

Level 2
Thinking and Reasoning Skills

B902

Unit 2
Resource Booklet

Time:

Candidates answer on the question paper.

Additional materials:

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INSTRUCTIONS TO CANDIDATES

- This Resource Booklet must be handed in to your teacher at the end of each lesson. **You must not write on the booklet**, apart from **writing your name, Centre Number and Candidate Number** at the top of this page.

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This document consists of **13** printed pages and **3** blank pages.

Section A

DOCUMENT 1

Animal Experiments: the issues

Scientists perform experiments on animals for two main reasons. The first reason is to test whether substances used by humans – such as drugs to cure people of illnesses – have the desired effect without at the same time poisoning them. The second reason is to do fundamental research in order to understand how humans and other animals function. This research can in some cases then be used to develop cures for human and animal diseases.

The basic principles governing animal experiments were defined in 1958 by the British biologists William Russell and Rex Burch. These principles usually summarised as the 3Rs of Reduction, Refinement and Replacement are:

- **Reduction** – decreasing the number of animals to the minimum required for a scientifically valid result.
- **Refinement** – refining the experimental procedures so as to improve the life of animals used in experiments as much as possible. This may include for example providing toys, hiding places and nesting material in animal cages.
- **Replacement** – replacing animal procedures with non-animal techniques wherever possible. For example, making use of computer models, experiments in test tubes with cell cultures and evidence from autopsies rather than experiments on live animals.

However many people believe this does not go far enough and want to see all animal experiments banned. Firstly, they argue that vivisection (experimenting on live animals) is morally wrong and some even argue that animals should be given the same rights as humans. Secondly, they also argue that such experiments are not as useful as the supporters of animal experiments claim.

It is therefore important to decide whether any animal experiments should be allowed and if so on which animals and for which kind of reasons.

DOCUMENT 2A**Are animal experiments necessary?**

The following dialogue took place in the student union of a leading British university.

Names have been changed to secure the anonymity of the participants.

Anita is twenty years old and coming to the end of a degree in Biology. She is hoping to get a position with a leading drug company in the USA which may involve some experimentation with animals. She is a member of Pro-Test and a supporter of the work of Professor Aziz.

Ben is nineteen years old and is studying History. He is hoping to become a lawyer. He is a member of SPEAK, the animal rights protest group, and believes in direct action to save animals from what he sees as torture.

Anita I just don't see how you can possibly object to animal experiments, they are absolutely necessary.

Ben I don't see what you mean by necessary. You know full well there are alternatives like computer modelling and experiments on cells in test tubes.

Anita Yes they are useful but they are not enough on their own. For example Professor Aziz could not have discovered deep brain stimulation by working on tissues in a test tube or fiddling around with a computer. He needed to experiment on living working brains like ours and that means – like it or not – experimenting on monkey brains!

Ben If animal experiments are so useful how come we still cannot cure cancer? We have been doing these so called experiments for over a hundred years now and we still haven't a cure for many major diseases. So clearly vivisection doesn't work!

Anita That is ridiculous. The opposite is the truth. What you call vivisection has been around for over a hundred years and medicine has been getting better and better so clearly animal experiments do work.

Ben What evidence have you got that medicine has been getting better?

Anita That is easy! People in this country are living longer and longer. In fact the average age at which people die in this country has increased by almost three months every year for the last century!

Ben Well I doubt that has got much to do with your evil animal experiments. I can think of other simpler explanations for that! And anyway there is plenty of evidence animal experiments don't work!

Anita Such as?

Ben Easy. The British Medical Journal for July 2004 says 5% of all hospital admissions in the UK every year are due to an adverse drug reaction (ADR) of which 18,000 resulted in death. That is five times the number of people killed in traffic accidents each year! And all these drugs have been tested on animals and found to be safe! So it is obvious animal tests are useless and therefore we should stop them at once!

- Anita I don't think that is the right conclusion to reach from this evidence. It is easy to see you are just a historian and not a scientist. What use is history anyway? You are all stuck in the past wanting to go back to a society before science, before human progress. You are all just frightened of progress because you are too stupid to understand it!
- Ben Oh yeah and you are just in it for the money! It is just big business to you. The companies you want to work for all know the tests don't work. Just look at the thalidomide drug that was tested on animals and passed safe and then caused all those problems for pregnant woman!
- Anita It wasn't tested on pregnant animals though. That was the mistake!
- Ben As I said it all comes down to money. The companies do the tests to make sure they cannot be sued for negligence in the courts if something goes wrong, that is all.
- Anita I think you'll find your reasoning there doesn't stand close examination. The truth is we share 90% of our genes with mice and their basic chemistry, cell structure and bodily organisation is just like ours. So experiments and tests on mice can tell us a lot and it is likely that what harms them will harm us too.
- Ben And I have heard it said somewhere that probably 70,000 people a year in England alone die because of using drugs passed safe by animal tests. And that fits with what the British Medical Journal says as well. So you'll never convince me that animal experiments are useful or work.

DOCUMENT 2B**Are animal experiments morally justified?**

Three days later Anita and Ben met up once more in the student union of their university.

They are joined on this occasion by another friend, Priya.

The conversation turns to animal experiments once more. However this time the focus of the discussion is no longer whether animal experiments work but whether they can be morally justified.

Anita is twenty years old and coming to the end of a degree in Biology. She is hoping to get a position with a leading drug company in the USA which may involve some experimentation with animals. She is a member of Pro-Test and a supporter of the work of Professor Aziz.

Ben is nineteen years old and is studying History. He is hoping to become a lawyer. He is a member of SPEAK, the animal rights protest group, and believes in direct action to save animals from what he sees as torture.

Priya is nineteen years old and is studying Philosophy. She loves horse riding and would like to compete nationally. Her grandmother has Parkinson's disease.

Ben It is a black and white issue. Either you care about animals or you don't care about animals. There is no middle ground. And if you care about animals, as you say you do, you should oppose all animal experiments.

Priya I am not sure. Surely some forms of animal experiments are not wrong? I can see it might be wrong to experiment on a great ape. But that is banned in our country anyway. But surely it is different with mice and rats? And most animal experiments involve them.

Anita You are being too nice to him, don't get him started. The truth is all animal experiments are equally ok. You can do what you like to an animal and it doesn't matter because animals are not people.

Priya Oh, I am not sure that can be right. What about pulling legs off spiders or kicking cats? Surely that is wrong?

Ben Of course it is. It is cruel and evil just like vivisection and testing drugs on animals. It is always wrong to harm or damage living things because all life is sacred.

Anita You make me laugh. The mould in your unwashed coffee cup is alive. Do you think it is wrong to kill that? And you like gardening don't you? I'm pretty sure I saw you weeding last week. Well those weeds you burnt were alive weren't they?

Priya I think Ben meant animal life. You did, didn't you Ben? He meant it is always wrong to harm or hurt live animals.

Anita And do you agree with that?

Ben Of course she does! As I said right at the start either you care about animals or you don't. There is no middle ground. What difference does size make? As far as I'm concerned it is as wrong to experiment on a mouse as it is to experiment on a great ape. To think otherwise is like saying it is ok to kill a small Year 7 but not ok to kill a tall Year 11.

Anita Well at least we agree on that! There is no difference between experimenting on a mouse and experimenting on a great ape but that is because they are both just animals and not people.

Ben So there is nothing wrong with torturing a mouse or mutilating an ape?

Priya Of course there is.

Ben Well that is what Anita and her friends do in the science labs. Of course they don't call it that. They call it animal experiments. I call it by its real name, vivisection, and that is just another fancy word for animal torture and animal murder! There is no difference between killing and dissecting a rat in a lab and torturing and killing a cat in a park. It is all the same and is all equally wrong.

Priya But isn't there a difference between an animal experiment and torturing and killing a stray cat? It is like saying there is no difference between what a torturer does to a prisoner and what a dentist does to a patient. They are clearly different.

Anita My point exactly.

Ben So on that basis I suppose you must think that the Nazi experiments on human beings were justified because the scientists who did them were looking to find cures for diseases and the results of their experiments could be used to save lives?

Anita That's a stupid thing to say and insulting!

Ben Is it? I cannot see any difference and that is my point. Once you accept experiments on mice, you may as well allow them on monkeys and apes and then why stop there? Before you know it you will be defending experiments on human beings. There is nowhere to draw the line.

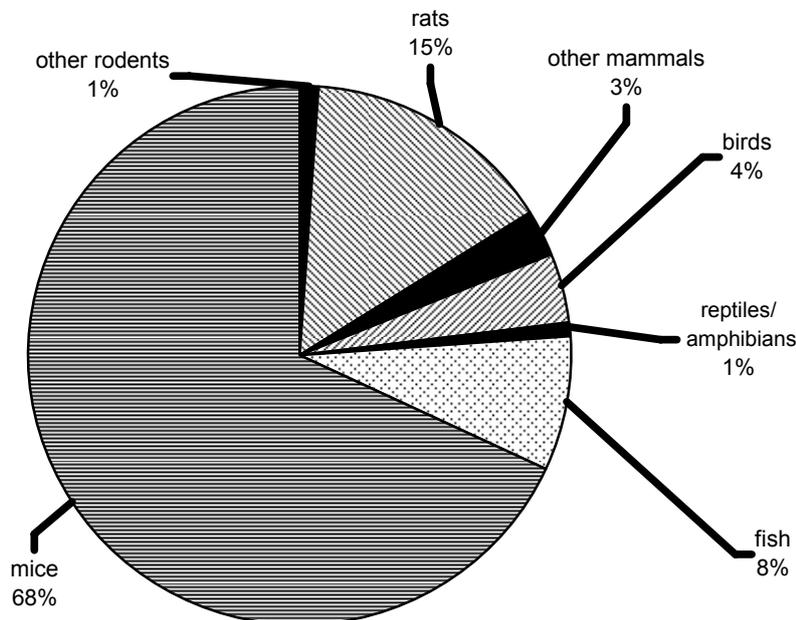
DOCUMENT 3

Animal Experiments: Evidence

Which animals and in what numbers

1. Official government figures show that just fewer than three million animals are used in experiments every year. To put this in perspective, for each person in the UK only about three animals are used for medical research for the whole of their lifetime.
2. Over 500 million animals are consumed as food in this country every year.
3. In general, only about 10% of medical research in this country involves the use of animals.

Below is a pie chart which shows which animals are used in experiments in the UK. The figures are provided by the government and relate to 2005.



Procedures by animal Species

Source: Home Office

Who is responsible and why

1. According to UK government figures for 2005
 - a. 43% of all animal experiments are conducted by universities.
 - b. 31% of all animal experiments are conducted by commercial, profit making, companies.
 - c. nearly a third of experiments involving animals were for the purposes of pure research aiming at increasing our knowledge of biology.
 - d. 14% of experiments involving animals were for the purposes of discovering whether drugs have harmful side effects.
2. According to Oxford University some of the major advances in the last century - anaesthetics, insulin, vaccines, penicillin or other antibiotics - would have been impossible without animal research.

Law and morals

1. According to government officials the UK has some of the tightest regulations in the world to ensure that animals used for research are well cared for and that those looking after them adhere to the highest standards.
2. In 1997 the UK government banned animal experiments on great apes (gorillas, chimpanzees and orang-utans) but not on other primates such as monkeys.
3. The great apes (gorillas, chimpanzees and orang-utans) differ from human beings by only 1% of their DNA and their brain structure is sufficiently close to the human to make them an invaluable resource for scientists seeking to understand the workings of the human brain.
4. 133 MEPs have signed a petition calling for a total ban on the research on primates throughout EU.
5. According to the Universal Declaration of Animal Rights (adopted at UNESCO headquarters in 1978), wild animals have the right to live in their natural environment. In addition, experiments on animals involving physical or psychological suffering violate the rights of animals.

DOCUMENT 4**What is deep brain stimulation?**

Deep brain stimulation (DBS) allows sufferers to cut the symptoms of a long-term illness at the flick of a switch. For example patients with Parkinson's disease who experience tremors, stiffness, and mobility problems, and who are not responding to drug treatment, can now be relieved of all these symptoms.

The surgery involves implanting a thin electrode several centimetres into the brain. The electrode is connected by a wire running under the skin to a battery pack, which responds remotely to a control switch that can be carried by the patient.

Once in place, the device produces electrical signals that interfere with and block the signals that are generating the symptoms. The degree of stimulation can be easily adjusted without surgery if the patient's condition changes.

The procedure was developed and perfected by Professor Tipu Aziz as a result of his experiments on primates like monkeys.

DOCUMENT 5***The great apes: gorillas, chimpanzees and orang-utans***

The Great Ape Project (GAP) wants to extend three basic rights to our nearest relatives, the great apes: the right to life; the right to liberty; and the right not to be tortured.

Supporters of the Project point out that the great apes (chimpanzees, gorillas and orang-utans) are not only our closest relatives; they are also, more importantly, creatures who are most similar to us in their behaviour. Their intellectual abilities can be compared with those of children between two and three years old, and their social bonds are stronger than we would expect from a child of that age. A typical great ape is, according to GAP, the intellectual equal, or superior, of millions of young humans whose rights to life, liberty and freedom from torture we do recognise.

Today, great apes are property which can be owned. Experiments on apes continue in several EU countries. Apes can also be used in zoos and circuses. Therefore according to GAP it is time to put the slavery of the apes behind us. They need basic rights, enforceable by law.

DOCUMENT 6**Witness 1: Laurie Pycroft founder of Pro-Test a society for supporting animal experiments**

He is 16 and works from a bedroom strewn with empty Coke cans and fried chicken boxes. But Laurie Pycroft, a school drop-out, is leading the fightback against animal rights extremists who are trying to halt construction of an £18 million research laboratory in Oxford.

The teenager's pro-vivisection movement, Pro-Test, staged the first demonstration in support of the Oxford laboratory.

**Laurie Pycroft led the march (right hand side)**

Mr Pycroft revealed that he had received death threats, "many badly written", from animal rights fanatics. But he remained determined: "I'm sick of seeing only the anti-vivisectionist argument being represented. It's time to speak out in support of scientific research. Animal experiments are necessary. The suffering of a few animals can vastly improve the quality of life of millions of people."

Mr Pycroft, who has wanted to be a neurosurgeon since the age of seven, said research he did as a member of the National Academy of Gifted and Talented Youth convinced him that vivisection was the only way to ensure safe scientific advances. He dropped out of his state school last year, however, where he was studying for A-Levels in physics, biology, chemistry and psychology, because of health problems but plans to go back in September.

Source Telegraph on line 25/02/2006

DOCUMENT 7**Witness 2: Professor Stein supporter of Pro-Test**

Professor John Stein, 64, is a distinguished neurophysiologist, from Oxford University and supporter of Pro-Test. Critics of Professor Stein's research point out that it involves inducing Parkinson's disease in monkeys and then attaching electrodes to their brains to test therapies which may help human sufferers.

Professor Stein said: "It's necessary. The suffering of a few animals can vastly improve the quality of life of thousands of people so I think it is entirely justifiable, especially since they are bred for the purpose and it is not a wild monkey. Imagine yourself a mother with a drowsy, whimpering three-year-old with meningitis. Fifty years ago, that child would have died. Now, due to the discovery of penicillin in this university, we can stop that child dying. Do we stop her getting penicillin just because it had been tested on 20 rats?"

Source Telegraph on line 25/02/2006

DOCUMENT 8**Witness 3: Professor Tipu Aziz supporter of Pro-Test**

Professor Aziz pioneered in Britain the procedure known as deep brain stimulation to halt the symptoms of Parkinson's disease which affects one in one hundred people over 60 years old. Patients have small electrodes permanently implanted in their brains. Some patients have described the surgery as miraculous - tremors stop and, in some cases, patients walk again. "Many people cry after the surgery because they are so happy that the symptoms have been effectively turned off."

He performs brain surgery about three times a week. He says that 40,000 people around the world have benefited from the techniques he has developed. He is very proud of his work.

Only one problem: Professor Aziz is a vivisectionist. He experiments on live monkeys. He puts electrodes in their brains. He has drugged them, too, in order to recreate the symptoms of Parkinson's. He began this research in the 1980s but the breakthrough came in 1989 when he injected a monkey with the "Parkinson's drug" and then did surgery to install electrodes in the monkey's brain, which enabled him to "switch off" the Parkinson's symptoms. This proved to be the foundation of his neurosurgical work for the next 17 years.

He reckons to use on average two monkeys a year this way and estimates that about 100 have been used for such research around the world. "I have absolutely no qualms about what I do. I know it is right "

Professor Aziz also supports animal experiments for cosmetic reasons. He says, "People talk about cosmetics being the ultimate evil. But beautifying oneself has been going on since we were cavemen. To say cosmetics is an absolute evil is absurd."

Source Guardian 04/04/2006

DOCUMENT 9**Witness 4: Mel Broughton member of SPEAK campaigns against animal experiments**

Photo: Richard Lowkes

Mel Broughton is a campaigner on behalf of SPEAK which is opposed to all animal experiments and Mel has been very active in campaigning against animal experiments at Oxford university. He has been passionate about animal welfare all his life. In the 1980s he campaigned against circuses, zoos, factory farming and live animal exports. He works as a landscape gardener.

"We have learnt that a professor recently applied for a licence to conduct brain experiments on primates. We've seen the licence application. Monkeys will have electrodes fitted into their brains, and will be deprived of food and water. They will be strapped into a chair for up to 18 hours a day. The reason given for this research is to study hunger and obesity in human beings. But we know why people get fat. We know why we feel hungry. Why do this to living creatures when you already know the answers? But whether it's a dog, cat, monkey, fish, amphibian, or rodent, the point remains that that animal has the ability to suffer..... I personally won't give up until all animal experimentation, for whatever purpose, is banned"

Source Independent on Sunday 10/04/2006

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