

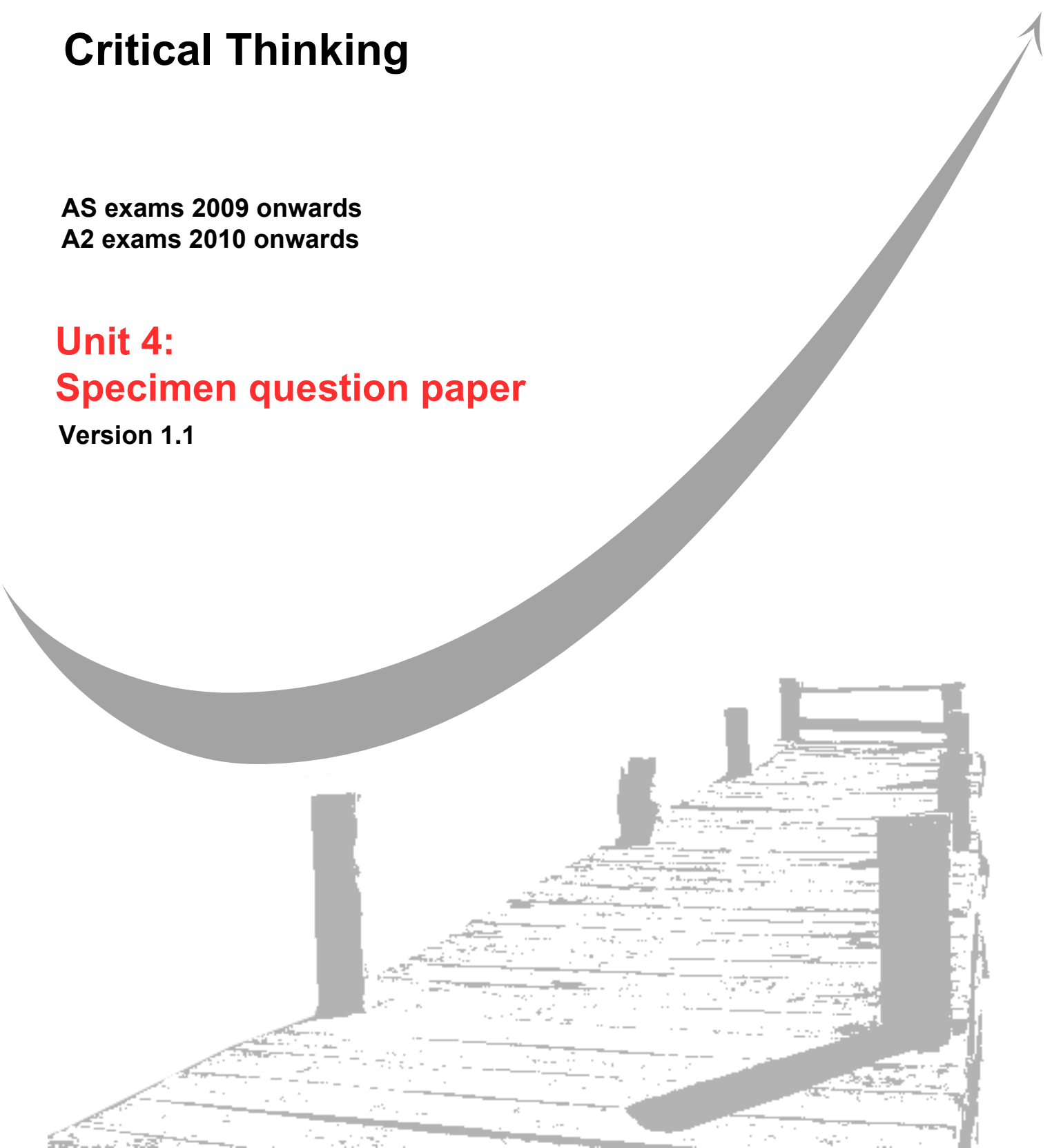
**GCE**  
**AS and A Level**

# **Critical Thinking**

**AS exams 2009 onwards**  
**A2 exams 2010 onwards**

## **Unit 4:** **Specimen question paper**

**Version 1.1**



# SPECIMEN PAPER TO PREPARE FOR THE JUNE 2010 AND SUBSEQUENT EXAMINATIONS

General Certificate of Education  
Advanced Level Examination



## CRITICAL THINKING CRIT4 Unit 4 Reasoning and Decision Making

### Case Study Source Material

- The material consists of seven sources (A to G) on the subject of the treatment of animals by humans, especially for scientific research. These documents are being given to you in advance of the Unit 4 examination to enable you to study the content and approach of each extract, and to consider issues which they raise, in preparation for the questions based on this material in the examination.
- Two further sources (H and I) will be provided in the examination paper.
- Your teachers **are** permitted to discuss the material with you before the examination.
- You may write notes in this copy of the Source material, but you will **not** be allowed to bring this copy, or any other notes you may have made, into the examination room. You will be provided with a clean copy of the Source Material at the start of the Unit 4 examination.
- This is a controversial subject, and feelings on many aspects of it can run high. The examination questions will ask you to *critically consider* various claims and arguments, and to make a *reasoned decision* of your own.
- You are not required to carry out any further study of the material than is necessary for you to gain an understanding of the detail that it contains and to consider the issues that are raised. It is suggested that at least three hours' detailed study is required for this purpose.

#### Supplementary Material

In addition to the printed material, the pre-release material will contain a video clip entitled: 'Testing, One, Two, Three...' produced by PeTA (People for Ethical Treatment of Animals).

This material can be viewed by visiting the following website:

<http://www.peta2.com/feat/testing123/>

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**DOCUMENT A (PRE RELEASE)**

**Animal testing**

The text is not reproduced here due to third-party copyright constraints.

Source: Adapted from [www.wikipedia.com](http://www.wikipedia.com)

## DOCUMENT B (PRE RELEASE)



**People for the Ethical Treatment of Animals (PETA)**, with more than a million members and supporters, is the largest animal rights organization in the world. Founded in 1980, PETA is dedicated to establishing and protecting the rights of all animals. PETA operates under the simple principle that animals are not ours to eat, wear, experiment on, or use for entertainment.

## PETA's Mission Statement

PETA focuses its attention on the four areas in which the largest numbers of animals suffer the most intensely for the longest periods of time: on factory farms, in laboratories, in the clothing trade, and in the entertainment industry. We also work on a variety of other issues, including the cruel killing of animals that

are branded as "pests".

PETA works through public education, cruelty investigations, research, animal rescue, legislation, special events, celebrity involvement, and protest campaigns.

### ABOUT PETA

**PETA believes that animals have rights and deserve to have their best interests taken into consideration, regardless of whether they are useful to humans. Like you, they are capable of suffering and have an interest in leading their own lives; therefore, they are not ours to use—for food, clothing, entertainment, experimentation, or any other reason.**

Source: <http://www.peta.org/>

## DOCUMENT C (PRE RELEASE)

# The Animal Welfare View

People are part of the natural world, and our relationship with animals is defined in large measure by the natural order. We know that humans and animals are inextricably tied together. In fact, we depend upon one another. It is virtually impossible for any living creature on this planet to exist without making use of fellow creatures. This is a fact that is unquestioned by any member of the animal kingdom with the exception of humans.

The notion of rights is a uniquely human one. Animals do not recognize the rights of other animals. They kill and eat one another as a matter of survival. But for humans, the concept of rights is a fundamental element of our social pact – the contract that permits us to live with one another in comparative harmony. As part of that contract, we recognize that rights are accompanied by responsibilities. In return for our rights as members of society, we accept the obligation to abide by society's laws.

But animals cannot be parties to contracts. If we are prepared to assign rights to animals, what responsibilities do we expect them to fulfil?

In the animal welfare view, social traditions and the body of existing law with respect to our use of animals are based on the premise that man's right to use animals for human benefit carries with it the responsibility to do so humanely. These traditions and laws exist because for centuries man has recognized the wisdom and natural correctness of using animals for food, clothing, research, education and companionship.

### **Animal rights vs animal welfare – what's the difference?**

For the last 50 years or more, the debate has been heating up over the role of animals in human society, with particular reference to the ways in which we use them for our benefit. Fuelling the debate still further has been the emergence, particularly in the last 20 years, of a small but vociferous group of adherents to the philosophy of animal rights, which views humans and animals as essentially equal and condemns any and all use of animals for human benefit.

Animal rights advocates do not distinguish between human beings and animals. In the words of Ingrid Newkirk, founder of PeTA: "There is no rational basis for saying that a human being has special rights. A rat is a pig is a dog is a boy. They're all mammals."

Animal rights supporters reject all animal use, no matter how humane. Some animal rights advocates have even suggested that animal welfare reforms actually impede progress toward animal rights because they improve the conditions under which "animal exploitation" occurs, making it more difficult to stimulate public opposition to animal use.

When the interests of humans and animals come into conflict, animal rights advocates put the animals first. Newkirk has said, "Even if animal research produced a cure for AIDS, we'd be against it."

The animal welfare philosophy is fundamentally different from the animal rights philosophy, since it endorses the responsible use of animals to satisfy certain human needs. These range from companionship and sport, to uses which involve the taking of life, such as for food, clothing and medical research. Animal welfare means ensuring that all animals used by humans have their basic needs fulfilled in terms of food, shelter and health, and that they experience no unnecessary suffering in providing for human needs.

Source: <http://www.furcommission.com/debate/welfare.htm>

**DOCUMENT D (PRE RELEASE)**

**What the UK  
wants** **Research Using Animals**  
**more alternatives  
high welfare  
strict controls**

During our lives,  
medical research  
uses two mice  
and half a rat for  
each of us.



Facts and Figures | CMP/MORI research 2005

**ANIMAL RESEARCH FACTS AND FIGURES**

**Statistics**

2.85 million scientific procedures were started in 2004, a rise of about 63,000 (2.3 per cent) on 2003. This is the same level as in the 1950s.

Mice, rats and other rodents were used in 85 per cent of procedures. Most of the remainder used birds (4 per cent), and fish (7 per cent). Dogs, cats, horses and non-human primates were used in less than 1 per cent of procedures.

The number of procedures using non-human primates fell by 12 per cent from 2003 to 2004. Since 1995 there has been a 35 per cent fall in the number of primates used for the first time.

34 per cent of procedures involved genetically modified animals; over two-thirds of these procedures were for breeding, not for experiments.

About 40 per cent of all procedures used some form of anaesthesia to alleviate the severity of the interventions. For many of the remaining procedures the use of anaesthesia would have increased the animal welfare cost of the procedure.

Nearly 13 per cent of procedures were required to comply with legislation or other regulation, for example by the Medicines Act. All new prescription medicines must be studied in animals before they can be tested and used in people.

Almost 42 per cent of procedures took place at universities and medical schools, 33 per cent at companies. The rest were at public health laboratories, NHS hospitals, government departments, other public bodies and non-profit making organisations.

There are 227 laboratories in the UK permitted to carry out animal research and some 14,000 scientists have personal licences to undertake this work.

The approximations given in the headline captions above were derived using the 2004 UK animal research statistics. They assume the average British citizen has a life span of 78.5 years and the population is 60 million.

No. of mice = 1.91 million x 78.5 (years) ÷ 60 million = 2.5

No. of rats = 0.46 million x 78.5 (years) ÷ 60 million = 0.6

### **Controls and legislation**

Research using animals in the UK comes under the Animal (Scientific Procedures) Act 1986. The Home Office runs the regulatory system set up by the Act via the Animals (Scientific Procedures) Division.

Under the Act, research establishments have to be approved and scientists must prove they are suitably qualified, trained and experienced. Research projects are assessed to ensure the use of animals is justified. Also the number of animals and any suffering must be minimised.

There are around 30 Home Office inspectors for the 227 establishments permitted to carry out research using animals in the UK. This means each inspector has far fewer laboratories than counterparts in other countries, e.g. each US inspector has over 90 laboratories. UK inspectors make about 2600 visits to research establishments each year. About 2/3 of these visits are unannounced.

All institutions conducting research using animals must have a local ethical review process, which questions the necessity for the experiments. Funding bodies, such as the Medical Research Council and the Wellcome Trust, also have their own review of grant applications to ensure any proposed animal procedures meet their criteria.

### **Welfare**

The husbandry of research animals is conducted to high standards. Animal technicians look after the daily needs – feeding, exercise, stimulation, cleaning – and in-house vets are available for the animals' well-being. Responsibility for welfare rests with the licence-holding scientist.

Professional bodies – such as the Institute of Animal Technicians, the Laboratory Animal Science Association and the Laboratory Animal Veterinary Association – work with the Home Office and others, such as FRAME and UFAW, to share best practice and improve animal welfare.

Source: <http://www.medicalprogress.org/>

## DOCUMENT E (PRE RELEASE)

# Speech by Lord Warner, Parliamentary Under-Secretary of State in the Lords, 18 May 2004: Coalition for Medical Progress Parliamentary Reception

...Some people argue that no animals should ever be used in medical research. Other people accept that experiments on animals are sometimes necessary if the treatments of tomorrow are to be found.

We should perhaps recall that research using animals contributed to almost every single one of the medical advances of the last century.

The effectiveness of penicillin, which revolutionised the treatment of bacterial infection, was proved in tests on mice.

Insulin for Type 1 diabetes, which affects more than 300,000 people in the UK, came about because of research on rabbits and dogs in the 1920s.

Polio epidemics were consigned to history by vaccines produced as a result of studies done on laboratory animals, including monkeys.

Hip operations were developed in the 1950s through research on dogs and sheep, and since then have reduced pain and increased mobility for over a million people in the UK.

Kidney dialysis came about through research on rabbits and dogs.

And – more recently – drugs for the treatment of cancer, HIV/AIDS, asthma and depression have all been developed with animal experiments.

The current challenge for medical science is twofold. First, it is to achieve further health gains by taking recent advances from the bench to the bedside...

This year's Budget set out an extra £100 million per year by 2008 for clinical research. This will be used to fund research into the treatment and cure of four major diseases - Alzheimer's, stroke, diabetes and mental health. Without the underpinning studies in animals, trials of new drugs could not take place and advances in medical practice would be stifled.

Second, the challenge for medical science is to protect the gains that have already been made over the past century.

The problems posed by the emergence of antibiotic resistant bacteria and the re-emergence of tuberculosis demonstrate the need to continue research into these conditions, including with the use of animals.

Animal research is needed for a number of reasons:

- To develop an understanding of how body systems operate normally when healthy, making it possible to follow the changes that happen in a disease.
- To observe a disease in its early stages and understand its progress.
- To monitor the biological chain of events triggered when a treatment is introduced into an animal and predict how this will be paralleled in humans.
- To make sure a medicine can reach its precise target in the body,
- and to study any side effects of a treatment, which can only be fully assessed in the complex environment of the whole body.

Of course, as you know, most medical research does not involve the use of animals. Wherever possible, alternatives such as cell cultures, tissues, computers, bacteria and plants are used instead.

But when animals are used, because there is no other way of advancing medical knowledge, there are - quite rightly - strict controls. The law is enforced by the Home Office. Legal measures have existed in the UK since 1876, and these were the first in the world. The controls were significantly revised and extended by the Animals (Scientific Procedures) Act of 1986.

And they were strengthened again in 1998. The Act is widely acknowledged to be the most rigorous piece of legislation of its type in the world.

Where the use of animals is justified, animals of the lowest neurophysiological sensitivity must be used. And primates can only be used in special cases that require clear justification, when no other species is suitable.

The Act stipulates that, before a researcher can use animals, a series of special licences must be obtained.

First, each establishment must hold a licence, demonstrating that it is a proper place to perform scientific procedures on animals.

Second, all researchers must have a personal licence showing that they understand the law and the ethics of animal research.

Third, the programme of research must be given a project licence, describing precisely what procedures are being undertaken and for what reason.

The Act also says that researchers must have the necessary skill, training and experience, and that the research laboratory must have the facilities to care for the animals properly.

In addition, the Act includes the three principles – the “3 Rs” - of **replacement**, **reduction** and **refinement**, which must be followed. These are:

- the replacement of animals by non-animal methods where possible
- the reduction of numbers of animals to the minimum necessary to obtain statistically valid results where replacement is not possible
- and the refinement of all procedures to minimise adverse effects on the animals.

To conclude, as the Department of Health stated in evidence to the House of Lords Select Committee:

“Research is essential for progress, and research on animals has contributed to almost every medical advance of the last century. The NHS would be unable to function effectively were it not for the availability of medicines and treatments that have been developed or validated through research using animals. Thus the public health – in its widest sense – is the ultimate beneficiary of medical research using animals.”

Source: [www.dh.gov.uk](http://www.dh.gov.uk)

**DOCUMENT F (PRE RELEASE)**

**Huntingdon Life Sciences**

The text is not reproduced here due to third-party copyright constraints.

Source: [www.wikipedia.com](http://www.wikipedia.com)

## DOCUMENT G (PRE RELEASE)

### Dissection

by Colin Rowbotham

This rat looks like it is made of marzipan,  
Soft and neatly packaged in its envelope;  
I shake it free.  
Fingering the damp, yellow fur, I know  
That this first touch is far the worst.  
There is a book about it that contains  
Everything on a rat, with diagrams  
Meticulous, but free from blood  
Or all the yellow juices  
I will have to pour away.  
Now peg it out:  
My pins are twisted and the board is hard  
But, using force and fracturing its legs,  
I manage though  
And crucify my rat.  
From the crutch to the throat the fur is ripped  
Not neatly, not as shown in the diagrams,  
But raggedly;  
My hacking has revealed the body wall  
As a sack that is fat with innards to be torn  
By the inquisitive eye  
And the hand that strips aside.  
Inside this taut, elastic sack is a surprise;  
Not the chaos I had thought to find,  
No oozing mash; instead of that  
A firmly coiled discipline  
Of overlapping liver, folded gut;  
A neatness that is like a small machine -  
And I wonder what it is that has left this rat,  
Why a month of probing could not make it go again,  
What it is that has disappeared . . .  
The bell has gone; it is time to go for lunch.  
I fold the rat, replace it in its bag,  
Wash from my hands the sweet  
Smell of meat and formalin  
And go and eat a meat pie afterwards.  
So, for four weeks or so, I am told,  
I shall continue to dissect this rat;  
Like a child  
Pulling apart a clock he cannot mend.

*Source: Strange Estates* Rockingham Press

**END OF SOURCE MATERIAL**

# SPECIMEN PAPER TO PREPARE FOR THE JUNE 2010 AND SUBSEQUENT EXAMINATIONS

General Certificate of Education  
Advanced Level Examination



## CRITICAL THINKING CRIT4 Unit 4 Reasoning and Decision Making

**For this paper you must have:**

- A copy of the Case Study Source Material (enclosed)
- an 8-page answer book

Time allowed: 1 hour 30 minutes

### Instructions

- Use blue or black ink or ball-point pen.
- Write the information required on the front of your answer book. The *Examining Body* for this paper is AQA. The *Paper Reference* is CRIT4.
- Answer all questions.
- Do all rough work in your answer book. Cross through any work you do not want marked.

### Information

- The maximum mark for this paper is 70
- This paper consists of **three** sections.  
**Section A** contains three compulsory questions based on statistical information.  
**Section B** contains two compulsory questions based on the pre-release sources.  
**Section C** contains five compulsory questions based on Document I provided in this examination paper  
You will be marked on your ability to use good English, to organise information clearly and to use specialist vocabulary where appropriate.

### Advice

- The recommended time allocation for this unit is as follows:
  - Section A: 20-25 minutes
  - Section B: 10-15 minutes
  - Section C: 50-60 minutes

## SECTION A

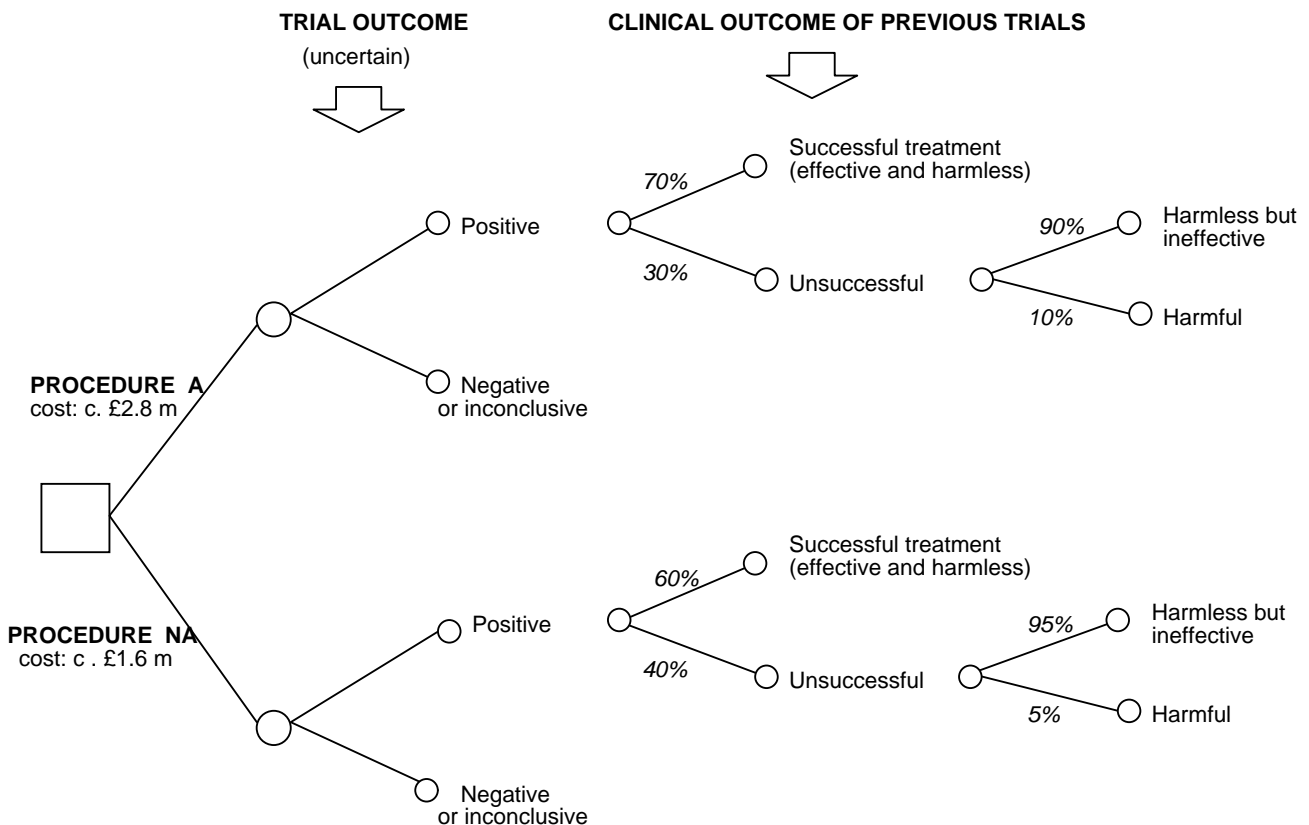
Study **Document H** before answering **Questions 1** and **2**.

### Document H

A pharmaceutical company is investigating the safety and effectiveness of a new over-the-counter (i.e. non-prescription) skin treatment they are developing, and must decide between bids from two research establishments each offering a different procedure. Procedure A includes toxicity testing on live animals. Procedure NA involves no animal experimentation, and relies on computer modelling and cell cultures (a technique for growing cells under laboratory conditions).

Consultants have advised the company of the relative costs of the procedures; and of some of the risks, based on the past records of the two research establishments. The consultants looked at the statistics for previous trials – both animal and non animal – on similar products. They compared the positive outcomes of such trials with the eventual clinical outcome – i.e. the way the products performed when used by humans.

These data have been included in the following decision-tree diagram.



NOTES:

- The consultants have warned that harmful side-effects in humans could cost as much as £10 million in compensation and legal expenses, as well as withdrawal of the product from the market.
- Revenue, if the new product is successful, is estimated at around £12 million over a five-year period (less initial costs). A negative outcome, using either procedure, will still incur the cost of the trial.
- The consultants also predict that displaying the ‘Not Tested on Animals’ logo on the product would give an edge on competitors worth about £800,000, based on current trends in public opinion.



- 1 Based on the statistical information, and the estimates provided by the consultants (**Document H**), which of the two procedures, A or NA, would you advise the company to choose – and why?

Your advice should be made on *purely economic grounds*, by considering the financial implications and the probability of the various possible outcomes.

Give:

- (a) a reasoned, economic argument for your decision, supported by relevant calculations; (9 marks)
  - (b) a brief, critical evaluation of the available data in terms of its reliability and relevance. (3 marks)
- 2 Referring to one or more of the pre-release materials identify one further factor which might have financial implications for the company if it decides on animal trials, and briefly explain why. (2 marks)

Read **Document D** and then answer **Question 3**.

- 3 (a) The ‘facts and figures’ presented in **Document D** are clearly intended to support the case for animal experimentation. Identify some of the ways in which the data are biased for this purpose. (3 marks)
- (b) How might an opponent of animal experimentation present some of the same facts and figures in order to support their case? (3 marks)

## SECTION B

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Arguments for or against animal research are not all economic (as in **Question 1**). Many employ *ethical* reasoning.

- 4** Find and summarise **one** example of ethical reasoning from **Documents A, B or C** of the pre-release material. Use it to explain some of the ways in which ethical grounds are different from economic grounds. (8 marks)
  
- 5** Read the last four lines of the poem *Dissection* (**Document G**). What general ethical principle is implicitly assumed here? (2 marks)

## SECTION C

Study **Document I** before answering all questions.

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### DOCUMENT I

## Animal research: a scientist's defence

Extract from a longer article by Stuart Derbyshire, in the on-line magazine, *Spiked*

### **Medical research is not concerned with the welfare of animals - and nor should it be.**

1. Animal research has been an integral part of the development of modern medicine, has saved an incalculable number of lives, and prevents tremendous human suffering. Yet it continues to be an issue of major political controversy: most recently, in the UK, over the protests surrounding the Cambridgeshire-based company Huntingdon Life Sciences.
2. But where are the scientists in this debate? A strong case for more animal research could easily be made. Yet scientists appear increasingly apologetic about their actions.
3. I would argue that scientists have made a series of disastrous tactical errors in dealing with the animal rights movement, and they continue to do so. Most of the errors have to do with trying to accommodate to the animal rights movement, or to reason with it and make compromises.
4. The most widespread accommodation is the adoption of 'the three Rs', first proposed in 1959 following a report for the Universities Federation for Animal Welfare (See pre-release document 5). The three Rs are 'refinement', 'reduction' and 'replacement'. Scientists pledge to refine their techniques so as to induce the minimum amount of suffering; reduce the number of animals used; and replace animals with other techniques wherever possible.
5. At first blush the three Rs appear reasonable, if somewhat patronising. All animal experimenters know to reduce the amount of stress an animal is subjected to (refinement) so as to not hinder discovery – a stressed animal will be less likely to behave or respond normally. Equally, all researchers will naturally tend to use fewer or less-costly animals or techniques (reduction and replacement) so as to get quicker results for fewer resources.
6. Patronising or not, the three Rs were not developed from the perspective of good scientific practice. They were developed from the perspective of animal welfare. This makes the three Rs disastrous, reinforcing a lowlife opinion of animal researchers and encouraging the notion that animal experiments are problematic.
7. Once the 'perspective' of the animal is adopted it is inevitable that all experimentation will be seen negatively, as no animal experiments are in the interests of the animal. Adoption of the three Rs comes across as a confession of guilt. The impression is that research animals are a 'necessary evil', when in fact they are necessary, full-stop.
8. The defensiveness of scientists indicates that we have lost the collective nerve to make our case. Scientists have retreated from the public platform, preferring to keep their laboratory doors closed and their research techniques a secret. Experiments are performed under conditions of security matched only at military institutions.

9. When scientists are occasionally forced into the spotlight of debate, they speak in euphemism to hide the unpleasant details of their work. One example is the way medical researchers talk about animals' deaths. Animals may be 'sacrificed' or 'euthanised', but never 'killed'. This strategy is painfully shortsighted because it insulates the public from the realities of science, and hands animal activists an easy propaganda weapon. The activists show the reality – gruesome pictures and films of animals in their death throes – and in the process highlight that biomedical science is covering up, hiding a gruesome scene, implying shame of their own activities.
10. The concessions to animal rights, made by the adoption of the three Rs and the shroud of secrecy covering animal research, belittle the history of the medical breakthroughs made possible by such research. Worse, these concessions limit the potential for further research and ultimately make the principle of continuing animal research impossible to uphold.

### **No middle ground**

11. The supposed 'middle ground' shared by researchers and animal rights activists is illusory. The reality is that greater accommodations will be provided to the animal rights activists at the cost of future animal experimentation and discovery. The agendas are diametrically opposed, and any compromise, including concessions to animal welfare, will only lead towards the ultimate abolition of vivisection.
12. It makes no sense for animal researchers to engage in a discussion of animal welfare beyond ensuring that the animals will be properly housed, fed and exercised, and that they will be generally physically and behaviorally nourished as much as possible to benefit their performance as an experimental subject. The idea that we should - or even can - be any more concerned about their welfare stretches credibility.
13. Giving animals diseases, carrying out experimental surgeries and infusing untested drugs hardly sound like procedures aimed at protecting the animals' welfare. Mistreating animals is unacceptable because it ruins experiments – but any further concern for the animals' wellbeing is beside the point.
14. Animal researchers and their advocates cannot have it both ways. Professed concern for the welfare of laboratory animals is simply inconsistent with the reality of laboratory experiments that almost invariably result in distress and death for the animal. The fact is that medical research is not concerned with the welfare of animals, and nor should it be.
15. The aim of medical research is to get answers about diseases and problems that afflict humanity. Taking a course that retards that progress is an affront to humanity in general and a particularly acute blow to those individuals whose very lives depend on that progress. Defending the welfare of animals means placing the life of a mouse, rat, cat, dog, monkey or whatever above that of the seriously ill.
16. Those of us who research with animals, or support the benefits of such work, have made a moral choice. We place human wellbeing and health above that of animals and we unequivocally believe that human life comes first. We must be willing to come out of our high-security research bunkers, stop hiding behind euphemisms and niceties, forgo attempts to make peace with our detractors, and stand by our decision.

**Stuart Derbyshire** is an assistant professor in the University of Pittsburgh Department of Anaesthesiology.

Source: *Spiked*

Read **Document I** and then answer **Questions 6 to 10**.

- 6** Identify the position Stuart Derbyshire argues for concerning animals and medical science. Is it a moderate or an extreme position? *(3 marks)*
- 7** Identify and briefly explain the two choices Stuart Derbyshire opposes, making clear how they differ from each other. (The pre-release material may be useful here.) *(4 marks)*
- 8** “Derbyshire describes the decision facing researchers as a ‘moral choice’ but in reality his own arguments are more pragmatic than ethical.”  
Is this a fair assessment of the article or not? Give some reasons and examples to support your answer? *(5 marks)*
- 9** Identify **two** possible weaknesses in Stuart Derbyshire’s argument from paragraph 11 onwards. *(4 marks)*
- 10** Imagine yourself in the position of a scientist chosen to lead a team on a new medical research project. The end-result could provide relief from a number of human illnesses and may, in some cases, save lives.

You must decide whether or not to follow the Derbyshire recommendation on the use of animals, or to adopt **one** of the alternatives he rejects.

In the course of your reasoning you should:

- Identify some of the possible consequences of each of the options.
- Assess the consequences in terms of:
  - their likelihood,
  - their importance, and
  - whether they count for or against the choice in question.
- Consider which values and/or principles should be taken into account when judging between the options.
- Refer selectively to (and/or quote from) the pre-release material where relevant; and introduce some relevant points of your own.
- Briefly but clearly explain your decision, and give your main reason(s) for reaching it.

*(24 marks)*

**END OF QUESTIONS**