

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Joint Examination for the Higher School Certificate  
and General Certificate of Education Advanced Subsidiary**

**GENERAL PAPER**

**8001/1,2**

**OCTOBER/NOVEMBER SESSION 2002**

2 hours 40 minutes

Additional materials:  
Answer paper

**TIME** 2 hours 40 minutes

**INSTRUCTIONS TO CANDIDATES**

Write your name, Centre number, candidate number and paper number (1 or 2) in the spaces provided on the answer paper/answer booklet.

Answer **two** questions.

Answer **one** question from Paper 1 and **one** question from Paper 2.

Write your answers on the answer paper.

Begin your answer to Paper 2 on a new and separate sheet of paper.

At the end of the examination, hand in your answers to Paper 1 and Paper 2 separately.

If you are unable to answer a question in any one Paper, send in a blank sheet giving your name, Centre number, candidate number and the number of that Paper.

**INFORMATION FOR CANDIDATES**

In Paper 1, all questions carry equal marks.

In Paper 2, the number of marks is given in brackets [ ] at the end of each question or part question.

The total time of 2 hours and 40 minutes includes 10 minutes for you to study the questions before you begin your answers. You may make notes during this time if you wish.

You are advised to spend no longer than 1 hour 15 minutes on Paper 1. You should write between 500 and 800 words.

**INFORMATION FOR CANDIDATES**

You are requested to place the answers belonging to the two papers in separate envelopes which should be marked 1 or 2.

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**This question paper consists of 7 printed pages and 1 blank page.**



**Paper 1**

- 1 How far do you agree that people from history considered 'great' rarely deserve the title?
- 2 'Not too much, nor too little.' To what extent is this the basis for a fulfilled life?
- 3 Assess the most important areas for government spending.
- 4 'Education divides, rather than unites, society.' Discuss.
- 5 Can scientists ever justify being involved in weapon research?
- 6 Is there any point in predicting the weather when we have no control over it?
- 7 'There are more advantages to living in the countryside than in the town.' Discuss.
- 8 'Children should be the product of nature, not of science.' Do you agree?
- 9 Do languages spoken by relatively few people have a place in the modern world?
- 10 'Only the rich can afford works of art.' How far is this true?
- 11 'Fiction has nothing to do with real life.' Discuss.
- 12 Assess the qualities to be found in a good advertisement.

## Paper 2

13 Read the following passage and then answer **all** the questions.

It is difficult to think of another technology – apart from nuclear technology – that has caused as much debate or concern as that of genetic engineering and its application to food.

When considering genetic engineering, it should be remembered that almost every living thing that human beings exploit has been genetically modified in a major way. The crops we use for food, the animals we eat, our pets and the plants in our gardens, are radically different from those that existed in the so-called ‘natural’ state. Thousands of years of selective breeding have improved the yields of crops, the milk production of cows, the quantity of meat on cattle and the sizes and colours of our flowers and dogs. Without this programme of genetic modification, modern life as we know it would be impossible. Ingenuity and scientific knowledge feed the world, and so it is curious that many should regard as dangerous the more efficient and knowledgeable way to breed animals and plants offered by the modern techniques of genetic engineering.

The technological developments of recent years – the ability to isolate, implant and modify genes – represent a true revolution. For the first time in our history, we have the ability to manipulate in a very precise and detailed way the very blueprint of any living organism. We can take the genes from fish that make them resistant to cold and insert them into a strawberry that will then grow better in cold conditions. We can make wheat with more gluten so that it will make better bread, and we can make tomatoes that keep their fresh-picked texture longer.

Critics of this work say that modern genetic engineering is not just an extension of the ‘traditional’ methods of breeding. Never in the past, they say, have we had the ability to transplant genes between widely different species – human genes into pigs, for example.

Nevertheless, few would deny the benefits of modern genetic engineering in medicine, such as the use of genetically-modified bacteria to produce drugs like insulin, which have saved the lives of millions. Still, many argue that genetically-modified food is simply unnecessary. It is, however, already here. The chances are that today you have already eaten a genetically-modified foodstuff or a food that was made with a modified organism. Much soya, found in many foods, is modified and much bread is nowadays produced with a genetically-modified yeast. All the indications are that these foods are harmless, but the question remains: do we need genetically-modified food?

Some crops, such as soya, have had a gene added to them to increase their tolerance to pesticides so that farmers can use those chemicals more efficiently. Many studies have shown that soya that has been genetically altered in this manner is in no way different in composition or nutritional quality from other commercially available soya varieties, and that it is suitable for food use. But the fact that in some cases the same company produces both the modified soya seed and also the pesticide has led to allegations that businesses are more interested in the profits they make from genetic engineering than in its possible effects on the environment.

Another ethical issue is whether it is right for these companies, at the beginning of the 21st century, to be allowed to patent genes (that is, to have legal ownership of them) which are chemical codes that have existed in nature for millions of years.

Again, many believe that the supporters of genetic engineering have been just a little too complacent about safety. The key question is: when we change the genetic structure of a plant or an animal, do we know enough about what we are doing to be sure of safety? Life is complex and has an unfailing capacity to surprise.

It is clear that genetically-modified foods have a lot they could offer the world if they were introduced in an open and fair way without the suspicion of big business bullying but there is a correct pace at which to introduce genetically-modified foods and many feel that the current pace is too fast. Above all, we must not become intoxicated by our power to manipulate genes. We have only just learned to do it in a very crude and simple way. Nature has been doing it for billions of years. 50 55

We have a lot to thank the genetic revolution for but we must remember evolution's ability to frustrate human desires. We must remember that our past is full of man-made disasters. Will the new genetic agricultural revolution produce unforeseen disasters as did the industrial age?

- (a) (i) From the examples of 'traditional' genetic modification given in the second paragraph, in what two general ways would 'modern life as we know it' be impossible if these modifications had not taken place? [2]
- (ii) **Briefly explain in your own words** the three respects in which modern genetic engineering goes beyond what was possible through selective breeding in the past. [6]
- (iii) It is now possible to 'isolate, implant and modify' genes. Explain briefly what each of these processes is. [3]
- (iv) What general point is being made by the mention of strawberries, wheat and tomatoes in the third paragraph? [2]
- (b) **Using your own words wherever possible**, outline the case against the modern uses of genetic engineering as presented in the passage. **Answer in no more than 100 words.** [10]
- (c) (i) Explain in a single word or a short phrase the meaning of **six** of the following words as they are used in the passage:  
exploit (line 5); ingenuity (line 11); texture (line 21); tolerance (line 36); composition (line 38); ethical (line 43); complacent (line 47); capacity (line 49). [6]
- (ii) Use each of the six words you have chosen from the list above in six separate sentences to illustrate their meanings as used in the passage. Your sentences should not deal with the subject matter of the passage. [6]

Note: Up to an additional 15 marks will be available for use of English.

- 14** You are about to interview three applicants for the position of Assistant Curator at the National Art Gallery. One of these applicants must be appointed because the position needs to be filled immediately. Apart from the daily responsibility of taking groups of visitors of all ages and nationalities round the various collections of paintings and sculptures, the job also entails putting on displays and preparing promotional material, organising workshops in art appreciation for schools and societies and laying on programmes of lectures on specific topics for invited audiences.

Below are the notes about the three applicants that you have jotted down from their applications, their testimonials and other sources.

**A ELVIRA**

- 1 50 years old, long since widowed and with no children.
- 2 Has recently been made redundant after 30 years' service in a firm that is being taken over by a multi-national company. The firm makes car components. Her former boss writes: 'Our excellent industrial relations have, for many years, been due in no small measure to Elvira's success as our Senior Personnel Officer ... Outstandingly efficient and extremely persuasive, she will be an asset anywhere.'
- 3 Former salary well in excess of that on offer but she has a pension from her previous employment.
- 4 Few hobbies because most evenings are devoted to running various activities associated with women's groups. Got someone from the National Art Gallery to speak at one of her functions a few years ago. 'Everything was laid on, just so,' he recalls. 'I had nothing to do but perform and feel that I was rather getting in the way of the real business of the evening.'
- 5 No formal qualifications in Art but she is prepared to read up on it, according to her letter of application.
- 6 Have received several e-mails from her in the past few days regarding details of the post.

**B BASIL**

- 1 62 years old, male and single.
- 2 A distinguished scholar and a highly respected broadcaster and journalist in a neighbouring country until he fled into exile in the wake of a military coup five years ago. At an early stage of his career, he became art critic of a leading national daily but was best known as a political commentator. Speaks four languages fluently.
- 3 Has been living in poverty in the country of his adoption but has recently been granted a work permit on a temporary basis. Salary on offer in no way comparable to what he had been earning at the height of his career. Not on the telephone.
- 4 Has spent a great deal of his time, since his arrival, in clubs and cafes patronised by his fellow countrymen. Rumoured to be Minister of the Interior in the Government in Exile but has never taken part in any demonstration against the military regime of his homeland.
- 5 A frequent visitor to the National Art Gallery, he has already put his scholarship to good use behind the scenes.
- 6 No recent testimonials available.

**C THOMAS**

- 1 35 years old, married and with a large family.
- 2 Teaches Art at a local secondary school since graduating with a modest degree. Head of Department writes: 'Inspirational in class but erratic outside it.'

Deputy Principal writes: 'Has a wonderful way with children of all kinds but can upset colleagues.'

Record of attendance at school is none too impressive.

His Principal declined to give a reference.

- 3 Current salary about the same as that on offer.
- 4 Own paintings have featured in several small exhibitions in the capital but never at the National Art Gallery. Quote from the latest review of his work: 'Its simplicity is its beauty.' Supplements income from classroom teaching and painting with extensive private tuition.
- 5 Groups from his school frequently visit the National Art Gallery and have been most rewarding though they tend to be directed towards modern art.
- 6 Should have been interviewed a week ago but cancelled the appointment at the last minute.

- (a) Which applicant would you be least likely to select and why? Answer in about 150 of your own words. [15]
- (b) Explain why you have decided to appoint one of the remaining applicants rather than the other. Answer in about 150 of your own words. [15]
- (c) What would be the most challenging question that you could ask the applicant you have decided to appoint? Give your reasons in about 50 words. [5]

Note: Up to an additional 15 marks will be available for use of English.

**15** Aat is a small, remote town in Bechwar. With the prospect of financial aid and expertise from various international organisations, the central government is proposing to flood the Dunno valley in which Aat is situated in order to create a vast, artificial lake which would supply water to the capital, Chumjuk, whose population has trebled within the last 40 years. The following are some of the considerations which the government has to take into account in deciding whether or not to go ahead with the Aat Dam Project (ADP).

- 1 Repeated attempts to promote tourism in and around Aat have failed owing to the hostile and conservative attitude of its inhabitants who have always wanted to keep themselves to themselves.
- 2 Drought is a common occurrence in Bechwar and neighbouring countries.
- 3 Aat is the birthplace of Hajek Isaat, the leader of the main opposition party in Bechwar.
- 4 Some of the ancient buildings in Aat are of considerable historical and architectural importance, examples being the Ur-Bechwari temples and towers.
- 5 The infrastructure of the surrounding region would be improved as a consequence of the ADP.
- 6 The River Dunno, which flows through Aat, is used for irrigation and industrial purposes downstream in Everek, a country not on good terms with Bechwar.
- 7 Garbak, Bechwar's most famous poet, wrote in the eighteenth century:  
'When all the rats in Aat are drowned  
The crops will fail for miles around.'  
(English translation from the Bechwari)
- 8 There are many unemployed skilled and unskilled workers in Chumjuk.
- 9 Aat is inhabited by an ethnic minority, the Fawis, whose home it has been since time immemorial.
- 10 Other countries, in recent years, have exported water and made a considerable profit.
- 11 A unique species of butterfly is to be found in the valley of the Dunno.
- 12 Cholera and typhoid cause many deaths in Chumjuk.

- (a) Of the twelve points given above, which do you consider to be the **least** important? Explain the reasons for your choice in no more than 50 words. [5]
- (b) Of the twelve points given above, which do you consider to be the **most** important? Explain the reasons for your choice in no more than 50 words. [5]
- (c) Points 3, 6 and 9 could be used by both supporters and opponents of the ADP to their advantage. Choose **one** of these points and
- (i) explain in no more than 50 words how supporters of the ADP could use this point; [5]
  - (ii) explain in no more than 50 words how opponents of the ADP could use this point. [5]
- (d) Make a case **for or against** the ADP. Select those considerations which support your case. Using your own words as far as possible, develop and explain those considerations to produce a convincing argument which expands the original material. Do not write more than 150 words. [15]

Note: Up to an additional 15 marks will be available for use of English.

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Copyright Acknowledgements:

Question 13. Dr. David Whitehouse, *The Power of Genes*.

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