



| BRANCHE | SECTION(S) | ÉPREUVE ÉCRITE |
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| ANGLAIS | CG/CC | <i>Durée de l'épreuve</i> 180' |
| | | <i>Date de l'épreuve</i> 13 JUIN 2017 |
| | | <i>Numéro du candidat</i> |

PART I

- DICTIONARIES ARE NOT ALLOWED FOR THIS PART -

A. ESSENTIAL ARTICLES

'Poverty or poison: The stark choice facing developing nations'

a) What makes electronic waste attractive for developing countries? (6m)

'A Paparazzo Speaks'

b) Why are the paparazzi becoming more unwilling to respect boundaries? (9m)

B. SHORT STORIES

'Edna, Back from America'

a) What does Muriel reveal about Sid and Sylvie as they are driving to the cottage? (9m)

'Sauce for the Goose'

b) What did Olivia do when she discovered that Stephen was in the freezer? (6m)

PART II

-DICTIONARIES ALLOWED FOR THIS PART –

Would you eat a burger grown in a laboratory?

The world's first hamburger made with synthetic meat protein derived from stem cells taken from cows was prepared by a celebrity chef and consumed in October 2012. The hamburger was made from 3000 strips of synthetic meat protein and a couple of hundred pieces of fat tissue grown in fermentation vats.

Dr Mark Post, of Maastricht University in the Netherlands, said that a hamburger made from artificial beef protein was a milestone in the development of novel ways to meet the global demand for meat, which is expected to double by 2050.

'We provide a 'proof of concept' showing that with in vitro culture methods that are pretty classical we can make a product out of stem cells that looks like, and hopefully tastes like, meat,' Dr Post said.

A handful of researchers had been working for years on the technical problem of extracting stem cells from bovine muscle, culturing them in the laboratory and turning them into strips of muscles that can be minced together with synthetic fat cells into an edible product.

The technical challenges included giving the meat a pinkish colour and the right texture for cooking and eating, as well as ensuring that it feels and tastes like real meat. The €250,000 cost of making the burger was paid by Google co-founder Sergey Brin, who said he got into the idea for animal welfare reasons.

Although some animals still have to be slaughtered, scientists estimate that a million times more meat could be made from the carcass of a single cow, compared with conventional cattle rearing. 'Eventually, my vision is that you have a limited herd of donor animals that you keep in stock in the world. You basically kill animals and take all the stem cells from them, so you would still need animals for this technology.' says Dr Post. As well as reducing the number of beef cattle, it would save the land, water and oil currently used to raise cattle for the meat trade.

One of the economic incentives behind the research is the increasing cost of grain used to feed much of the world's cattle. This is helping to drive up the cost of meat.

Dr Post said: 'Right now we are using about 70 per cent of all our agricultural capacity to grow meat through livestock. You are going to need alternatives. If we don't do anything, meat will become a luxury food and will become very expensive'.

Livestock also contribute a lot to greenhouse gas emissions more so than our entire transport system. Livestock produces 39 per cent of the methane, 5 per cent of CO₂ and 40 per cent of all the nitrous oxide. Eventually we'll have an 'eco-tax' on meat.'

Growing meat in fermentation vats might be better for the environment. And it might be more acceptable to vegetarians and people concerned about the welfare of domestic livestock, Dr Post said. He explained that there were many reasons why people were vegetarian. Members of the Dutch vegetarian society said that they would eat this meat if it has cost fewer animal lives and requires less intensive farming

Growing artificial meat would also allow greater control over its makeup. It will be possible, for example, to alter the fat content, or the kind of fat the meat contains. 'You could make any type of meat, you could make mixed meats, I'm pretty sure you could even make panda meat', Dr Post concluded.

582 words

The Independent, 20 February 2012 (adapted)

A. COMPREHENSION QUESTIONS

Answer in your own words.

- c) What are the reasons for vegetarians to be interested in the synthetic hamburger? (5m)
- d) Explain how the synthetic burger was produced. (5m)
- e) Why is meat no longer going to be affordable? (5m)

B. Development Essay (15 marks) (250 words,+/- 10 %)

Is genetically modified food a blessing or a curse?