



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

THINKING SKILLS

9694/22

Paper 2 Critical Thinking

May/June 2011

1 hour 45 minutes

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the booklet.

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **all** the questions.

Start each question on a new answer sheet.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question.

This document consists of **6** printed pages and **2** blank pages.



1 Study the evidence and answer the questions that follow.

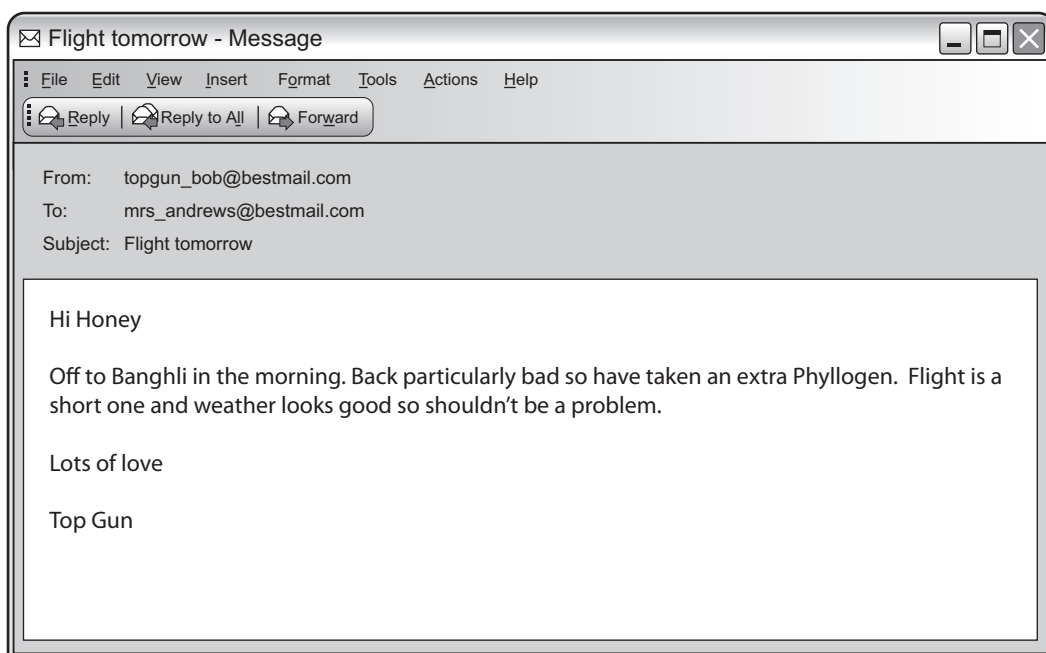
Source A**Newspaper Article***Daily Echo*

A Boeing 737 was involved in a dramatic incident at Banghli Airport yesterday. Landing in heavy rain, the plane skidded off the runway and an emergency evacuation of the plane took place. Whilst shaken, none of the passengers was hurt. A spokesman for the Flyaway airline said it was too early to speculate as to the cause of the incident. The captain in charge of the flight, Bob Andrews, was one of their most experienced pilots, but a full investigation would take place and pilot error

could not be ruled out. The senior air stewardess on board remarked to a reporter that Captain Andrews had looked tired at the start of the flight. This incident is further bad news for Flyaway, who are just recovering from a cabin crew strike that grounded many flights. Some tension remains between pilots and cabin crew as the former had not supported the industrial action of the cabin crew.

Source B**Journal Article***'Pilot' – the leading magazine for airline pilots*

Readers are sending in reports about landing conditions at Banghli Airport. The airport is prone to sudden, unpredictable tropical showers that make the runway slippery because of the accumulation of oil on the previously dry surface. Banghli has seen a 300% increase in flights over the past two years due to the opening of the Tropical Idyll holiday resort. Questions are being asked as to whether this once sleepy airport has kept pace with this sudden growth in air traffic. However, all flights have landed successfully so far, even if it has required all the concentration and skill of the pilots.

Source C

Source D**Leaflet accompanying Phyllogen pain relief tablets**

These tablets should only be taken if prescribed by your doctor. May cause drowsiness if recommended dose is exceeded. If pain persists you should see your doctor.

Source E**Banghli Airport information for passengers**

Welcome to Banghli Airport! We have embarked on an exciting programme of expansion over the last 2 years and you will find many of your favourite shops are here – so your waiting time should fly by! At busy times you may have to wait in one of our temporary marquees before entering the terminal – we apologise if this happens to you.

- (a) How reliable is the information given by the senior air stewardess in Source A? Justify your answer. [3]
- (b) How significant would the information in Source D be in an enquiry into Bob Andrews' responsibility for the incident at Banghli Airport? [3]
- (c) Suggest **one** piece of **additional** information it would be useful to have about this incident. Explain how this would help you make a decision about what happened. [3]
- (d) How likely is it that Bob Andrews was responsible for the plane skidding on landing at Banghli Airport? Write a short, reasoned argument to support your conclusion, with critical reference to the evidence provided and considering plausible alternative scenarios. [6]

2 Study the evidence and answer the questions that follow.

Source A

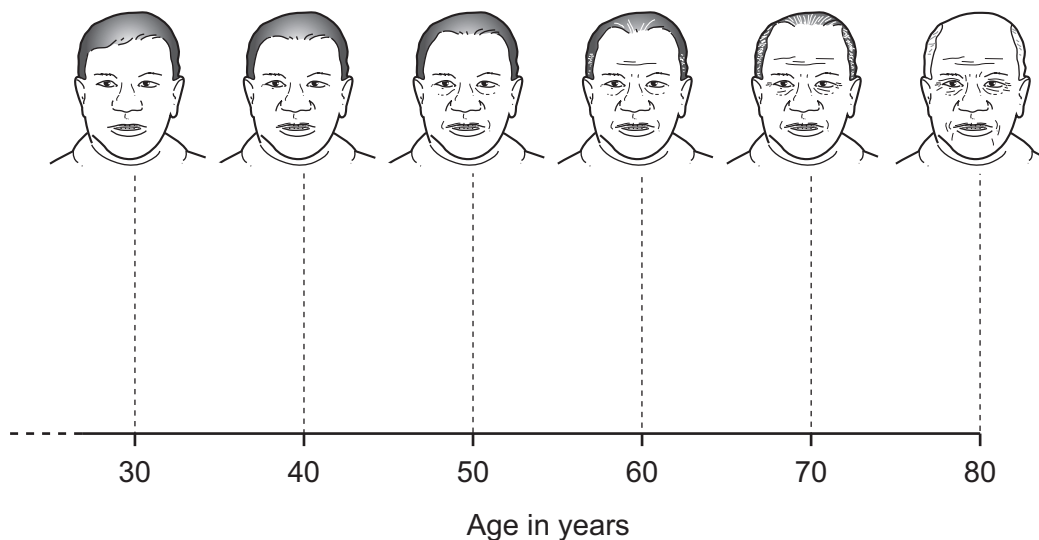
Scientific researchers distinguish between two forms of ageing in humans:

- chronological ageing i.e. how old someone is in years;
- biological ageing whereby some individuals are physically older (or younger) than suggested by their chronological age.

Biological ageing is determined by the shortening length of what are known as telomeres. Inside the nucleus of virtually all of our cells are chromosomes. At the tips of these chromosomes are telomeres – a bit like the hard ends of your shoelaces. Each time a normal cell divides, its telomeres become shorter, until eventually they are so short that no further cell division can occur.

Source B

Change of appearance with age



Source C

Extract from a research report

Our study suggests that some people are genetically programmed to age at a faster rate than is normal, therefore they are 'older' than their chronological age would suggest. The effect was quite considerable, equivalent to between three and four years of biological ageing as measured by telomere length loss.

These genetically susceptible people may age even faster when exposed to bad environments for telomeres like smoking, obesity or lack of exercise, and end up several years biologically older. Equally, somebody with a good genetic basis for biological youthfulness may negate this through an unhealthy lifestyle.

Source D

In developed countries life expectancy rose rapidly in the twentieth century as a result of improvements in public health, diet and medicine. However, there is a natural limit to human life-span, so it's likely that life expectancy in the most developed countries will level off in the mid-80s age range. The current leader is the tiny state of Andorra in the Pyrenees with an average life expectancy of 83.5 years.

Source E

Assessing how well a person operates (functional age) seems to be a more rational basis for categorising a person's age than chronological age alone, although only the latter can be easily and accurately measured. This implies that the norm of qualifying for a retirement pension at a fixed chronological age (e.g. 65) should be abandoned in favour of people retiring when they reach an age that means they are not functioning effectively. However, so far, it has not been determined whether or not individuals whose functional age was lower than their chronological age have actually lived longer.

- (a) Can we reliably conclude from Source A that cell division is a normal part of life for all organisms? Explain your answer. [3]
- (b) Look at Source B. With the help of the information in Sources A and E, assess to what extent Source B is incompatible with the idea of biological ageing. [3]
- (c) 'Some individuals are born with shorter telomere lengths than others.'
How useful is this information in assessing whether genetic factors outweigh lifestyle factors in determining biological ageing? [3]
- (d) Should qualification for a retirement pension be determined by functional rather than chronological age?
Write a short, reasoned argument to support your conclusion, using and evaluating the information provided in Sources A – E. [6]

3 *Read the passage and answer the questions below.*

- 1 Biofuel is the name given to any fuel that is produced from the processing of plants. It is increasingly seen as a solution to the decline in the supply of fossil fuels like coal and oil and also offering a 'green' solution to the planet's energy needs.
 - 2 However, there is a problem in deciding whether biofuel is really a 'green' form of energy. On the one hand, it is derived from a renewable resource, as more plants can always be grown to replace those that are used up. It could also be, in theory, 'carbon neutral' as the plants that produce biofuel absorb carbon dioxide which will help compensate for that produced by the burning of the fuel.
 - 3 On the other hand, it can be argued that the growing of many of the plants used to produce biofuel, particularly palm trees, is responsible for much of the loss of tropical rainforest. This tropical rainforest provides a crucial mechanism by which the planet absorbs CO₂. The cultivation of plants for biofuel would be a totally inadequate compensation for the loss of these rainforests.
 - 4 But this dilemma can be quickly resolved if biofuel production is confined to those plants, such as elephant grass, which can be grown in non-tropical conditions and therefore not threaten the tropical rainforest. So there is an environmentally friendly way of producing biofuel. We should not reject an excellent solution to the dwindling supply of fossil fuels just because of the objections of a few environmental extremists. Those who oppose biofuels have an anti-car agenda – they want us all to get around by horse and cart.
 - 5 We should promote biofuels as the way forward – it is either that or the end of civilisation as we know it. With biofuels we can be sure that the fuel needs of advanced technological society have been catered for, so we can look forward to ever-growing prosperity and progress. Big oil companies agree that this is the direction in which catering for our fuel needs should go, and they should know what they are talking about.
- (a) Using the exact words from the passage as far as possible, identify the main conclusion in the argument in paragraphs 4 and 5. [2]
- (b) Using the exact words from the passage as far as possible, identify **three** reasons used to support the main conclusion. [3]
- (c) Evaluate the reasoning in the argument. In your answer you should consider any strengths, weaknesses, flaws and unstated assumptions. [5]
- (d) 'We cannot both tackle global warming and increase our progress and prosperity.'
Write your own short argument to support **or** challenge this claim. [5]

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