2018 年度 科学技術英語特論・演習 定期試験

注意：解答用紙は２枚あります。それぞれに学籍番号と氏名を記入してください。

問題１

次の文章は"Many Black Holes in Center of Milky Way Galaxy"と題した記事で、５つのパラグラフから構成されている。この英文に関する以下の問に、原文に則して日本語で答えなさい（直訳でなくてよいが、原文の内容を十分に踏まえて書くこと）。

Astronomers say the center of our galaxy has plenty of strange, super gravity objects. For years, scientists believed that circling the center of galaxies, including our own Milky Way galaxy, were not only stars, but lots of stellar black holes. These are stars that have collapsed, creating gravity so strong even light does not get out.

But scientists had yet to find evidence of black holes at the center of the Milky Way until now. Astronomers studying old x-ray observations have found signs of at least 12 black holes in the inner circle of the Milky Way. And since most black holes cannot be found that way, they believe that there are likely thousands of them there. In fact, a study suggests there may be more than 10,000 black holes in the center of our galaxy. The findings appear in the journal Nature. Chuck Hailey was the lead writer of the report.

Scientists already know about a supermassive black hole at the center of the Milky Way. They call it Sagittarius A. Supermassive black holes are the largest kind of black hole, being between a million and billion times bigger than others. This latest research shows that the newly discovered stellar black holes are in addition to Sagittarius A and they do, in fact, circle it.

The newly discovered black holes are within about 31 trillion kilometers from the supermassive black hole at the center of the Milky Way. So there is still a lot of empty space and gas among all those black holes. But Hailey noted that if you looked at the amount of space around Earth, there would be zero black holes, not thousands. Our planet is part of a spiral arm circling the Milky Way. It is about 3,000 light years from its center.

The recently discovered black holes are also only the kind that are binary, meaning they are partnered with another star. Black holes partnered with other stars produce large amounts of x-rays as the black holes pull in the star's outer layer. Those x-rays are what astronomers observe. Binary black hole systems are likely only five percent of all black holes, he added. So that means there are really thousands of them.

stellar – adj. of or relating to the stars

spiral – n. a circular curving line that goes around a central point while getting closer to or farther away from it

light year(s) - n. a unit of distance equal to the distance that light travels in one year, about 9.46 trillion kilometers

layer – n. an amount of something that is spread over an area

（Science & Technology, Voice of America Learning English　2018 年 4 月 10 日の放送原稿より抜粋）

(1) ブラックホールとはどのようなものであると述べているのか、答えなさい。

(2) 最新の研究では、天の川銀河の中心にはどのぐらいの数のブラックホールがあると述べているのか、答えなさい。

(3) 超大質量ブラックホールの特徴とはどのようなものか、説明しなさい。

(4) なぜ地球の周辺の宇宙ではブラックホールが観測されないのか、説明しなさい。

(5) ブラックホール連星はどのようにして観測することができるのか、説明しなさい。

授業科目名	担当者名	開講曜時	金曜日２講時	理工学研究科 電子情報学専攻	氏名		学籍番号	採点
科学技術英語特論・演習	小堀他	実施日	8 月 3 日 2 講時	年			T	

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問題２

Answer the following questions in English using more than 50 but less than 100 words for each question.

(1) Describe your research activities.

(2) What kind of practical use is expected when your research is completed ?

(3) How is your research related with the important challenges in this century (global warming, food crisis, population explosion, energy depletion, digital divide, etc.) ? If you cannot answer the question, you may describe one of these challenges.

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