

**MARK SCHEME for the October/November 2009 question paper
for the guidance of teachers**

9694 THINKING SKILLS

9694/21

Paper 21 (Critical Reasoning), maximum raw mark 45

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.

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1 (a) Explain the significance of Sonita's wedding. [2]

- Discussion of/preoccupation with Sonita's wedding is thought to be the cause of Mrs Gomez's injury/the dispute.
- It is unlikely that Mrs Gomez would know about the wedding if she had not heard talk about it from Dr Higes and she would not have had contact with the anaesthetist except during the operation, so we can assume that the anaesthetist probably did talk about his wedding during Mrs Gomez's operation.

2 marks: Reasonable explanation with reference to the evidence.

1 mark: Some explanation or reference to the evidence which might be used to explain. [Max 2]

(b) How reliable is Mrs Gomez's evidence? Justify your answer. [4]

- Mrs Gomez was being operated on, which is stressful and she may therefore have misremembered.
- Mrs Gomez has a vested interest to lie or exaggerate about Dr Higes and the nurse in order to gain compensation.
- Mrs Gomez has a reputation as given by Nurse Ines for being a difficult old lady and looking at things in a negative light. However, Nurse Ines may not be telling the truth about this, as it would be to her advantage to portray Mrs Gomez in a bad light.
- Mrs Gomez does not have any reported problems with her hearing, and she was in a position to hear what was happening around her.
- Corroboration from Dr Latif that Mrs Gomez still does have problems with her eye, and that these problems are consistent with her story about Dr Higes putting a needle in the wrong part of her eye.

4 marks: Strong support given to candidate's conclusion grounded in solid understanding of credibility issues.

2–3 marks: Reasonable support given to candidate's conclusion based on acceptable understanding of credibility issues.

1 mark: Inconclusive point or points which might be used to show how reliable Mrs Gomez's evidence is.

[Max 4]

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(c) Whose evidence is more reliable, Dr Higes's or Dr Latif's? Justify your answer. [4]

- Dr Latif's evidence is more reliable.
- She is an independent consultant with nothing to lose by lying.
- She is an eye specialist so her expertise adds credibility to her evidence.
- She has had the opportunity to examine Mrs Gomez's eye and see the injuries.
- Her reputation is given only by Dr Higes, who has a vested interest to show that her evidence is not valuable to protect himself. If she does exaggerate, this would reduce her credibility.

- Dr Higes has a significant vested interest to lie about any errors he has made to protect his job/reputation.
- He is also likely to be biased in his own favour and to have favourably reinterpreted events.
- He is not quite consistent: if he cannot remember Mrs Gomez's operation in particular, it is inconsistent to be quite so definite about not having discussed his sister's wedding. It is also inconsistent with the evidence that Mrs Gomez knows about it, even his sister's name.

4 marks: Strong support given to candidate's conclusion grounded in solid understanding of credibility issues.

2–3 marks: Reasonable support given to candidate's conclusion based on acceptable understanding of credibility issues.

1 mark: Inconclusive point or points which might be used to show that either Higes or Latif is more reliable.

[Max 4]

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(d) How likely is it that Dr Higes is responsible for Mrs Gomez's continuing problems with her right eye? Write a short reasoned argument to support your conclusion using the evidence provided. [5]

- It is quite likely that Dr Higes is responsible for Mrs Gomez's problems.
- The Wedding plus Dr Latif's evidence fairly strongly support claims that he was talking and that his needle did scratch the wrong part of Mrs Gomez's eye.
- The Reputations of Mrs Gomez and Mrs A as not very nice/litigious do weaken support but do not mean that in this case the law suit is malicious or ill founded.
- Reputations also given by Nurse Ines who has a vested interest, and who seems fairly negative and vague.
- Letter from Jishan Patel simply takes the automatic defensive position of claiming all staff doing the right thing and suggesting alternatives. Alternatives seem plausible but do not fit the evidence as given by Dr Latif.

Generic:

Acceptable conclusion in terms of probability. [1]

And:

3 marks Reasoned argument involving thorough evaluation of the evidence to support the conclusion. [3]

2 marks Evaluative reference to the evidence in support of the conclusion. [2]

1 mark Some reference to the evidence in support of the conclusion. [1]

And:

Consideration of the plausibility of the alternative scenarios. [1]

[Max 5]

Indicative content

It seems likely that Dr Higes is responsible for the damage to Mrs Gomez's eye, as the evidence provided by Dr Latif seems indisputable. Dr Higes may well have been distracted but as a result of fear may be unable to admit that he made a mistake. The evidence against Dr Higes is considerable, as it all seems to corroborate on one point or another, such as that of Mrs Gomez and Dr Latif on the possible effect of a misplaced needle and that of Mrs Gomez and Raquel Ines that there was talk of a wedding, although Raquel Ines is unsure whether it was during the operation or not. However, it is plausible that Mrs Gomez may have suffered an injury from another source, or her age may be taking a toll on her eye. It is plausible that Jishan Patel, the hospital administrator is correct.

(1 + 3 + 1 = 5)

Dr Higes is very likely to be responsible for Mrs Gomez's continuing problems with her right eye. The reasons would be the fact that he was distracted by the talk of his sister Sonita's wedding, with the nurse, the fact that he was rushing (possibly) since he claimed he had many operations to perform, and Dr Latif's examination results with the evidence of the needle having scratched the retina of the eye from box C.

(1 + 2 + 0 = 3)

[Total: 15]

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2 (a) Explain one problem with the method used to calculate happiness in the map (Source A). [3]

- 'Life satisfaction' is subjective and could be the same thing as happiness. So it's a bit meaningless/difficult to measure.
- The map's calculation of happiness includes life expectancy, which is strongly affected by wealth. But there is not necessarily a correlation between long life and happy life.

3 marks: Strong explanation of a problem with the method used to calculate happiness.

2 marks: Reasonable explanation a problem with the method used to calculate happiness.

1 mark: Comment which might be used to show a problem with the method used to calculate happiness.

[Max 3]

(b) In 1964 the possible answers to the question in the Japanese poll were changed. How does the additional information affect the conclusions drawn from the poll? Explain your answer. [3]

The additional information significantly weakens the conclusions drawn from the poll, because there is an important difference between the top option before 1964, 'I am generally satisfied,' and the top option after 1964, 'I am completely satisfied.' People are far less likely to be completely satisfied than generally satisfied, because there are always little niggles in life. So we cannot accept the conclusion that people became less happy as they got richer.

3 marks: Strong explanation of the effect this additional information has on the conclusions drawn from the poll.

2 marks: Reasonable explanation of the effect this additional information has on the conclusions drawn from the poll.

1 mark: Comment which might be used to show what effect this additional information has on the conclusions drawn from the poll.

[Max 3]

(c) 'People were pleased to be taxed for a good cause.' How far is this conclusion supported by Mayr's experiments? Explain your answer. [3]

- It is supported only slightly.
- The evidence shows at most that people feel rewarded when a gift of money is split between them and a good cause. This is not the same as money you have earned being taken without your permission.
- The experiment considers only very short term effects.
- 'Their brains lit up' is a very primitive understanding of what happens in fMRI and we can't be sure that 'lit up' means the same thing in both cases.
- There are too many assumptions between the evidence and the conclusion.

3 marks: Strong explanation of how far this conclusion is supported by Mayr's experiments.

2 marks: Reasonable explanation of how far this conclusion is supported by Mayr's experiments.

1 mark: Comment which might be used to show how far this conclusion is supported by Mayr's experiments.

[Max 3]

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(d) Does money make you happy? Write a short, reasoned case to support your conclusion, using and evaluating the information provided in Boxes A–D. [6]

- The map suggests that people in the wealthiest regions are happiest which might imply that money does make you happy but this could be because of the way they define happiness or a correlation/cause flaw.
- Source B shows that on balance, there is a correlation between life satisfaction and GDP per person – but there are a great many countries on or around 5 points of happiness, from poor Zambia to rich Hong Kong. This indicates that there are other factors.
- Document C asserts that even large increases in wealth do not lead to an increase in personal happiness but there are flaws in the methodology.
- Mayr's experiments indicate that a gift of money causes activity in the brain areas related to reward which might be related to happiness. Document D indicates that people feel rewarded when money is given away on their behalf to help others. So having money itself does not necessarily lead to happiness (although having enough to give away might?).
- At most we can conclude that you are more likely to be happy if you have enough money, but we cannot say that money alone will make you happy.

Generic

Level 3: Strong answer 5–6 marks

Reasoned argument which evaluates and uses the argument in support of own thinking.

Level 2: Reasonable answer 3–4 marks

Simple argument which uses and/or evaluates the evidence.

Level 1: Weak answer 1–2 marks

Opinion/assertion with reference to the evidence OR a simple argument which makes no reference to the evidence.

[Max 6]

Indicative content

The lack of money leads to many problems, lack of adequate shelter, a proper diet and adequate clothing. This may lead to sadness as it leads to bad health which is a definite cause of sadness. It could be argued such as the source A that it is relative to the ecological footprint. However, a beggar with a small ecological footprint is unlikely to be happy. Source B is an attempt to support the conclusion that money makes you happy, however, it takes into account large numbers of people and has so become a generalisation. Source C supports the conclusion to a certain extent but is unreliable as it may include inconsistencies. Source D supports the conclusion as the subjects became happier after receiving money but it may also mean that money is not the only reason for happiness. I therefore conclude that money in conjunction with other things makes you happy. (6 marks)

Money does make me happy because it is able to provide things that are significant in sustaining me happiness in my life. Source C informs that people from the 1950s to the 1970s were the subjects that gave positive responses from the polls. This time was the period in which Japan's economy began to recover from the economic damages of WWII, so it is safe to say that the satisfaction and happiness that the citizens from the period had was primarily because of the increase of money in Japan. In source A the countries that are poor are the least happy in opposition to the western countries that are rich and most happy. Source B shows that the striving countries are placed higher on the average life satisfaction scale and the more poor countries are farther down the scale. Also source D shows the fact that money is important to people. This all comes to show that money can buy happiness as it provides things that ensure life satisfaction.

(3 marks. This is mostly description and summary of the sources with some evidence of critical skills).

[Total: 15]

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3 (a) Identify the main conclusion. [1]

- This expense (of paying your way through college) is not worthwhile.

Accept: Most students actually get very little from university education.

(b) 'Most students actually get very little from further education.' (Para 1) Identify three reasons given in paragraphs 3–5 to support this claim.

- Many individuals had minimal formal education.
- So formal education does not make you successful.
- Very little learning goes on at university.
- Students don't find the learning that comes from doing the work themselves worth the effort.
- Teachers can do more harm than good.
- A teacher who prepares a young person to think beyond what is in the textbook is a rare find indeed.

Any three. One mark each.

[Max 3]

(c) Evaluate the reasoning in paragraphs 3–5 (by identifying assumptions, flaws and weaknesses and assessing their effect on the strength of the reasoning.) [6]

Use grid below. See overleaf for indicative content.

(d) 'Everyone should remain in education until the age of 18.' Write your own argument to support or challenge this claim. [5]

Use grid below. See also page 10.

Descriptor	Level 3	Level 2	Level 1	Level 0
(c) evaluation max 6	Evaluation of strength of argument with critical reference to assumptions, weaknesses and flaws. 5–6 marks	Some evaluative comments referring to assumptions, weaknesses and/or flaws. Relevant counter argument 3–4 marks	Discussion of or disagreement with the argument. Weak counter argument 1–2 marks	No relevant comments. 0 marks
(d) further argument max 5	Relevant, developed argument. 5 marks	One or more relevant, points given in support of candidate's conclusion. 3–4 marks	Relevant comments. 1–2 marks	No argument. Statement of disagreement or irrelevant comment. 0 marks

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Evaluation:

(c) Paragraph 3

Just because many great individuals had minimal formal education does not mean that education does not contribute to some individuals' success, and does not mean that contemporary individuals get little out of education.

The example of Louis Armstrong suggests that formal education is rarely an important qualification for popular musicians, (although many of them do have more education than they admit to). Education does not normally aim to create original, popular musicians. This makes Armstrong a weak example.

Chaplin refers only to arithmetic rather than to education in general. Arithmetic is part of basic rather than further education, so his comment is not relevant to the benefits of further education. It would be a significant benefit not to be short-changed (or otherwise defrauded of our money) so it seems as if Chaplin is underestimating the benefits of arithmetic. He is therefore a fairly weak example.

Einstein's dropping out of school at 15 might be shown to demonstrate that further education is not necessary for creative scientific thinking; it omits, however, that Einstein did return to university (candidates should not be expected to know this, but if they do, credit it). But even so, it only shows that further education is not necessary to success, not that it can't contribute or that there is nothing to be gained from it.

Galileo may have been right to consider university an obstacle to scientific progress in the sixteenth and early seventeenth centuries. The nature of education in universities, and the priority given to science have changed somewhat during the intervening period. So Galileo is a weak example of what someone might get from university in the 21st century.

It is weak reasoning to generalise from four examples of people who were successful in their fields to further education being unnecessary or lacking in benefit.

Paragraph 4

For this reasoning to be correct, one would have to assume that it is a university's role to teach graduates basic reading, writing and thinking skills. However, this is the job of schools, and universities are supposed to encourage higher level learning. (The thinking skills is trickier.)

Assume that being bored in class is an indication of no learning taking place. Even if this were the case, this 40% may learn whilst not bored, and the other 60% may learn much of the time. This research is not attributed to anyone, so we cannot be certain of its quality. We also cannot generalise from American first year students to undergraduates in universities around the world.

The analogy between education and the assembly line is weak: students have a much bigger role in their own progress at university than do products on an assembly line.

Not completing the course is perhaps indication that students have not learned as much as they hoped; but this may have been because they went expecting to be filled up with knowledge and found they had to do some thinking? This point also can't be generalised.

The proliferation of assignment cheats does suggest that students are not learning as much as they should, but buying their way through courses. This does not, however, mean that the learning is not worthwhile. Nor does it mean that the students are learning nothing else. It may be that the opportunities for independent study are stimulating them.

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So there is some, but not much support for the claim that very little learning goes on at university. This claim itself does give some support to the further claim that most students actually get very little out of university, as the main thing that one would like to get out of university is intellectual development. However, there may be other things that students could get out of attending university.

Paragraph 5

Trainee teachers are attending university rather than affecting the quality of education available there.

Have to assume that graduate students are not experts, or that being taught by them is unlikely to do you good.

Generalises experts – even if in some cases the generalisation might be true. But again, one has to assume that teaching is a question of imparting knowledge – the expert may be excellent at challenging enquiring minds or stimulating thought.

Even given these weaknesses in the reasoning, we can accept that teachers can do more harm than good. This does not mean that they usually do.

Indicative content

The following are part answers to indicate level of performance:

The analogy weakens the argument as the need for medication is derived from a sickness that needs to be cured. However, the further education of the brightest minds is an investment so as we can have doctors to administer that medication properly. (Level 3)

An assumption in paragraph 2 is that all young people that go to a university are bright and hardworking. This is not true because many students are forced to attend a university by their parents. (Level 2)

The view that those who are not so bright do not deserve education is a huge flaw in the reasoning in that it is used to insult the way universities educate their students. (Level 1, just)

Teachers who prepare young people to think beyond what is in the textbook probably are rare, but this does not mean that young people cannot use the opportunity of university to do so for themselves.

So there is little support for the claim that most students get little out of university. And even if there are many students who gain little, this does not mean that attending university is not worthwhile for the others.

[Max 6]

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(d) 'Everyone should remain in education until the age of 18.'

[5]

Suggested arguments:

Support

Education is a basic right which should be available to all young people. It tends to be students with better off parents who choose to stay at school after the minimum leaving age. So, to give poorer students an equal opportunity to benefit from education, the minimum leaving age should be as high as possible. Furthermore, many young people do not learn enough while they are fourteen or fifteen. These people are often more mature when they are seventeen or eighteen, and would benefit from education.

Modern economies need people with the highest possible level of skill. Technologically aware people are needed, whereas unskilled labourers are not. So people need to stay at school for as long as possible to help them develop the skills the economy needs. It is also wrong that people as young as sixteen should be in full time work when they could be learning, and even more wrong that there are so many 16–18 year olds who are not in education, work or training. These people would be better off remaining in education to improve their life chances.

Challenge

Many students begin to fail at school when they are as young as four, five or six. School is a constant torment to them of being last, least able, most useless. Many of these young people thrive in a working environment where they are given tasks they can complete well. It remains the case that we need plumbers, builders and engineers. Such skills are often better learned in a working environment, with real, relevant tasks and one to one attention from a master craftsman. So it is very much better for many young people to leave education at an earlier age and get a job which allows them to thrive.

Many students are thoroughly disaffected with school by the time they are sixteen. They mess around and disrupt the learning of those who want to learn. These students are determined not to learn and would be better off out of education. Some students have reached their academic ceiling by the time they are sixteen, and will not progress to a higher level of skill by remaining in a school or college. Others are able to learn, but do not see the point, and would benefit from a year or two working before returning to college at eighteen, ready to develop. So, although everyone should be entitled to two years of education after they are sixteen, they should not be forced to remain in education for the specific two years between being sixteen and eighteen.

[Total: 15]