



General Certificate of Education  
Advanced Subsidiary Examination  
June 2013

# General Studies (Specification A)

## GENA2

Unit 2 AS Science and Society

Thursday 23 May 2013 1.30 pm to 3.00 pm

**For this paper you must have:**

- a Source Booklet for Section A (enclosed)
  - an objective test answer sheet for Section A
  - an AQA 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 for Section B. 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.

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**Section A****Answer Questions 1.1 – 1.30**

There is 1 mark for each question.

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Read the passage entitled **Why Britain faces a bleak future of food shortages**, 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** According to paragraph 1, the devastation of the Australian wheat harvest in 2008 had which of the following consequences?
- A** Sales and consumption of bread rose sharply.
  - B** The production cost of wheat rose by 30%.
  - C** Overall inflation in eurozone countries rose by 15%.
  - D** The international price of wheat more than doubled.
- 1.2** The agricultural operations in Australia in March are most similar to those in which month in the Northern Hemisphere?
- A** March
  - B** June
  - C** September
  - D** December
- 1.3** According to **Figure 1**, what was the approximate price of wheat (US\$ per tonne) in January 2006?
- A** \$150
  - B** \$175
  - C** \$205
  - D** \$215
- 1.4** Approximately how many times greater was the peak price of wheat in 2007/8 compared with the average price in 2006/7 (**Figure 1**)?
- A** 1.3 times
  - B** 2.3 times
  - C** 3.5 times
  - D** 4.8 times

1.5 According to paragraph 4, which of the following best summarises the expected future growth in Britain's population over the next 40 years, relative to that of the world?

- A The population of the world is growing more quickly than that of the UK.
- B The UK's population will become a greater proportion of the world's population.
- C The population of the UK is growing more quickly than that of the world.
- D The population of the world and of the UK are growing at about the same rate.

1.6 Which of the following is a fact rather than an opinion?

- 1 Britain will produce as much food in the next 50 years as it has in the past 5000 years.
- 2 The population of Britain will rise by 15 million over the next 40 years.

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.

1.7 The green revolution of the 1960s (paragraph 5) was associated with

- A growing concerns about damage to the environment.
- B producing food without the addition of artificial fertilisers.
- C reducing the amount of land used for farming.
- D increasing the amount of food produced in Britain.

1.8 Which of the following is the most likely explanation for the sharp rise in the price of wheat (**Figure 2**) in 2007?

- A New foodstuffs were developed from wheat.
- B The world supply of wheat decreased suddenly.
- C Wheat was extensively used to make biofuel.
- D The population of the developing world increased sharply.

1.9 A 'post-Copenhagen' world (paragraph 6) refers to

- A the decision made by the European Parliament about climate control.
- B a world conference held in Copenhagen on population control.
- C an international conference to try to reach agreement on climate control.
- D the General Agreement on world trade to support developing countries.

1.10 In paragraph 6, the article indicates that farmers will not use as many agro-fertilisers in future because

- A the production of the chemicals requires too much energy.
- B the use of fertilisers increases the vulnerability of crops to pests.
- C future crops will become disease-resistant.
- D droughts and rising temperatures will have less effect on crops.

Turn over ►

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- 1.11** Which of the following is caused by overuse of chemical fertilisers?
- A** eutrophication
  - B** genetic modification
  - C** global warming
  - D** greenhouse effect
- 1.12** To help to meet the challenge of increasing crop yields while using very little fertiliser, paragraph 6 indicates that farmers will need to
- A** use organic fertiliser only, in order to save energy.
  - B** eradicate crop diseases.
  - C** grow plants that produce their own fertiliser.
  - D** reduce their energy consumption by 3%.
- 1.13** Paragraph 8 suggests that bluetongue disease has only recently become a problem in Northern Europe because
- A** a new variety of midge can survive in the climate of Northern Europe.
  - B** higher temperatures have enabled the disease-carrying midge to survive further north.
  - C** the increasing movement of animals has caused the disease to be carried across national borders.
  - D** modern 'factory' methods of farming animals make them more susceptible to disease.
- 1.14** The diseases mentioned in paragraph 8 could be controlled by the use of
- A** fungicides.
  - B** germicides.
  - C** herbicides.
  - D** insecticides.
- 1.15** Globalisation can cause the spread of disease because
- A** increasing world temperatures enable pests to survive in climates which were previously too cold.
  - B** diseases can increasingly become immune to treatment when attacked in a wide range of countries.
  - C** it is increasingly likely that vaccines can be developed in many countries because of the spread of diseases.
  - D** the movement of livestock around the world means that a disease can be spread to many countries.
- 1.16** Vaccines work by
- A** giving the patient a mild form of the illness.
  - B** mutating the virus so that it becomes harmless.
  - C** prompting the body to produce antibodies.
  - D** increasing the number of white blood cells.

1.17 According to paragraphs 8 and 9

- A bluetongue disease affects only sheep.
- B bluetongue disease is spread by mosquito bites.
- C we had a vaccine ready for the first cases of bluetongue in Britain.
- D there is a vaccine ready in case African swine fever reaches Britain.

1.18 Aphids are becoming an increasing problem as the UK temperature rises because

- A they survive until later in the year when the crops are due to be harvested.
- B they arrive earlier when the crops are younger and more vulnerable.
- C they are becoming larger and attacking a wider range of crops.
- D plant defences have not developed in early spring.

1.19 The European Union discourages pesticide use because

- A the number of insect pests becoming resistant to pesticides is increasing.
- B there are potentially poisonous side-effects from the chemicals used.
- C their use by large farm producers works against the small farmers on the continent.
- D their use disrupts the natural balance of the environment.

1.20 Planting nettles around wheat fields (paragraph 12) provides protection for crops from pests because

- A wasps eat aphids on the nettles and then attack aphids which arrive to feed on the wheat.
- B nettles produce an aroma which discourages aphids.
- C wasps are attracted to aphids on nettles, and the wasps attract predators which help to keep aphids away.
- D wasps discourage aphids from flying over them and so act as a barrier.

1.21 Cheap supermarket deals for food products

- A are good for everyone.
- B are a fundamental element of a free-market economy.
- C allow farmers to achieve increased turnover and profit.
- D risk undermining the reliability of future food production.

1.22 Small hill farmers are likely to oppose the formation of larger collectives because

- A their independence would be lost when they are part of a large organisation.
- B they would no longer receive generous funding from the European Union.
- C amalgamation is likely to make their animals more vulnerable to disease.
- D it is often thought that large organisations are always inefficient.

Turn over ►

**1.23** In order for the UK to be more self-sufficient we will need to grow more food than now whilst facing which of the following challenges?

- 1 the need to produce fewer carbon emissions
- 2 a smaller area of land will be available for farming
- 3 there will be fewer people to work on the land
- 4 the supply of water will be much less than now

Answer

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

**1.24** Which of the following are ways in which we can reduce food waste?

- 1 fewer 'buy one get one free' deals
- 2 not discarding all food past its 'sell-by' date
- 3 buying fruit and vegetables which are misshapen
- 4 using leftover food to make other meals

Answer

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

**1.25** Food shortages and water scarcity could in the future result in which of the following consequences?

- 1 an increase in the price of food
- 2 a jump in the world's population
- 3 increased migration of people
- 4 conflict in some parts of the world

Answer

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

**1.26** Which **one** of the following best summarises the overall message of the source?

- A Potential food shortages are due to a variety of factors.
- B Feeding the world's population will become unsustainable by 2050.
- C The potential food shortage is primarily caused by global warming.
- D Scientists have developed a range of solutions to address food shortages.

**Assertion / Reason questions**

For **Questions 1.27 to 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.

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

**ASSERTION****REASON**

<b>1.27</b>	Cereals cost more when the harvest is poor	because	the amount of rainfall affects crop yield.
<b>1.28</b>	Growing nettles around the edge of fields can lead to increased crop production	because	nettles reduce the amount of insect life in the area.
<b>1.29</b>	Aphids can be controlled without using chemicals	because	aphids are predators of other insects, such as ladybirds.
<b>1.30</b>	Increasing UK crop yields in the future will be challenging	because	food shortages are likely to be a global problem.

**END OF SECTION A****Turn over for Section B****Turn over ▶**

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## 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.

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### EITHER

#### Questions 02 and 03

### ORGAN TRANSPLANTATION

The Welsh Assembly is considering creating an organ donor system which presumes consent for organ donation unless the person opted out in their lifetime. Under the proposals, the current system whereby people opt in to organ donation by signing the organ donor registers would change to one where consent would be presumed unless the person had indicated they did not want to donate their organs.

Source: adapted from 'Welsh consult on organ donation opt-out', *Channel 4 News*, 8 November 2011  
<http://www.channel4.com/news/welsh-consult-on-opt-out-organ-donation>

Most in the medical community will not support payment for kidney donations. Some doctors are concerned about potential abuse while others consider it fundamentally unethical.

However, there are some individual but strong voices, particularly among transplant doctors, who argue that having a 'spare' healthy kidney that they could sell gives people in poor communities a rare marketable asset. Those who receive donated kidneys can go back to work, their families no longer have to support them and the doctors involved are paid – so why shouldn't the donor also profit materially, they ask?

Source: adapted from SARAH BOSELEY, 'Time to allow cash for kidneys?', *The Guardian*, 4 August 2011  
 © Guardian News and Media Ltd.  
<http://www.guardian.co.uk/commentisfree/2011/aug/04/cash-for-kidney-rules>

- 0 2** Explain the main medical and scientific issues involved in the transplantation of organs and tissues into humans. (17 marks)
- 0 3** Discuss the ethical implications of organ transplantation and of proposals to increase the supply of organs for transplantation. (18 marks)

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OR

Questions 04 and 05

**ECOLOGICAL AND SOCIAL PROBLEMS**

A report by a group of celebrated scientists has warned that the world is faced with a wide range of ecological and social problems as a result of overpopulation, excessive consumption and environmentally damaging technologies. Apart from dire warnings about biodiversity loss and climate change, the group challenges governments to think differently about the consequences of continual economic growth.

The report warns that problems such as poverty and climate change cannot be solved simply by technological advances, but require economic and social change as well. To help make the transition to a more sustainable future, changes could include:

- promotion of 'clean' low carbon technologies
- reduction of overconsumption and the encouragement of recycling
- cooperation and fair trade as the basis of economic policy, and
- greater emphasis on the conservation of biodiversity and ecosystems.

Source: adapted from JOHN VIDAL 'Civilisation faces 'perfect storm of ecological and social problems'',  
*The Guardian*, 20 February 2012 © Guardian News and Media Ltd

**0 4** Explain the significant 'ecological and social problems' the world is facing and outline the reasons for them. *(17 marks)*

**0 5** Consider what measures the government and individuals in the UK could take to help make the transition to 'a more sustainable future'. *(18 marks)*

**Turn over for the next question**

**Turn over ►**

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OR

**Questions 06 and 07**

**RESEARCH ON THE FAMILY**

New research suggests that fewer than a fifth of people think they are part of a traditional family. A survey of 3000 people found eight in 10 people thought their families did not conform to the stereotype of two married parents with two or more children.

The report indicates that family structures are becoming increasingly diverse. A quarter of couples are childless and a fifth of the population lives alone.

The survey suggested that people are increasingly likely to view single-parent, same-sex or unmarried couples as 'proper' families. 77% believe single parents can be a family and 59% believe same-sex couples can be a family.

Half of those surveyed believe society is out of date in its view of the family. A quarter think businesses do not cater for their type of family. More than half think the government fails to take their family set up into account and that their family is not portrayed on television or in advertising.

Source: adapted JUDITH BURNS, 'Few people feel part of 'traditional' families',  
*BBC News*, 6 December 2011  
<http://www.bbc.co.uk/news/education-16049533>

- 0 6** Examine different research methods that are used by social scientists investigating changes in institutions such as the family. *(17 marks)*
- 0 7** Consider the extent to which the family in the UK is changing, and discuss the social and economic consequences of this change. *(18 marks)*

**END OF QUESTIONS**

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