Cambridge Assessment International Education

Cambridge International AS & A Level

THINKING SKILLS **9694/23**

Paper 2 Critical Thinking **October/November 2021**

1 hour 45 minutes

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **all** questions.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **8** pages. Any blank pages are indicated.

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Section A

Study the evidence and then answer Questions 1 and 2.

Source A

Popular science magazine

The brain of a honeybee is no bigger than a pin head and it contains fewer than a million neurons, compared to the 85 billion neurons in a human brain. Yet with that tiny brain, bees can do some extraordinary things.

Bees have the ability to communicate the location of flowers to other bees in the hive. When a foraging bee has found a source of nectar and pollen, it informs others in the hive by performing a dance called the 'waggle dance'. There are six different kinds of dance and bees have been seen to change their behaviour according to the dance they observe. If bees encounter a dead bee at a flower, they change the pattern of dancing they perform back at the hive: this suggests they have performed a risk/benefit analysis.

Source B

UK research report

In 2017, researchers at the Queen Mary University of London performed an experiment to examine the learning capabilities of bumble bees. Some bees were trained to pull a small wooden ball along a pathway and into a marked circle. When a bee put the ball into the circle, it was rewarded with a drop of sucrose. The bees quickly learned to perform the task accurately. In the second phase of the experiment, untrained bees watched a trained bee performing the task and being rewarded. After the untrained bees had observed the process three times, they could perform the task themselves with almost 100% accuracy. By comparison, bees with no training and no observations achieved 30% accuracy.

Source C

Australian research report

Bees are more intelligent than was previously thought. Previous studies have shown that honeybees can count, but recent research from the Royal Melbourne Institute of Technology (RMIT) has shown that they understand the concept of zero. This concept is quite sophisticated, and the discovery of zero enabled great progress to be made in mathematics.

The RMIT research shows that bees understand that zero does not simply denote absence, but has meaning within a sequence of numbers. The researchers discovered this by presenting bees with sets of two images, each containing a number of black dots, and rewarding them for choosing the image with the lower number of dots in each case. The bees quickly learned to choose the lower number, which was sometimes one, sometimes two and sometimes three. When presented with an image with no dots, the bees selected it, showing that they recognised zero as the lowest number.

Source D

Article from magazine aimed at the general reader

One approach to defining intelligence is to focus on what is lost by people living with Alzheimer's disease (dementia). People with dementia find it hard to cope with changes to their environment, such as moving into a care home or even into another room. This suggests that intelligence consists of several related abilities that enable people to respond to the demands of their environment. Animals and even plants can do this, and so it makes sense to describe them as being intelligent.

Source E

Another article from the same issue of magazine

Intelligence can be defined as 'the ability to think, reason, and understand instead of doing things automatically or by instinct.' Intelligence includes the following abilities:

- being self-aware
- forming concepts
- understanding complex ideas
- understanding and using abstract concepts
- reasoning from one concept to another
- solving problems
- planning for the future
- using language to communicate.

To count as being intelligent, you must not only act intelligently but also know what you are doing.

1 **(a)** How well does Source A support its suggestion that honeybees 'have performed a risk/benefit analysis'? [4]

(b) How useful is Source B in relation to establishing that bees are intelligent? [4]

(c) Is Source C an argument? Justify your answer. [2]

(d) Explain why Source D is only moderately reliable. [2]

(e) Identify an inconsistency between the understanding of 'intelligence' in Source E and in Source D. [2]

2 *You are advised to spend some time planning your answer before you begin to write it.*

'Bees are highly intelligent.'

To what extent do you agree with this claim? Write a short, reasoned argument to support your conclusion, using and evaluating the evidence provided. [8]

Section B

Read the following passage and then answer Questions 3, 4 and 5.

1 All young people should be able to go to university. The United Nations Universal Declaration of Human Rights identifies education as a universal human right; because it is universal, it applies to 18-year-olds just as much as it does to children aged 5 or 11.

2 In previous times, the only people who received more than a basic education were selected on the basis of money or ability. In many European countries, children were tested at the age of 11, and only those who were judged to have the most academic potential received an education which would prepare them for university and well-paid jobs. Those countries now agree it is wrong to choose some children and reject others at age 11, and to be consistent they should recognise that selection at the age of 18 is equally unacceptable.

3 Rejecting some young people from university in the belief that they would be unable to benefit from that level of study infringes their right to equality of opportunity. Giving extra advantages to people who happen to have been born with academic potential is as unjustified as it would be to reward them for being tall. Those who through no fault of their own are academically less talented should be given the support they need to help them to succeed at university.

4 People who go to university gain increased employability and higher lifetime earnings. So depriving some people of a university education imposes a severe financial penalty on them. A recent report revealed that in the US, people with a university degree earn $900 000 more on average over their lifetime than those who end their education after high school.

5 The main benefits of a university education are not financial. Spending three years away from home, among people of a similar age, gives adolescents a safe environment in which to grow up and to discover or create their adult identity. Since every young person, irrespective of academic ability or other qualities, has the potential to benefit from these opportunities, it is unfair to deprive some of them of the chance to do so.

3 **(a)** Using the exact words from the passage as far as possible, identify the *main conclusion*. [2]

(b) Using the exact words from the passage as far as possible, identify **three** *intermediate conclusions*. [6]

(c) Identify the argument element and explain the function of the following words from paragraph 4:

'in the US, people with a university degree earn $900 000 more on average over their lifetime than those who end their education after high school' [2]

(d) Identify an *unstated assumption* required by the reasoning in paragraph 2. [2]

4 **(a)** Identify and evaluate an *appeal* in paragraph 1. [2]

(b) To what extent is the reasoning in paragraph 1 weakened by a flaw of *equivocation*? [2]

(c) Evaluate the *analogy* in paragraph 3. [2]

(d) Identify **one** flaw or weakness in paragraph 4 and assess the extent to which it reduces the support given to the main conclusion. [2]

5 *You are advised to spend some time planning your answer before you begin to write it.*

'People who are rich should be able to buy advantages for their children.'

Write your own short argument to support **or** challenge this claim. The conclusion of your argument must be stated. Credit will not be given for repeating ideas from the passage. [8]

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