

You should spend about 20 minutes on questions 1–13, which are based on Reading Passage 1 below.

Telescope to detect ET on his mobile

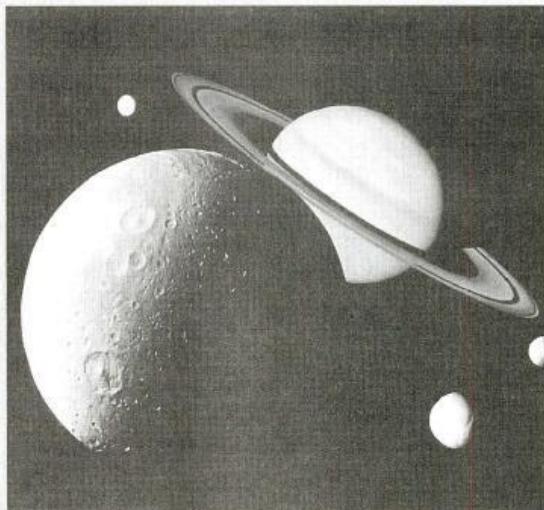
A Astronomers are planning to build the world's largest telescope – a machine so powerful it could detect radio signals from a planet up to 50 light years, or 13.5 billion years from Earth. The giant radio-telescope is called the Square Kilometre Array (SKA) and will consist of 3,000 separate radio dishes and other antennae all linked together into one huge machine. It will generate 100 times more data than all the information currently on the Internet and will need the world's most powerful supercomputer to analyze the information it collects.

B The SKA will work in a similar way to other large radio telescopes such as Australia's CSIRO Parkes radio telescope, also known as 'The Dish'. The telescope gets its name from the bowl-shaped reflector called a 'dish' that is used to collect radio waves from space. The reflector focuses the waves onto an antenna that changes them into electric signals. From the antenna, the signals are transmitted down into the control room at the base of the telescope and are picked up by a radio receiver. This receiver makes the signals stronger. The signals are then analyzed by a computer at another location and the information is used to draw a picture of the source of the radio waves.

C Compared to 'The Dish', however, SKA will be thousands of times more sensitive. This sensitivity is because of its size; the larger the dish, or the more dishes there are, the more powerful the radio signal can be, allowing unknown areas of the universe to be discovered. 'We know that the universe is incredibly vast, containing hundreds of billions of stars,' said Richard Schilizzi, director of the SKA project. 'However, at present we can only see a fraction of what is out there. The SKA will enable us to explore some of its furthest reaches.' Scientists hope to find alien life intelligent enough to invent radio. The SKA will be able to detect a mobile phone system within 50 light years of Earth, but will also probably be able to scan star systems which are much further away, because any advanced life form would have powerful radio emitters such as radar and radio stations.

D But looking for evidence of extraterrestrial life is just one of many tasks for the SKA. Scientists also hope that the telescope will help them to understand how the first stars and planets were formed, during a period of time called 'first light'. 'The SKA is a bit like a time machine,' said Phil Diamond, head of the astronomy and space science division of CSIRO, the Australian government's research arm. 'It will gather radiation emitted more than 13 billion years ago, allowing us to get a picture of what the universe looked like then. By choosing the type of radiation we look at, we can get similar pictures of the universe from any other era we choose – so we can watch how it evolved.'

E More than 20 countries will share the estimated £1.4 billion cost of the project for the telescope. Two potential sites have been chosen, one in Western Australia and the other in South Africa. Both are in the southern hemisphere because this will give the instrument a direct line of sight into the heart of the Milky Way. The SKA must be built on a site completely free of radio interference – with the host country promising it will prevent the construction of any mobile phone, radio or TV masts for up to 50 years. This means it will have to be built mainly in a desert – either in the outback of Western Australia or the Karoo of South Africa.



Questions 1–4

Reading Passage 1 has five paragraphs, A–E.

Choose the correct heading for paragraphs B–E from the list of headings below.

List of headings

- i Budgeting for the construction of SKA
- ii Discovering the secret origins of our universe
- iii Abilities of advanced life forms
- iv Potential to see further than before
- v Methods of mapping the location of the planets
- vi Plans for the world's largest telescope
- vii Location considerations for SKA
- viii The collection and analysis of radio waves

Example

Paragraph A

Answer

vi

Paragraph B

Paragraph D

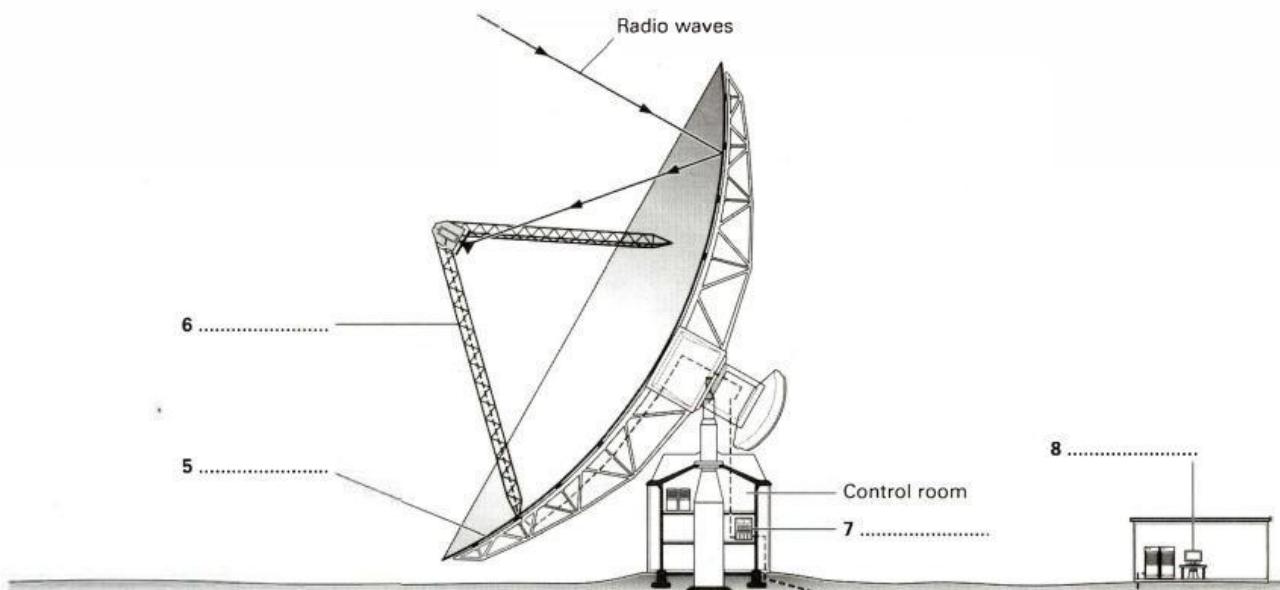
Paragraph C

Paragraph E

Questions 5–8

The diagram below shows how a large radio telescope works.

Label the diagram. Choose **NO MORE THAN TWO WORDS** from the passage for each answer.



Questions 9–13

Do the following statements agree with the information given in Reading Passage 1?

Write:

TRUE

if the statement agrees with the information

FALSE

if the statement contradicts the information

NOT GIVEN

if there's no information on this

- 9 The SKA will be made from many parts.
- 10 The SKA will be the world's most powerful telescope.
- 11 About one third of the universe has been discovered.
- 12 Scientists hope to get in touch with aliens by mobile phone.
- 13 Governments have decided where the SKA will be built.