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Other names

Pearson
Edexcel GCE

Centre Number

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Candidate Number

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General Studies

Advanced Subsidiary

Unit 1: Challenges for Society

Monday 5 June 2017 – Afternoon

Time: 1 hour 30 minutes

Paper Reference

6GS01/01

You must have:

Insert (enclosed)

Calculator

Total Marks

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Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Do not return the insert with the question paper.

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Quality of Written Communication will be taken into account in the marking of your answers
– *you should take particular care with your spelling, punctuation, grammar and clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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SECTION A

Answer ALL questions.

You should aim to spend no more than 20 minutes on this section.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Use the information below to help you answer questions 1 to 5.

A World Health Organisation report has classified processed meats such as sausage and bacon as Group 1 carcinogens, the same category as cigarettes and alcohol. It has been estimated that six out of every 100 people in the UK suffer from bowel cancer during their lifetime. Just 50g a day, a thick rasher of bacon, raises the risk of bowel cancer by a significant 18%.

In a study group, people who ate a lot of processed meat also ate fewer plant-based foods that have a protective effect against cancer. Red meat is now classed as a probable carcinogen, in the same category as the weedkiller ingredient glyphosate. In 2011, there were 41 581 new cases of bowel cancer in the UK, of which only 57% are expected to survive for 10 years or longer.

(Source: Attribution <http://www.independent.co.uk/news/uk/home-news/who-cancer-report-bacon-sausages-and-other-processed-meats-cause-cancer-a6708991.html>)

- 1 The statement 'a thick rasher of bacon raises the risk of bowel cancer by a significant 18%' contains
- A fact only
 - B opinion only
 - C both fact and opinion
 - D neither fact nor opinion

(Total for Question 1 = 1 mark)

- 2 Which of these conclusions regarding the causes of bowel cancer is supported by the report?
- A Eating 25g of processed meat a day increases the risk by 9%.
 - B Consuming 50g of red meat or 50g of glyphosate carry the same risk.
 - C Drinking alcohol and eating red meat increases the risk.
 - D Consuming more vegetables with meat helps to lower the risk.

(Total for Question 2 = 1 mark)



3 Approximately how many of the people diagnosed with bowel cancer in 2011 would be unlikely to survive the disease for 10 years?

- A 23 700
- B 20 600
- C 17 900
- D 15 200

(Total for Question 3 = 1 mark)

4 The statement 'It has been estimated that six out of every 100 people in the UK suffer from bowel cancer during their lifetime' contains

- A fact only
- B opinion only
- C both fact and opinion
- D neither fact nor opinion

(Total for Question 4 = 1 mark)

5 If everyone in the UK consumed an extra 50g of bacon a day, out of 100 people, approximately how many in total are likely to develop bowel cancer?

- A 13
- B 11
- C 9
- D 7

(Total for Question 5 = 1 mark)

6 Each of these fund clinical trials for cancer treatments except

- A drug companies
- B local councils
- C charitable organisations
- D central government

(Total for Question 6 = 1 mark)



7 Creationism is taught in some UK faith schools as an alternative to

- A atomic theory
- B game theory
- C the theory of evolution
- D the theory of relativity

(Total for Question 7 = 1 mark)

8 France is described as a secular state. This means

- A the majority of the population is atheist
- B state and religion are separate
- C it does not have a royal family
- D the state sets immigration controls

(Total for Question 8 = 1 mark)

9 Which of these is not a criminal offence?

- A aggravated burglary
- B slander
- C fraud
- D tax evasion

(Total for Question 9 = 1 mark)

10 Halley's Comet has been observed and recorded by astronomers for hundreds of years. Scientists predict it will next be visible in 2061. This prediction is based on

- A analogy
- B deduction
- C belief
- D induction

(Total for Question 10 = 1 mark)



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11 Utilitarianism is a form of moral reasoning that says a right action is one which

- A follows established laws and customs
- B produces the greatest happiness of the greatest number
- C reduces suffering for some social classes
- D gives the performer the greatest amount of satisfaction

(Total for Question 11 = 1 mark)

12 The use of faulty reasoning in an argument is described as

- A fallacy
- B assertion
- C analogy
- D opinion

(Total for Question 12 = 1 mark)



Use the information below to help you answer questions 13 to 15.

CO ₂ emissions estimates, 2010			
Country	CO ₂ emissions in thousands of tonnes	Area (km ²)	Population
China	8 240 958	9 640 821	1 339 724 852
India	2 069 738		1 210 193 422
Russia	1 688 688	17 075 400	142 946 800
UK	493 158	243 610	62 262 000
World Total	33 508 901	148 940 000	6 852 472 823

(Source: <http://www.energy.gov/search/site/CO2%20country%20emissions>)

13 For what percentage of world CO₂ emissions was the UK responsible in 2010?

- A 1.82%
- B 1.01%
- C 0.73%
- D 1.47%

(Total for Question 13 = 1 mark)

14 In 2010 what were the CO₂ emissions per person in China in tonnes?

- A 0.062
- B 0.62
- C 6.2
- D 62

(Total for Question 14 = 1 mark)

15 In 2010 India produced 630 tonnes of CO₂ per km². Use the figures to calculate the area of India in km².

- A 3 285 298
- B 6 856 328
- C 489 112
- D 14 395 680

(Total for Question 15 = 1 mark)

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16 CFCs have been associated with

- A increasing acidity of rainfall
- B depleting the ozone layer
- C preventing global warming
- D reversing the Earth's magnetic field

(Total for Question 16 = 1 mark)

17 The principle of Occam's razor is best described as

- A a means of guessing answers
- B the conservation of energy
- C falsifying an established theory
- D favouring the simplest explanation

(Total for Question 17 = 1 mark)

18 Stem cell research is **least** likely to benefit sufferers of

- A genetic disease
- B skin cancer
- C diabetes
- D post-traumatic stress

(Total for Question 18 = 1 mark)

19 Empirical knowledge is

- A gained by making observations
- B derived by pure reasoning
- C understanding that we are born with
- D awareness of the meaning of words

(Total for Question 19 = 1 mark)



20 A car is teleological because it

- A has been designed to have a purpose
- B is not directly related to any religious belief
- C can be produced in a variety of designs
- D has used synthetic materials in its construction

(Total for Question 20 = 1 mark)

TOTAL FOR SECTION A = 20 MARKS

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SECTION B

Answer ALL questions.

You should spend no more than 30 minutes on this section.

Read Source 1 on the separate insert and then answer questions 21–27.

21 From Source 1, identify **four** potential benefits of cold fusion.

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(Total for Question 21 = 4 marks)

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22 Assess the **strengths** and **weaknesses** of the evidence and arguments used by the author to consider whether endless energy from cold fusion is within reach.

Area with horizontal dotted lines for writing.

(Includes 3 marks for Quality of Written Communication)
(Total for Question 22 = 7 marks)



23 From your own knowledge, give **three** benefits of countries cooperating together in the field of nuclear fusion.

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(Total for Question 23 = 3 marks)

24 (a) Apart from fuels derived from crude oil, name an energy source that leads directly to the production of greenhouse gases.

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(b) Apart from nuclear fusion, name an energy source that does **not** lead directly to the production of greenhouse gases.

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(Total for Question 24 = 2 marks)



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25 Outline the usual stages in the development of a scientific theory.

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(Total for Question 25 = 4 marks)

26 Give **two** reasons why the claim ‘we will run out of crude oil in forty years’ is not certain.

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(Total for Question 26 = 2 marks)



27 Explain why attempts to achieve cold fusion are not simply a matter of science.

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(Includes 3 marks for Quality of Written Communication)
(Total for Question 27 = 8 marks)

TOTAL FOR SECTION B = 30 MARKS



P 4 8 9 6 4 A 0 1 5 2 4

SECTION C

Answer BOTH questions.

You should aim to spend no more than 40 minutes on this section.

28 On Bastoy Island in Norway, the prisoners live in conditions critics brand 'cushy' and 'luxurious'. Yet Norway has by far the lowest reoffending rate in Europe, less than half that of the UK.

(Source: <http://www.theguardian.com/society/2013/feb/25/norwegian-prison-inmates-treated-like-people>)

Discuss the view that the primary purpose of imprisonment is punishment.

(20)

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(Includes 4 marks for Quality of Written Communication)
(Total for Question 28 = 20 marks)



29 To what extent do religious beliefs necessarily conflict with scientific discoveries?

(20)

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(Includes 4 marks for Quality of Written Communication)
(Total for Question 29 = 20 marks)

TOTAL FOR SECTION C = 40 MARKS
TOTAL FOR PAPER = 90 MARKS



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Source 1

Is Endless Energy from Cold Fusion within Reach?

Our present crude oil reserves are predicted by the World Energy Council to run out in the next forty years, leaving us without fuel to run our cars or heat our homes. Here in the UK renewable forms of energy are failing to meet demand, and are more expensive than conventional fossil fuels.

In 1938, a German physicist named Hans Bethe published a theory describing the mechanism of nuclear fusion, and by so doing explained the origin of the Sun's energy. Towards the end of the last century, two researchers at the University of Utah, Stanley Pons and Martin Fleischmann, released an article entitled 'A simple method of producing sustained nuclear fusion' in which they claimed they had generated a very large amount of heat energy over a prolonged period of time by a process called cold fusion. The announcement of their results caused notable interest around the world, due to the many potential benefits, most importantly reducing the need for fossil fuels to produce electricity.

Their claim stated that cold fusion, the process of fusing together atoms of hydrogen at room temperature, had been achieved using very modest equipment similar to a car battery at a cost of just a few thousand pounds. The claims, if found to be correct, would have been the most important discovery of the millennium, enabling almost limitless energy to be provided cheaply whilst eliminating the release of greenhouse gases into the atmosphere. Simple seawater would provide the basic fuel. An alternative approach by the EUROfusion Programme, incorporating 27 European countries, has spent millions of pounds trying to achieve cold fusion but by using a different method.

Work at the same time by other teams failed to reproduce these results, giving rise to conflict within the scientific community. A rival team based at Brigham Young University described Pons' and Fleischmann's results as dubious and their methods lacking in rigour. There was the near certainty of a Nobel Prize for any scientist who could develop cold fusion into a commercially viable form; however, for Pons and Fleischmann their inability to produce convincing evidence led to them losing their positions at the University of Utah.

Much more recently, scientists working for the United States Navy produced new work in this field, and scientists working for the Japanese firm Canon have applied for patents for a different type of cold fusion, with the aspiration of supplying all our future energy requirements. When exactly this energy will be available is uncertain. We are like mountaineers: the summit is shrouded in cloud; we are not sure how far we still have to go or what difficulties lie ahead.

(Source: adapted from book 'perspectives on science' pages 8 to 24, Heinemann press. ISBN 978 0 435569 60 0)