



General Certificate of Education
Advanced Subsidiary Examination
January 2012

General Studies (Specification A)

GENA2

Unit 2 AS Science and Society

Monday 16 January 2012

9.00 am to 10.30 am

For this paper you must have:

- a Source Booklet for Section A (enclosed)
- an objective test answer sheet for Section A
- an 8-page answer book for Section B

You may use a calculator

Time allowed

- 1 hour 30 minutes

Instructions

- Use black ink or black ball-point pen.
- Write the information required on the front of your answer book. The **Examining Body** for this paper is AQA. The **Paper Reference** is GENA2.
- Answer Section A (Questions 1.1 to 1.30) using the answer sheet provided **and one** pair of questions from Section B in your separate answer book.
- Do all rough work in your answer book.
- Hand in **both** your answer sheet **and** your answer book separately at the end of the examination.

Information

- The maximum mark for this paper is 65.
- This paper consists of two sections.
Section A contains 30 objective test questions based on material in the Source Booklet. There is 1 mark for each question.
Section B contains three alternative pairs of questions. Marks are shown after each question and the total for each pair is 35.

Section AAnswer **Questions 1.1 - 1.30**There is 1 mark for each question.

Read the passage entitled **Ethical Eating – Eat Less Meat?**, which is printed in the separate Source Booklet, and answer **Questions 1.1 to 1.30** by choosing the answer represented by the letter **A, B, C** or **D** that you think best. Mark your responses on your objective test answer sheet.

1.1 The phrase ‘very broad scientific consensus’, as used in paragraph 1 about climate change, signifies

- A** divided views.
- B** general agreement.
- C** incomplete research.
- D** unanimity of opinion.

1.2 Paragraph 1 implies each of the following **except**

- A** some people are sceptical that the climate is changing.
- B** most scientists believe that the climate is changing.
- C** humans are partly responsible for climate change.
- D** the sceptics are very believable.

1.3 The following are all found in the Earth’s atmosphere. Each of them contributes to retaining the Earth’s heat **except**

- A** methane.
- B** oxygen.
- C** water vapour.
- D** carbon dioxide.

1.4 Between the years of 1750 and 2005, the atmospheric concentration of methane (paragraph 4) has increased by approximately

- A** 50%
- B** 60%
- C** 150%
- D** 1060%

1.5 The type of power station which currently emits the least carbon dioxide is

- A** nuclear powered.
- B** natural gas fired.
- C** fired by renewable coppiced wood.
- D** fired by rubbish being incinerated.

- 1.6** Greenhouse gas emissions could be reduced by
- A** burying organic waste in landfill sites.
 - B** incinerating waste that currently goes to landfill.
 - C** replacing a gas-fired power station by off-shore wind turbines.
 - D** replacing a nuclear power station by a tidal barrage.
- 1.7** Based on the information in paragraph 5 and **Figure 1**, which one of the following has the greatest effect on global warming?
- A** agriculture
 - B** fossil fuels
 - C** power stations
 - D** industry
- 1.8** According to paragraphs 5 and 6
- A** methane makes a less significant contribution to global warming than carbon dioxide.
 - B** increasing food production has major implications for the environment.
 - C** population growth will completely outstrip food supplies by 2050.
 - D** fossil fuel and water shortages will threaten the world economy by 2050.
- 1.9** Rearing fewer cattle for food would
- A** lead to a grain mountain in the USA.
 - B** reduce international trading opportunities.
 - C** reduce the number of children dying from malnutrition.
 - D** mean more crops could be grown for human consumption.
- 1.10** The demand for meat will be greater in future (paragraph 8) because
- 1** the population is increasing.
 - 2** a preference for meat is increasing.
 - 3** factory farming allows the production of cheaper food.
 - 4** meat is a major source of energy for the body.

Answer

- A** if **1** alone is correct.
- B** if **2** and **3** only are correct.
- C** if **1**, **2** and **3** only are correct.
- D** if **2**, **3** and **4** only are correct.

Turn over ►

1.11 According to paragraph 8, what is the best estimate of the factor by which the amount of meat produced may increase from 1961 to 2050?

- A** 1.4
- B** 2
- C** 4
- D** 8

1.12 There are concerns about factory farming because

- 1** greenhouse gas emissions may be higher than if food is produced locally.
- 2** there is a greater risk of infection between animals.
- 3** the practice raises ethical issues.

Answer

- A** if **2** alone is correct.
- B** if **1** and **3** only are correct.
- C** if **2** and **3** only are correct.
- D** if all are correct.

1.13 In paragraph 10, 'mortality from coronary heart disease' refers to the

- A** chances of also developing cancer.
- B** number of deaths per year from the condition.
- C** number of new cases of heart disease diagnosed in a year.
- D** average life expectancy compared to people without heart disease.

1.14 A good source of iron for a vegetarian would be

- A** baked beans.
- B** milk.
- C** spinach.
- D** tomatoes.

1.15 Which of the following are given as reasons for eating a vegetarian diet?

- 1** The death rate from heart disease is 30% less for vegetarians.
- 2** There is a high correlation between meat eating and several forms of cancer.
- 3** A vegetarian diet contains more unsaturated fat than a diet containing meat.
- 4** Vegetarians are less likely to contract diabetes.

Answer

- A** if **1** and **3** only are correct.
- B** if **1**, **2** and **4** only are correct.
- C** if **2**, **3** and **4** only are correct.
- D** if all are correct.

1.16 The increase in the number of cases of diabetes (paragraph 11) is associated with

- A** a change to a vegetarian diet.
- B** a lack of vitamin C in the diet.
- C** insufficient absorption of iron into the blood.
- D** the growing number of people classified as obese.

1.17 Which one of the following conditions is unlikely to change in frequency if more people became vegetarian?

- A** cancer
- B** diabetes
- C** fractures
- D** heart disease

1.18 Paragraph 12 is based on

- A** values and opinions.
- B** reliable scientific research.
- C** a sound body of facts.
- D** an understanding of civilisation.

1.19 Which of the following is fact rather than opinion?

- 1** Agriculture and land use are responsible for most nitrous oxide emissions.
- 2** If we change our eating habits climate change will slow down.

Answer

- A** if neither is a fact.
- B** if **1** alone is a fact.
- C** if **2** alone is a fact.
- D** if both are facts.

1.20 The NFU claims that discouraging people from 'eating meat could be environmentally counter-productive' (paragraph 13) because

- A** Camden Council is considering the introduction of 'choice edit' menus in some canteens.
- B** the arguments in favour of vegetarianism are based on flawed data.
- C** introducing 'choice edit' menus could lead to accusations of a "nanny state".
- D** farming is a significant contributor to greenhouse gas emissions.

Turn over ►

1.21 A carbon sink (paragraph 18)

- 1** plugs a gap in the carbon cycle.
- 2** absorbs carbon dioxide from the atmosphere.
- 3** holds carbon compounds within its structure.
- 4** is a source of carbon dioxide for respiration.

Answer

- A** if **3** alone is correct.
- B** if **1** and **2** only are correct.
- C** if **2** and **3** only are correct.
- D** if **2**, **3** and **4** only are correct.

1.22 Pressure groups such as the NFU and Sustain seek to

- A** act as a political party.
- B** control channels of communication.
- C** represent a particular interest.
- D** discredit the work of councils.

1.23 From 1990 to 2006 (**Figure 2**), methane emission from agriculture in the UK has decreased by approximately what percentage?

- A** 2%
- B** 5%
- C** 15%
- D** 30%

1.24 **Source B** could be considered biased because it

- A** quotes alternative figures obtained from different sources.
- B** comments on the difference between the UK and the whole world.
- C** points out that the global problems cannot be solved by the UK.
- D** defends the life-style of farmers over many generations.

1.25 The NFU feels that there is flawed evidence of the potential reductions in harmful emissions following a reduction in eating meat in the UK because

- 1** the quantity of greenhouse gas emissions from livestock in the UK has been exaggerated.
- 2** no account has been taken of the carbon emissions for alternative foodstuffs.
- 3** “choice editing” menus have not yet been introduced into all areas.

Answer

- A** if **1** and **2** only are true.
- B** if **1** and **3** only are true.
- C** if **2** and **3** only are true.
- D** if all are true.

1.26 Which of the following is a fact rather than an opinion regarding climate change?

- 1** Taking action as an individual will not make any difference to problems of a global nature.
- 2** Action needs to be taken at a global level before it is worth anyone acting individually.

Answer

- A** if both are facts.
- B** if **1** alone is a fact.
- C** if **2** alone is a fact.
- D** if neither is a fact.

1.27 At a global level the production of food to feed people would be more efficient if

- A** plants were eaten instead of animals.
- B** more cows were reared for consumption.
- C** tropical deforestation was reduced.
- D** land used to grow soya was used for grazing instead.

1.28 The two sources give conflicting ideas. This suggests that

- A** one side is wrong.
- B** both sides are wrong.
- C** both sides have different agendas.
- D** one side is biased.

Turn over ►

Assertion / Reason questions

For **Questions 1.29** and **1.30** you are given an assertion followed by a reason. Consider the assertion and decide whether, on its own, it is a true statement. If it is, consider the reason and decide if it is a true statement. If, and only if, you decide that *both* the assertion and the reason are true, consider whether the reason is a valid or true explanation of the assertion. Choose your answer (**A** to **D**) as follows and indicate your choice on the answer sheet.

	Assertion	Reason	Argument
A	True	True	Reason is a correct explanation of assertion
B	True	True	Reason is not a correct explanation of assertion
C	True	False	Not applicable
D	False	–	Not applicable

ASSERTION**REASON**

- | | | | |
|-------------|--|---------|--------------------------------------|
| 1.29 | Some people think that factory farming is unethical | because | animals can suffer pain. |
| 1.30 | Even without any animals, agriculture would be responsible for producing methane | because | rotting vegetation produces methane. |

END OF SECTION A

Section B

Answer **one pair** of questions only, **EITHER 02 and 03**
OR 04 and 05
OR 06 and 07.

For **each pair** of questions, read the stimulus extract provided and answer the questions with reference to the extract and your own knowledge.

You will be marked on your ability to use good English, to organise information clearly and to use specialist vocabulary where appropriate.

EITHER**Questions 02 and 03**

BRITAIN'S AGEING POPULATION

The number of people aged 65 and over is predicted to rise by nearly two thirds in the UK to reach 15.8 million by 2031. More than one in five of the UK population – 22% – will be 65 and over by 2031.

People aged 50 years and over already made up at least one quarter of the population in each region and country in the UK in 2008, Office for National Statistics (ONS) figures show.

In 2008, around a quarter of the British population aged 60 years and over were either claiming pension credit or benefiting from it by being related to someone who did claim.

London had the highest percentage of people aged 60 and over living in low income households between 2005/6 and 2007/8 at 22%, followed by the East Midlands and Northern Ireland.

There were 173 hip and knee replacement procedures per 10 000 people aged 65 years and older living in the South West region in 2008/9, compared to London where the figure was 118.

Source: adapted from, 'Number of over 65s to rise by two thirds',
 Press Association, *The Independent*, 8 June 2010

www.independent.co.uk/news/uk/home-news/number-of-over-65s-to-rise-by-two-thirds-1994589.html

- 0 2** Examine health, environmental and other reasons for the increase in the number of older people in Britain's population. (17 marks)
- 0 3** Consider the social, economic and political consequences of the UK's ageing population. (18 marks)

Turn over ►

OR

Questions 04 and 05

ALCOHOL RELATED HARM

Nationally, the annual human and financial cost of alcohol misuse is huge and includes:

- 22 000 preventable deaths which are associated in some way with alcohol misuse
- around half of all violent crimes (1.2 million) and a third of all reported incidents of domestic abuse (360 000)
- £7.3 billion spent tackling alcohol related crime and disorder
- up to 70% of A&E admissions at peak times
- £95 million spent on specialist alcohol treatment
- over 126 000 admissions to hospital for mental and behavioural disorders resulting from alcohol misuse: a rise of 75% over the past ten years
- up to 1.3 million children affected by parental alcohol problems
- more than one in five men, one in six women and one in seven 16–24 year olds having had unsafe sex after drinking too much alcohol, increasing their risk of pregnancy and disease
- 31.5 million days lost to the workforce
- 19 000 alcohol related sexual assaults.

Source: adapted from the *Alcohol Harm Reduction Strategy*, Middlesbrough Local Strategic Partnership, September 2010

www.middlesbrough.nhs.uk/includes/documents/Your_Health/1625_alcoholstrategy_doc_PROOF%20v2.pdf

- 0 4** Explain the effects of alcohol on the human body and its impact on an individual's health. (17 marks)
- 0 5** Discuss social and economic issues that arise when considering ways of reducing the harm caused by alcohol. (18 marks)

OR

Questions 06 and 07

RADIATION AND NUCLEAR ENERGY

Professor Gillies McKenna, Cancer Research UK's expert on radiation treatment for cancer, says that fear of radiation is a problem. McKenna's expertise is in the use of radiation to kill cancer cells. "People become so fearful of radiation that they avoid diagnostic tests that might save their lives, or avoid radiotherapy when they have cancer that is much more likely to kill them than exposure to radiation. People are now avoiding CT scans or avoiding building nuclear power stations when, in most aspects, radiation is a very useful thing."

Half of cancer patients will be given radiotherapy and the majority of those will be cured by it, McKenna said. "In most instances, where you use radiation – certainly in medicine and in most other forms of industry – the benefits greatly outweigh the risks."

Susan Short, clinical senior lecturer in cancer treatment at University College London, said, "People have such poor understanding of risk – these people who go and demonstrate against local nuclear power plants are the same as those who will happily smoke 20 cigarettes a day or lead high-risk lifestyles and don't see the irony."

Source: adapted from ALOK JHA and SARAH BOSELEY,
'Irrational fears give nuclear power a bad name, says Oxford scientist', *The Guardian*,
10 January 2010
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- 0 6** Examine the uses and risks of radiation in medicine and other forms of industry.
(17 marks)
- 0 7** Discuss arguments for and against building more nuclear power stations as part of Britain's future energy policy.
(18 marks)

END OF QUESTIONS

There are no questions printed on this page

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