

**MARK SCHEME for the October/November 2011 question paper
for the guidance of teachers**

9694 THINKING SKILLS

9694/41

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.

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

Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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1 (a) Identify three points that weaken the credibility of the statistics in the passage.

1 mark for each distinct, clearly-expressed and relevant comment: e.g.

- 60% increase is over a period of 30 years whereas 30% decrease is over a period of no more than 11 years. These arbitrary periods may have been selected to accentuate the apparent decline.
- Confusing cause and correlations – other possible explanations. There is conflation of different statistics. 30% decrease in applicants for medicine and 30% increase in applicants for computer and media studies could well be a coincidence. The correlation does not prove one caused the other.
- 30% increase in media studies has no baseline for comparison / similar percentages (30 and 30) do not mean similar numbers.
- The number opting to do medicine may not be the same as the number studying medicine / there might have been a change in the application procedure that has discouraged unrealistic applications
- Survey mentions UK, US and India but the statistics only relate to US – generalizing from the particular.
- The passage firstly claims “almost half”, and then claims “50%”; almost half is not precise whereas 50% is precise.
- The people that chose to respond to the survey are not a random sample.
- The 50% who say they plan to reduce the number of patients or stop practising could cover a huge range of responses, as to how significantly they reduce working hours and number of patients they see. Furthermore, some of those planning to stop practising may simply be retiring, not ‘quitting’.

(b) “We are on a slope of very worrying decline in human resources where medicine is concerned.”

Do you think the evidence in the 2nd paragraph is sufficient for this inference to be drawn? Briefly justify your answer. [2]

1 mark for weak response comprising of judgment and minimal explanation. 2 marks for justification plus a well-developed response. No credit for repeating or restating **1(a)** in **(b)** but credit may be awarded if a point identified in **1(a)** is elaborated with different / fresh critical insight / dimension to support whether the inference can or cannot be drawn.

- The 4% (12 000) is not a sufficiently representative sample to help us draw the conclusion that there is real decline of those who would be doctors. The doctors who bothered to complete the questionnaires may have been those about to retire or those who were sufficiently dissatisfied to want to express their wishes.
- Doctors who say they are planning to cut back or quit may change their mind.
- Difficult to gauge how much to worry about without knowing what demand there is for doctors.
- There is insufficient information of the doctor-patient ratio to infer the impact of the withdrawal of doctors.
- Paragraph 2 presents no information that the number of doctors quitting or reducing patient contact has changed over time, so there is no real evidence of a ‘decline’.
- There may be other possible reasons for doctors choosing to leave the medical profession or cutting back such as that the medical industry may be over-populated or there are too many doctors per population.

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2 Briefly analyse HGA's argument in Document 1, by identifying its main conclusions and reasons, as well as any intermediate conclusions and counter-arguments.

R1 – It is not equal rights to force / draw women into these professions / (to be scientists and engineers / science and technology).

R2 – If men are naturally better at (or more interested in) science and maths, we should not force women to be what they are not supposed to be.

IC1 – (Therefore) it would be (more) sensible to let each sex do what they are good at.

R3 – However, gender equality activists (who challenge natural perceptions of men and women and ask them to think differently) are biased and insecure people with grudges against the opposite sex.

R4 – Human beings of both sexes are always seeking equality because they want respect and recognition for their abilities.

R5 – Equality is realised when men and women respect each other and their differences.

IC2 – (Therefore we can assert two facts:) that women are different from men, but they are equal to men.

R6 – Most women would prefer to be acclaimed and respected as the inspirational force behind the movers and shakers of the world than be made to do the moving and the shaking themselves.

IC3 – If the sexes can stop thinking they have to fight each other for equal rights and respect each other for who they are, science and technology will benefit.

MC – (Therefore) Gender equality in science and technology should be about men and women having equal respect for each other and not about equal rights.

CA (counter-argument) – (It is not 'equal rights' to think that) because science and technology is getting impoverished, owing to decreasing numbers of scientists and engineers, the solution is to draw more women into these professions.

Mark Allocation

Summary or gist without any ICs or MC – 1 mark. Credit CA as IC

MC + gist – 2 marks.

MC + 1 IC – 3 marks.

MC + 2 ICs – 4 marks.

MC + 3 ICs – 5 marks.

Identification of CA – 1 mark.

If only ICs and / or CA are identified cap at 5 as follows:

1 IC + gist – 2

2 IC – 3

3 IC – 4

+1 for identification of CA.

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3 Give a critical evaluation of HGA's argument in Document 1, by identifying and evaluating its strengths, weaknesses, implicit assumptions and flaws.

Para 1

"It is not 'equal rights' to think that because science and technology is getting impoverished, owing to decreasing numbers of scientists and engineers...draw women...tantamount to forcing women"

Assumption: That most scientists and engineers are men.

Conflation: Drawing (≠ force) people does not necessarily mean they have to force them. Drawing is encouraging rather than forcing. There are a variety of ways of drawing/persuading people.

Assumption: That science's impoverishment is due to men not being bothered (rather than men not being capable).

Para 2

"If men are naturally better at (or more interested in) science and technology, we should not force women to be what they are not supposed to be. Researchers say that women are naturally better at verbal skills than men, but you don't therefore see men getting all uptight about it and pushing young boys to pursue a social service career, which needs verbal skills."

Flawed Analogy: The reasons for women shunning science and tech may not be the same as for men shunning social services.

Generalisation from 'many' to 'all' / confusion between 'many' and 'all'.

Para 3

"Instead of trying to compete... Are we so caught up in 'equal rights' to the point where we are nurturing young girls to think that they have to fight the boys and overcome them?"

Assumption: Involving both genders in same area would cause competition.

Slippery Slope / Conflation / Shift in meaning: Presents equal rights movement as sliding from healthy notion of competition to unhealthy strife / overcoming.

"It would be more sensible to let each sex do what they are good at.... If you give a Lego to a girl and a doll to a boy...your daughter creatively builds a doll's house from the Lego and your son enjoys dismembering the doll by running his toy bulldozer over it."

Stereotyping the genders or use of stereotypes to argue his point.
The example of girls building **contradicts** the claim that females are less suited to science and technology.

"Gender equality activists who challenge natural perceptions of men and women and ask them to think differently are biased and insecure people with grudges against the opposite sex".

Ad Hominem: This is an ad hominem argument – attacking the activists rather than their arguments.

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Para 4

“Human beings of both sexes are always seeking equality because they want respect and recognition for their abilities. True equality between men and women is realised when they respect each other and that includes respecting each other’s differences.”

Conflation – mutual respect between genders is conflated with gender equality.

Circular reasoning / Begging the question – human beings seek equality because they want respect and recognition, therefore respecting each other makes them equal to each other.

Necessary / Sufficient condition: Respect is necessary for equality but not sufficient.

Conflation of notion of respect with notion of equal rights; or **digression** – digresses from talking about equality in science and technology to equal rights in general.

“It also explains why, historically, men have made the most contributions in scientific discoveries and technological inventions.”

Other possible explanations: There are other explanations e.g. women were not given the opportunities in those days because of dominant cultural perceptions.

“Women do not, on the whole, have the same brainpower as men – they cannot problem-solve as well as men can (even if they are more perceptive and can identify problems more quickly).”

Possible contradiction: this contradicts his earlier claim that “women are equal to men”.

Ambiguous or narrow definition of brainpower – brainpower is defined as ability to solve problems, but the other related mental functions such as identifying problems are not seen as due to brainpower.

Strength: The majority of the reasoning is about respect and recognition and, in that regard, does support the main conclusion that gender equality should be about men and women having equal respect for one another.

Overall Evaluation

The argument is overall flawed leading to a considerably overdrawn conclusion.

The intermediate conclusion, *“If the sexes can stop thinking they have to fight each other for equal rights, and respect each other for who they are, science and technology will benefit”*, is crucial to acceptance of the main conclusion but is itself very weakly supported. Just how respect between genders will benefit science and technology has not been established.

The dismissal of equality of opportunity makes the overall argument quite weak.

Marks

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

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

Maximum 9 marks.

4 'Gender equality in science and technology does not matter.'

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

Band	Overall	Within	Score
Band IV 27–30	Can consider counter-positions to own argument and reflect on implications in arriving at conclusion.	Developed consideration of counter-positions. Knows precisely what complexities face own argument.	30 29 27
		Simple statement of 1 or 2 counter-arguments to own argument.	
Band III 17–21 / 22–26	A critical stance: ideally an evaluation of sources, and explicit consideration of counter-arguments (or conflicting sources). Must reference 3 + documents.	Well-constructed, coherent argument. Candidates introduce their own ideas and arguments building their own position. Can compare and contrast documents and draw precise / developed inferences through synthesising arguments from different documents. Good interpretation of sources.	26 24 22
		Developed critical reasoning of at least one point, and development of further argument. Can compare and contrast documents relevantly and/or has good interpretation of sources.	21 19 17
Band II 07–11 / 12–16	A reasoned stance: a clear conclusion, supported by reasons clearly expressed but uncritically selected from the sources . Reference to at least 2 documents.	Some independent reasoning / Implicit critical reasoning. Clear statement of 3/4 reasons in support.	16 14 12
		Develops further argument relevant to conclusion but without any reference to any of the sources. Reasons indiscriminately selected. Little clear independent or no independent reasoning. Some irrelevance/deviation from the question. May be multiple conclusions with little support for each one.	11 09 07
Band I 02–06 0–1	"Pub rhetoric": unclear or no conclusion; reasoning that goes off question target at a tangent; substantial irrelevant material. Completely misunderstands or no understanding of question.	Reproduced reasoning from (2) and (3). Disorganised. Unconvincing attempts to construct reasoning.	06 04 02
		Stream of consciousness. Wholly irrelevant / deviant / incoherent material. No attempt.	01 0 0

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4 Indicative Content

Credit will be given for the judicious use of resources in the documents. Candidates are expected to refer to stimulus documents relevantly, availing of the material therein to support or challenge their claims in building up their case, e.g. a case can be made for the conclusion by corroborating claims in documents 1, 4 and 5, while claims in documents 2 and 3 can avail for the opposing side.

Credit will be given for the assessment and interpretation of evidence. E.g. document 3 shows that it is lack of opportunity rather than lack of ability that puts women's participation on the back foot. The data in document 4 can be interpreted in varying ways to further the nature versus nurture debate.

Credit will be given for critical analysis and evaluation of stimulus sources. E.g. it might be pointed out that the writer of document 1 is biased rather than objective, while source of document 2 provides an informed and well-researched analysis of gender inequality and how it impacts science and technology. Or it can be pointed out that Dr Summers may have been quoted out of context, given Denise Denton's comments.

Credit will be given for the critical reasoning and inferences candidates construct by comparing and contrasting claims and arguments in conflicting and corroborating sources; or through synthesising arguments from different sources. Credit will be given for further arguments and for other examples of observations they bring to the debate. E.g. candidates can bring together claims from documents 1, 4 and 5 and forge critical reasoning e.g. they may infer that there are many aspects of gender differences in the nature versus nurture problem that make gender equality a moot issue. Similarly, implications can be drawn from document 4 which contradict document 2 or document 5, but which support document 1, which enables further lines of reasoning to be drawn to build own argument for or against the conclusion. Or insights from a range of documents may be combined to form critical reasoning to support the given argument: such as that "gender equality in science and technology does not matter insofar as ensuring equality of opportunity for talent and quality, irrespective of gender, must take priority." Candidates can use their own knowledge and ideas of gender issues to build a coherent case / further argument for the conclusion proposed.

To obtain higher bands, candidates should anticipate counter-arguments and objections to their own position, and offer some response to these.

No marks are reserved for the quality of written English or specialist knowledge of the subject matter/s in the stimulus material. It is the quality of critical thinking and reasoning alone which is under assessment, and provided the candidate has made his or her thought processes sufficiently clear to be understood, full credit will be given.