

УСПЕШНИ на националното външно оценяване по АНГЛИЙСКИ ЕЗИК в 10 клас на ниво В1

НОВОТО ИЗДАНИЕ ЩЕ БЪДЕ НА ПАЗАРА В КРАЯ НА МАРТ 2020



КОМПОНЕНТ ЧЕТЕНЕ ЧАСТ 3

Directions: Read the text below. Then read the questions that follow it and answer them. Try to use your own words.

Seeing the invisible

Until recently black holes were believed to be invisible. They can be really big, sometimes as big as our Solar System. Astronomers can tell they are there because of the effect of their gravity on objects around them and the gravitational waves they emit when they collide. Until April last year, no one had ever seen a black hole directly. It was then when an international team of radio astronomers released a startling close-up image of a black hole's 'shadow'. The picture showed a dark heart surrounded by a ring of light. The image won the *Breakthrough of the Year* award of the Science magazine for 2019.

Why is this discovery so important? For years, astronomers had been theorising about something that cannot be actually seen. But until recently very few astronomers thought such an image was even possible. However, the advancement of technology had made it possible to come up with the technique of 'very-long-baseline interferometry' (VLBI), which combines data from widely spaced radio dishes to simulate a much larger telescope. The technique helped reveal distant objects in greater detail. Improvements in receivers, antenna design, and digital electronics made it possible for radio astronomers to capture millimeter waves.

A consortium of more than 200 scientists from across the globe joined their efforts and equipment to try and 'see' the invisible. In April 2017, the team was ready for a major 10-night observing run. Astronomers in the United States, Mexico, Chile, Spain, and at the South Pole, took repeated nightlong exposures of two black holes. It took the team two more years to realise the proportions of what they had achieved. They made extra efforts to make sure the data were accurate. The process involved calibrating and processing data and repeatedly checking the results before the final image was produced. The silhouette of the black hole – outlined in a ring of light – appeared on front pages and featured in news reports across the globe. It quickly became the most downloaded image in the history of the National Science Foundation's website.

35. What is the main theme of the text?
36. What has helped astronomers identify the presence of blackholes?
37. Why was the technique of 'very-longbaseline interferometry' successful?
38. How long did the observation which led to the production of the famous image last?
39. Why did it take the astronomers two years to produce the final image?
40. What did the picture actually show?