

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced Subsidiary GCE

CRITICAL THINKING

Paper 1

Monday

10 JANUARY 2005

Morning

2870/11 2870/12

Additional materials: Answer sheet Answer booklet

TIME 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the spaces provided on the answer booklet.
- There are two sections in this paper.

Section A

Answer all questions. For each question there are five possible answers, A, B, C, D, and E. Choose the one you consider correct and record your choice of letter on the answer sheet provided.

Section B

Answer all questions.

Read each question carefully and make sure you know what you have to do before starting your answer. Answer Section B in the answer booklet.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 40.

Section A

Answer **all** questions in this section of the paper.

You are advised to spend no more than 30 minutes on this section of the paper.

Pets are often blamed for people picking up various disorders. However, if anything, we make our pets more ill than they make us. Pets can pick up our infections. For example, though cats and dogs tend to be immune to colds, hamsters are not and easily catch a cold from us. Furthermore, most pets can catch the flu from us. Skin conditions such as scabies are often blamed on pets, but pets are more likely to catch these conditions from us than we are from them. In addition, our lifestyle is often bad for our pets. For example, dogs have a higher risk of lung cancer if they live with smokers, and caged birds can be poisoned by the fumes from deep-fat fryers.

Which of the following, if true, would **most strengthen** the above argument?

- A Few animal viruses are known to cross to humans.
- **B** Annual vaccinations for cats and dogs offer few health benefits.
- **C** The outbreak of flu in Asia has been blamed on farmed birds such as chickens.
- **D** Some exotic animals such as snakes need very specific conditions in which to live.
- **E** The skin condition ringworm, picked up from cattle, can be passed on between people very quickly.

[1]

2 Since 1989 there has been a ban on the sale of elephant ivory. This ban was introduced to protect elephants from being killed for their tusks. Since then, tusks from about 6000 African elephants have been stockpiled. These are, it is claimed, from elephants which have either died naturally or which were killed in official culls in South Africa, Namibia and Botswana. These countries want to sell the tusks. Other countries, led by Kenya, oppose the sale because it would encourage the illegal killing of elephants. This is correct. The 1989 ban on the sale of elephant ivory was and remains good news for African wildlife. By highlighting the plight of the elephant, it puts conservation of animals very high on the agenda.

Which of the following, if true, would **most weaken** the above argument?

- A There are many animals much more under threat than the African elephant.
- **B** The killing of hippos for their tooth ivory has increased fivefold since 1989.
- **C** Between 1970–1985, 85% of the world's rhinos were killed, primarily for their horns.
- **D** It cannot be proved that none of the tusks from the 6000 elephants came from illegally-killed elephants.
- **E** A previous sale of official stocks of ivory in 1999 was followed by an increased level of elephant poaching in Kenya.

3 UK children have the highest rate of asthma in the world. Almost a third of 13–14 year olds in this country report that they have symptoms of the disease, three times the rate of France, Germany and Italy. Why is our rate so high compared to theirs? Either there's something different about the UK compared to these other countries or there's an issue about diagnosis. Given that the UK is similar to these other countries in being a technologically-advanced urban society, there's no obvious difference to explain the higher rate. This indicates that the explanation must be to do with diagnosis. Either UK doctors are too willing to diagnose children as asthmatic or doctors in France, Germany and Italy are too unwilling.

Which one of the following is the best statement of the **flaw** in the above argument?

- A The author comes to a conclusion on diagnosis that is self-contradictory.
- **B** The author restricts the argument to only four countries.
- **C** The author restricts the options to either explaining a high rate or a low rate of asthma.
- **D** The author fails to consider alternative possible explanations for the different rates of asthma.
- **E** The author fails to distinguish between reporting symptoms of asthma and having the disease.

[1]

4 Over the past 92 years, the record for the men's 100 metres race has been reduced by only 0.82 seconds. This is despite the huge changes in the technology of athletics: computer-designed lightweight shoes, standardised running tracks, specialist clothing. This technology must have had some positive effect on performance, but the striking thing is how little. Athletes of the 1950s and 1960s had none of these advantages. Even more significantly, if we go back over two hundred years, people were fitter than they are today. They used to walk and run everywhere. Sixteenth century longbows have been discovered, and very few men alive today can pull them: they're not strong enough. Hundreds of years ago, people must have been very, very strong.

Which of the following is a conclusion that can be drawn from the above passage?

- **A** Today's athletes produce performances that are less good than has been predicted.
- **B** Today's best athletes are probably not the best of all time.
- **C** Athletic performance would have declined if athletes hadn't used the technology of athletics.
- **D** If they were performing today, athletes of the 1950s and 1960s would have broken today's records.
- **E** None of today's sportspeople is as strong or fast as people hundreds of years ago.

4

5 advancing knowledge. The role of women in this history is either unknown or seen as unimportant (Marie Curie being a notable exception). But women have often made very significant contributions. For example, Michael Faraday's discovery of electromagnetism started with his reading Jane Marcet's book 'Conversations on Chemistry'. Charles Darwin used his wife and other female relatives to edit his writing and to carry out observations of both children and animals. In various ways, women have played a vital role in helping science to become much more widely known. Thus the role of women in the history of science has been much more important than is often realised.

Which of the following, if true, would most strengthen the above argument?

- The apparently limited role of women in science is similar to their role in the history of Α literature and art.
- В Very little information about whether women have been involved in scientific discoveries has survived.
- С Translations of important scientific works have often been carried out by women.
- D Many notable scientists needed a large team of people to carry out detailed work.
- Ε Until the twentieth century, most scientific work took place in private homes rather than large laboratories.

[1]

6 Ten per cent of adults in the UK say they are happier spending time with their computer than with their partner or friends. Perhaps this statistic shouldn't surprise us. We live in a society in which we spend little of our time in social or community activities. Unlike in TV soaps, we don't shop at the corner shop but drive to supermarkets; we play video games with imaginary characters for company. But there is a lot of evidence that people who maintain social relationships with many people are happier, live longer, and get over depression quicker. Thus, computers make us miserable, unhealthy, and shorten our lives. People should switch them off and get out more.

Which one of the following is the best statement of the **flaw** in the above argument?

- The author fails to explain the causal link between social relationships on the one hand, and Α happiness and health on the other.
- В The author uses only two examples to support their claim that we are spending too little time in social activities.
- С The author fails to consider that some people's social relationships can be unfulfilling.
- D The author draws a conclusion about computers from evidence that fails to identify them as a problem.
- The author uses the term 'happier' and 'unhealthy' without explaining how they are to be E defined.

7 It used to be said that 'the camera never lies' because photographers record only what is 'there'. Recent revelations of doctored photographs have challenged this. The well-publicised reduction of Kate Winslet's legs for a magazine cover photograph is a good example. But the practice of changing reality in photographs is an old one. Abraham Lincoln, US President 1861–1865, had his image adjusted to make his neck look less scraggy. In the Soviet Union of the 1920s and 1930s, people who fell out of favour were removed from photographs. The technology for altering images is now so advanced that we could create a photograph of anybody doing anything with anyone. When you read of 'irrefutable photographic evidence', be concerned. Even if cameras don't lie, photographs often do.

Which of the following is the best statement of the **main conclusion** of the above argument?

- **A** Photographs are often distortions of reality.
- **B** Technology enables us to create photographs that could show anything.
- **C** The practice of altering reality in photographs has been carried out for a long time.
- **D** Recent examples of doctored photographs have made us realise that the camera sometimes lies.
- **E** We should be troubled by the claim that there is 'irrefutable photographic evidence' of something.

[1]

8 What exactly is 'love'? Only a small part of the brain is active in creating the feeling of being 'in love'. When couples hold hands or hug, levels of the hormone oxytocin increase. When we pick our mate, we try to pick someone whose genes are as different from our own as possible (to increase the chances of children being healthy), something that we can detect by smell. So love is a chemical process in a small part of the brain which is concerned with just the need to produce healthy children. Thus all those songs about love are unnecessary. They're about something like hunger and fear, ordinary survival mechanisms. Stop worrying about what love is all about. Mice and rabbits feel the same thing.

Which of the following is the best statement of the main conclusion of the above argument?

- **A** Songs about love serve no useful purpose.
- **B** We should not be concerned with the meaning of love.
- **C** Being in love is responding to an ordinary survival mechanism.
- **D** Love is no more than brain chemistry designed to increase our chances of producing healthy children.
- **E** Being in love for us is no different from the feelings that mice and rabbits have for each other.

9 The recent discovery of Sedna, the most distant known member of the solar system, has raised the question: what is a 'planet'? Our solar system currently has nine, although there is some uncertainty whether Pluto, the smallest, is one. A necessary feature of planets is that they orbit a star (in our case, the Sun). This rules out Titan, one of Saturn's moons, even though it is bigger than the planet Mercury. Thus size isn't necessarily significant. If it was, then the Moon would be a planet, being larger than Pluto. So what about Sedna? It orbits the Sun, and is about three-quarters the size of Pluto. What do we also do about Quaoar, the next largest Sun-orbiting object beyond Pluto, with a diameter only 300 miles smaller than Sedna's?

Which of the following is a conclusion that can be drawn from the above passage?

- A If Sedna is a planet, then so too must Quaoar be a planet.
- **B** If Pluto is a planet, then so too must Sedna be a planet.
- **C** If Sedna is a planet, then so too must Pluto be a planet.
- **D** If Sedna isn't a planet, then neither is Pluto a planet.
- **E** If Quaoar isn't a planet, then neither is Sedna a planet.

[1]

10 Bad breath can be caused by bacteria in the mouth, the smell coming from the compounds that they produce. Chewing cinnamon-flavoured gum can reduce the problem. In a study involving three different types of gum, it was found that gum flavoured with cinnamon was the most effective in reducing the amount of bacteria in the mouth (by more than 50%). A second gum which contained natural flavours (not including cinnamon) was less effective but, because it also contained a plant extract that suppressed bacteria, it eliminated about 40% of the bacteria. The third gum, with no flavouring, produced no significant reduction in bacteria. Thus people who use chewing gum should use that flavoured with cinnamon (or at least one with a plant extract that has a similar effect).

Which of the following is an underlying **assumption** of the above argument?

- A Bacteria in the mouth cause no greater problem than bad breath.
- **B** Chewing gum is either unflavoured or has natural flavours.
- **C** People use chewing gum in order to deal with the problem of bad breath.
- **D** Bad breath has no other cause than bacteria in the mouth.
- **E** Cinnamon-flavoured chewing gum is the best method of treating bad breath.

11 Each day we have to make at least 200 decisions. These can be small ones such as 'should I have a burger for lunch?' or big ones such as 'which university should I go to?' Choice is normally seen as a good thing (by increasing our happiness). Supermarkets and department stores are therefore better than the corner shop. Furthermore, there is a link between prosperity and choice: the more money we have, the more choices we have. However, there is evidence that if we have too much choice, we can't choose at all. If we have to consider too many versions of the same thing, we become anxious. 'Will I choose the right one? Might I miss something I haven't thought about?'

Which of the following is a conclusion that can be drawn from the above passage?

- **A** Our happiness can decline as our prosperity increases.
- **B** Having the ability to make choices is not a good thing.
- **C** The more happy we are, the more choices we need to make.
- D Having to make decisions each day makes us anxious.
- **E** Poor people will have lower levels of anxiety than those who are well-off.

[1]

12 About £13 billion a year is spent on gambling. It would seem obvious that all of this money is spent by people hoping to win more than they risk. Oddly, however, about 25% of people who bet expect to lose. These are people who use no system to work out the most likely result of what they're betting on, whether it's a horse race, a football match, or which record will be the next 'number one'. They appear to give every possible outcome an equal chance. In that the purpose of gambling is to make money, it makes no sense for this 25% to be betting at all. Given that they'll lose their money, they should spend it on more worthwhile things.

Which one of the following is the best statement of the flaw in the above argument?

- A The author ignores those gamblers who lose money although they expect to win.
- **B** The author assumes that all types of gambling offer the same chances of winning.
- **C** The author assumes that having a system for gambling is a sufficient condition for winning money.
- **D** The author fails to consider that there are always some bets which have a lower chance of succeeding than others.
- **E** The author ignores the possibility that expecting to lose money when gambling is not a sufficient condition for doing so.

13 People are rightly encouraged to wash their hands after visiting toilets. However, although lavatory seats have been found to have 49 microbes per square inch on them, this is insignificant compared to the number found on everyday items in an office. Desks have been found to have 20,961 microbes per square inch on them; telephone earpieces had 25,127. This is unsurprising, in that most microbes are spread by unclean hands, coughing and sneezing. The health risks from working in such an environment are obvious. People should ensure that desks and telephones (and any other equipment used by more than one person) are disinfected regularly. Unless they do, there will be a high chance of staff picking up diseases and thus having to take time off.

Which of the following is the best statement of the main conclusion of the above argument?

- **A** There are obvious health risks from working in an office.
- **B** Regular disinfection of office equipment needs to be carried out.
- **C** If office equipment is not disinfected regularly, staff will have to take time off through sickness.
- **D** Without regular disinfection of office equipment, staff in offices will pick up diseases.
- **E** It should not surprise us that office equipment has such a high number of microbes per square inch.

[1]

14 Nine million nappies are thrown away every day. These result in 800,000 tons of nonbiodegradable and toxic nappy waste being dumped in the UK's landfill sites each year. In order to produce these nappies, 7 million trees have to be cut down. All these figures are alarming. However, those people who use disposable nappies are very often the same ones who collect their newspapers and cartons for recycling. They do this, they say, in order to save trees and to stop our landfill sites being filled up. In doing so, they are completely inconsistent. All their fussing about the 'environment' applies only when the 'environment' doesn't get in the way of their convenience. If they really cared about it, they would stop using disposable nappies.

Which of the following is an underlying assumption of the above argument?

- A People who use disposable nappies are aware of how this product affects the environment.
- **B** There is no justification for using disposable nappies.
- **C** There is no point in people recycling paper if they use disposable nappies.
- **D** Using disposable nappies is worse for the environment than not recycling paper.
- **E** People who use alternatives to disposable nappies care more about the environment than those who don't.

15 Amongst young women, there has been a big increase in 'binge' drinking, in which large amounts of alcohol are consumed over a short amount of time. According to a recent survey, many of these women drink in this way to deal with stress. Unfortunately, about 50,000 women are admitted to hospital as a result of 'alcohol-related diagnoses' every year. The Government's response to 'binge' drinking is to allow 24-hour opening times for pubs (as in France and Spain) in an attempt to create a more relaxed approach to drinking and so avoid the rush to drink before closing time. This change should result in a reduction in the amount of 'binge' drinking amongst young women. In consequence, there should be a noticeable improvement in women's health.

Which of the following is an underlying assumption of the above argument?

- A 'Binge' drinking is not an effective way of dealing with stress.
- **B** Drinking alcohol over many hours is not dangerous to health.
- **C** Women's health is better in France and Spain than it is in the UK.
- **D** Using alcohol to deal with stress is less likely if pub opening hours are increased.
- **E** All of the 50,000 women admitted to hospital as a result of 'alcohol-related diagnoses' are 'binge' drinkers.

[1]

16 What's the difference between a parking fee and a parking fine? The price? But, to a rich person, the price is irrelevant. So, to the same person, is a fine for any offence significant? Not unless the level of the fine is high in relation to their income. This shows that we must set the level of fines for any particular offence at the same level in relation to people's income. Thus, if it is set at 10% of monthly income, someone on £1000 a month pays £100, and someone on £5000 a month pays £500. This is entirely fair, in that it gives the consequences of each crime the same ineligibility. Any other system would be like punishing the short more severely than the tall.

Which of the following is the best expression of the **meaning** of the word 'ineligibility' as used in the above argument?

- **A** absence of support
- **B** lack of consideration
- **C** miscalculation of benefit
- **D** lack of legality
- E degree of unacceptability

[1]

Total marks for Section A [16] marks

Section B

Answer all questions on this section of the paper.

You are advised to spend no more than 30 minutes answering the questions on each passage.

Read the passage 'Our Identity Crisis' and then answer Questions 17-22 about it.

Our Identity Crisis

The Government wants all those aged 16 years and over to have Identification (ID) Cards. They hope that 80% of the relevant population will be covered by the scheme by 2013. The idea of ID cards has considerable public support: in a recent survey, 80% supported it. This high level of support is almost certainly as a result of the threat of terrorism, but it's misguided. Requiring that people carry ID cards does not guarantee that they will not commit crimes. After all, it is significant that many of those involved in the attack on the World Trade Center had valid ID cards. Also, it needs to be remembered that in prisons, where the identity of everybody is known, a relatively high number of crimes – especially violent ones – are committed.

We are used to having lots of forms of ID: for example, passport, driving licence, and bank cards. As a result, it might be thought that having a national ID card is just a small extension of an already-accepted idea. But the plan to eventually make such a card *compulsory* shows that this is a very considerable extension. After all, just because most of us have a mobile phone doesn't mean that we should *have* to have one.

A national ID card system makes sense only if it enables the government to know what everybody's doing at any one time. But for them to have this knowledge requires that we agree to constant monitoring. The introduction of CCTV cameras in public places is a good thing both to deter crime and to help catch those who commit it. The idea of further monitoring is unacceptable. Privacy cannot be sacrificed for security.

Crucial documents such as passports can be fairly easily forged, so it is not obvious what would stop ID cards from being the same. The Government's response is that the ID cards will carry what is called 'biometric' data. Such data would include unique individual characteristics such as fingerprints and iris recognition (the iris is the coloured part of the eye). However, using biometric data creates its own problems. For one thing, there would have to be a massive programme to record everybody's fingerprints and iris pattern. If it was decided to get the whole UK population of 60 million covered in one year, that would mean that 240,000 would have to be processed every working day. For another, one in 70,000 people have no iris, so a system of iris recognition is seriously flawed.

The Government's ID card plan is not supported by evidence from other countries. Though other countries have ID cards, none uses biometric data. Such countries include Germany, France and Belgium. None of these countries has a very high crime rate as a result of not using such data. The UK banks looked at the idea of using biometric data but rejected it in favour of the 'chip and pin' system because the necessary technology is not yet available on a big enough scale. A system of personal numbering would be much easier to implement. For example, in Japan, each citizen is given a unique 11-digit number.

If ID cards are going to play such an important part in correctly identifying who we are, then the accuracy of the information they contain is vital. The case of the British pensioner arrested in South Africa on the instructions of the FBI illustrates the problem. He had the same name as someone on the FBI's 'most-wanted' list, but was not that person. His passport – which proved his identity – was insufficient to protect him.

The cost of having a national ID card system is huge. It is predicted that it would be something like £3 billion. This would provide a large number of hospitals, schools, and improved roads. Even if we could afford the cost, the Government's planned national ID card system has too many problems. It should not be supported.

1

Now answer questions 17–22.

- 17 Give two reasons the author uses to support their conclusion. [2]
- (a) In Paragraph 1, the author argues that the high level of public support for ID cards is 'misguided'. Give one assumption the author must make about the reason for the public support of ID cards.
 - (b) In Paragraph 1, the author uses the example of prisons to show that ID cards are not a good idea. Evaluate the relevance of this example. [1]
- **19** In Paragraph 2, the author argues against the idea of compulsory ID cards by giving the analogy of mobile phones. Evaluate the relevance of this analogy. [2]
- In Paragraph 4, the author gives two examples of problems in the use of biometric data. Show one weakness in each of these examples.
 [2]
- (a) The author refers to the examples of Germany, France and Belgium in Paragraph 5 in order to argue that using biometric data will not reduce the crime rate. Evaluate the relevance of the evidence of the crime rate for this purpose.
 - (b) In Paragraph 5, the author gives evidence on the UK banks' rejection of biometric data to argue against its use in ID cards. Give **one** assumption the author must make in order to use this evidence.
 [1]
- 22 (a) Give one example of where the author is inconsistent in their argument. [1]
 - (b) Give one example of how information the author gives could be used against their conclusion. [1]

Of Mice and Athletes

We need to completely rethink our response to the issue of performance-enhancing drugs in sports. For one thing, we tend to think it's a new problem. But it isn't. In ancient Greece, the participants at the original Olympic Games used potions to improve their performance. In the 19th 1 century, endurance athletes used caffeine, alcohol and cocaine. Potions one day; steroids the next: there's no difference.

A 1995 survey of 198 American athletes who were of Olympic standard showed that more than half said that they would take a banned substance if they wouldn't get caught, and if it would guarantee that they would win every competition for five years. They said they would still take it even if doing so would lead to a certain early death. The study is often quoted to show that there is a widespread problem. However, at the 1996 Olympics in Atlanta, 2000 of the 11,000 athletes were tested, and only two failed the drugs test. Clearly, the problem is much smaller than the survey suggests.

One of the most famous cases is that of Ben Johnson. He broke the 100 metres world record at the 1988 Olympics, but was stripped of his gold medal as a result of being tested positive for steroids. He protested, saying he was not alone in taking such drugs. He was right to protest. Indeed, half of the top twelve 100 metres runners of all time have faced accusations of using banned drugs (including Linford Christie and Dwain Chambers). Furthermore, he'd been tested nineteen times in the previous two years, and had always passed. So much for the point of testing.

The basis of the objection to using performance-enhancing drugs is that it is cheating. So what is cheating? It's giving an advantage to someone that other people do not have. But then all sorts of things could come under this heading. Having a natural advantage of height (how many of us could compete at basketball with Michael Jordan?); having more suitable environmental 4 conditions (for example, it's no accident that many of the top skiers are Austrian). So, if using drugs is cheating, then so too is the family that pays for their child to have the best education available.

If a sportsperson has a positive drugs test, it is no defence to say that they did not knowingly take a performance-enhancing drug. But this principle of 'strict liability' raises more problems (especially about punishing the innocent) than it solves. The example of horses illustrates this. It is widely believed that some horses are given tranquillisers before some events to calm them down. If this were found to be true, who would be responsible? Clearly not the horse. Would it be the rider, the trainer, the vet? Might it be something in a sugar lump which a visitor has given the horse?

5

An additional problem is that various everyday substances can give athletes an advantage. Just two cups of strong coffee are enough to improve performance. Should sportspeople therefore never drink coffee? Another example is that of remedies that you can buy over the counter for the treatment of colds. One athlete tested positive for drugs, only because he had used an inhaler to clear a blocked nose. In many ways, much of the campaign against drugs in sport is just about banning the use of substances that do no more than bring an athlete up to the level of their normal performance.

If we worry about performance-enhancing drugs, the next step should worry us more. Two years ago, a mouse – subsequently called He-Man – was injected with a gene that makes muscles grow and repair themselves. Though now technically very old, He-Man can climb a ladder carrying 7 three times his own body weight, and keep running around his cage all day without tiring. He-Man is the future of sport.

2870/11 Jan05

23 In Paragraph 1, the author says that there is no difference between potions used in ancient Greece and steroids. Give two reasons why there might be. [2]

13

- **24** In Paragraph 2, the author contrasts the findings of the 1995 survey with the result of drug-testing at the 1996 Olympics to show that the findings of the survey were incorrect.
 - (a) Give one way in which the author cannot argue in this way. [1]
 - (b) Give one way in which the author can argue like this. [1]
- **25 (a)** In Paragraph 3, the author agrees with Ben Johnson about his protest when he was caught taking drugs. Why is the protest nevertheless a weak one? [1]
 - (b) In Paragraph 3, the author sees the evidence of Ben Johnson's nineteen negative tests as relevant to questioning the value of testing for drugs. Give **one** assumption the author must make for this evidence to be relevant in this way. [1]
- **26** In Paragraph 4, the author gives a definition of 'cheating'.
 - (a) Evaluate this definition.
 - (b) The author gives three examples of what would be 'cheating' according to their definition: 'natural advantage of height'; 'more suitable environmental conditions'; a family paying 'for their child to have the best education'. Explain why any **one** of these examples is not an example of cheating in the normal sense.
 [1]
- 27 (a) In Paragraph 5, the author uses the example of horses to illustrate the problems of the principle of strict liability. Show why the example is **either** a good **or** a poor illustration. [1]
 - (b) In Paragraph 6, the author asks the question 'Should sportspeople therefore never drink coffee?' Show why this question exaggerates the problem that the author has raised. [1]
- (a) In Paragraph 6, the author argues that many drugs banned in sport 'do no more than bring an athlete up to the level of their normal performance'. Show how this is contradicted by the way the author refers to such drugs throughout the passage. [1]
 - (b) In Paragraph 7, the author claims that 'He-Man is the future of sport'. Give one assumption the author must make to argue this.

Total marks for Section B [24] marks

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16

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