

General Certificate of Education  
January 2006  
Advanced Level Examination



**GENERAL STUDIES (SPECIFICATION B)**  
**Unit 6 Space-Time**

**GSB6**

Friday 27 January 2006      9.00 am to 10.45 am

**For this paper you must have:**

- a 12-page answer book
- Source Material (enclosed)

Time allowed: 1 hour 45 minutes

**Instructions**

- Use blue or black ink or 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 GSB6.
- Answer **two** questions.
- Answer **Question 1** from **Section A** and **one** question from **Section B**.
- Do all rough work in your answer book. Cross through any work you do not want marked.

**Information**

- The maximum mark for this paper is 80.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers. All questions should be answered in continuous prose. Quality of Written Communication will be assessed in all your answers.

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**SECTION A**

Answer this question.

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- 1 According to **Source A**, science fiction deals with ‘possible’ futures, with what is ‘scientifically plausible’.

Science fiction aims to entertain – but does it have a deeper purpose? Is it worthwhile for

- scientists
- historians
- politicians
- environmentalists

for example, to try to imagine possible futures?

*(40 marks)*

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**SECTION B**

Answer **either** Question 2 **or** Question 3.

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**EITHER**

- 2 To outsiders, antique dealers (**Source B**) and electron clouds (**Source C**) can be equally confusing.

Discuss whether we have more to learn about the ways in which people, or the ways in which things, behave. *(40 marks)*

**OR**

- 3 Traditional religion is giving way to new expressions of belief (**Source D**); and it is recommended that traditional honours be renamed or abolished (**Source E**).

Why do you think we appear to be turning our back on traditional ways of doing things?

*(40 marks)*

**END OF QUESTIONS**

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## Insert

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Source Material to be read in conjunction with questions in Unit GSB6.

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**Source A**

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**Source B**

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**Source C****Quantum Theory**

You can never predict where an electron will be at any given moment. You can only list its probability of being there. In a sense, as Dennis Overbye has put it, an electron doesn't exist until it is observed. Or, put slightly differently, until it is observed an electron must be regarded as being 'at once everywhere and nowhere'.

If this seems confusing, you may take some comfort in knowing that it was confusing to physicists, too. Overbye notes: 'Bohr once commented that a person who wasn't outraged on first hearing about quantum theory didn't understand what had been said'. Heisenberg, when asked how one could envision an atom, replied: 'Don't try'.

So the atom turned out to be quite unlike the image that most people had created. The electron doesn't fly around the nucleus like a planet around its sun, but instead takes on the more amorphous<sup>1</sup> aspect of a cloud. The 'shell' of an atom isn't some hard, shiny casing, as illustrations sometimes encourage us to suppose, but simply the outermost of these fuzzy electron clouds. The cloud itself is essentially just a zone of statistical probability marking the area beyond which the electron only very seldom strays. Thus an atom, if you could see it, would look more like a very fuzzy tennis-ball than a hard-edged metallic sphere (but not much like either or, indeed, like anything you've ever seen; we are, after all, dealing here with a world very different from the one we see around us).

As physicists delved deeper, they realised they had found a world not only where electrons could jump from one orbit to another without travelling across any intervening space, but where matter could pop into existence from nothing at all – 'provided', in the words of Alan Lightman, 'it disappears again with sufficient haste'.

Source: BILL BRYSON, *A Short History of Nearly Everything*, Doubleday, 2003

<sup>1</sup>amorphous = shapeless

**Turn over for the next source**

**Turn over ►**

## Source D

### Religion and Postmodernity

Globalisation has ensured that religions originating outside the West have now come to exert an impact on Western societies. Religion becomes a 'cultural site' since any society, including those in the West, can be influenced by various forms of religiosity across the world, which can then generate their own localised expressions of faith.

The so-called 'new religious movements' (NRMs) which have arrived on Western shores are by no means a new development: they have spread over the last 40 years or so. The inspiration for NRMs comes from various sources, but many are inspired by ancient mystical religions from the East, principally expressed in Hindu and Buddhist thought, which includes belief in the unity of humankind and nature. Holistic views of mind, body and the spirit stress the limits of science and rationality and challenge some of the core values of Western society, as in Hare Krishna and the Bhagwan Rajneesh movement.

With the decline of traditional religious beliefs, religious activity in the postmodern world is enhanced in a culture of 'pick'n'mix'. Practically anything can be transformed into an expression of religion or grafted on to more traditional forms. New beliefs may merge with old ones. The New Age movement weaves together ancient faiths with contemporary cultural themes.

**Table 1**

There has been an increase in the popularity of occultist practices. Today, over half the British population believes in fortune telling, and approximately one quarter believes in horoscopes. A sizeable percentage also believes in spiritualism and lucky charms.

% of British population

|                 | 1970s | 1980s | 1990s |
|-----------------|-------|-------|-------|
| Belief in:      |       |       |       |
| Horoscopes      | 24    | 26    | 26    |
| Fortune telling | 48    | 54    | 53    |
| Lucky charms    | 17    | 19    | 47    |
| Spiritualism    | 11    | 14    | 14    |
| Ghosts          | 19    | 28    | 31    |

Source: STEPHEN HUNT, *Sociology Review*, September 2003

**Source E**

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**END OF SOURCES**

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