substantial irrelevant material)	Reproduced reasoning from (a) and (b) . Disorganised.	06 05 04
		Stream of consciousness.	03 02 01

Note to markers: credit candidates' attempts to compare and synthesise arguments from different documents. Evidence of this should elevate the candidates' score by up to 3 marks (depending on the sophistication and clarity of the attempt).

Note to markers: individual critical comments within a Middle band answer can also elevate the candidates' score by up to 3 marks (depending the sophistication and clarity of the comment).