

2003年2月12日

平成15年度
北海道大学大学院理学研究科地球惑星科学専攻
博士前期(修士)・博士後期課程第二次入学試験

外国語試験問題

試験時間 09:30～11:30

以下の注意事項をよく読むこと。

1. 問題冊子1冊(この冊子), 答案用紙4枚, 草案用紙2枚を配付する。
2. 問題は, 英文和訳2問と, 和文英訳2問の合計4問である。
3. 問題のすべてに解答すること。
4. 解答は, 問ごとに別々の答案用紙に記入すること。答案用紙には, 問番号と受験番号を記入すること。氏名は記入しないこと。
5. 解答は答案用紙の裏面に及んでもよい。
6. 解答の如何に関わらず, 4枚の答案用紙をすべて提出すること。
7. 問題冊子と草案用紙は持ち帰ってもよい。

問題 1 英文和訳

問 1 - 1 次の英文の下線部を和訳せよ.

The center of gravity of the physical sciences is always moving. Every new discovery displaces the interest and the emphasis. Equally important is that new technological developments open new fields for scientific investigation. To a considerable extent the way science takes depends on the construction of new instruments as is evident from the history of science. For example after the development of classical mechanics and electromagnetism during the 19th century, a new era was started by the construction of highly developed spectrographs in the beginning of this century. For its time those were very complicated and expensive instruments. They made possible the exploration of the outer regions of the atom. Similarly, in the thirties the cyclotron - for its time a very complicated and expensive instrument - was of major importance in the exploration of the nucleus. Finally, the last decade has witnessed the construction of still more complicated and expensive instruments, the space vehicles, which are launched by a highly developed rocket technology and instrumented with the most sophisticated electronic devices. We may then ask the question: What new fields of research -if any -do these open for scientific investigation? Is it true, also in this case, that the center of gravity of physics moves with the big instruments?

(注) この英文は、1970年にノーベル物理学賞を受賞した Hannes Alfvén 博士による受賞記念講演「Plasma physics, space research and the origin of the solar system」の一部である。

問 1 - 2 次の英文の下線部 (A), (B) および (C) を和訳せよ.

(A) In 1992 the U.S. Department of Agriculture officially released the Food Guide Pyramid, which was intended to help the American public make dietary choices that would maintain good health and reduce the risk of chronic disease. The recommendations embodied in the pyramid soon became well known: people should minimize their consumption of fats and oils but should eat six to 11 serving a day of foods rich in complex carbohydrates-bread, cereal, rice, pasta and so on. The food pyramid also recommended generous amounts of vegetables (including potatoes, another fruitful source of complex carbohydrates), fruit and dairy products, and at least two servings a day from the meat and beans group, which lumped together red meat with poultry, fish, nuts, legumes and eggs.

(B) Even when the pyramid was being developed, though, some nutritionists had long known that some types of fat are essential to health and can reduce the risk of cardiac disease. Furthermore, scientists had found little evidence that a high intake of carbohydrates is beneficial. Since 1992 more and more research has shown that the USDA (U.S. Department of Agriculture) pyramid is grossly flawed. By promoting the consumption of all complex carbohydrates and eschewing all fats and oils, the pyramid provides misleading guidance. In short, not all fats are bad for you, and by no means are all complex carbohydrates good for you. The USDA's Center for Nutrition Policy and Promotion is now reassessing the pyramid, but this effort is not expected to be completed until 2004. (C) In the meantime, we have drawn up a new pyramid that better reflects the current understanding of the relation between diet and health. Studies indicate that adherence to the recommendations in the revised pyramid can significantly reduce the risk of cardiac disease for both men and women.

(注 1) chronic: 慢性の, poultry: 鳥類の肉, legumes: 豆類,
nutritionists: 栄養学者, cardiac: 心臓の

(注 2) Scientific American, January 2003 より一部改変して引用

問題2 和文英訳

問2-1. 次の文中の下線部を英訳せよ.

科学は知識の集合であると同時に、知識を得る作業、すなわち自然界の実態と過程を理解する作業でもある。英語の Science という単語は、もともとは知識を意味するラテン語“Scientia”に由来する。しかし、Science は単なる事実と情報の集合体ではなく、人間の好奇心に支えられた知的活動のダイナミックな過程でもある。科学的アプローチは、自然界の出来事には物理的理由、すなわち究極的には知り得ることができるとあるという仮定に基づいている。科学的知識は、系統的に集めたデータについての解析と客観的な理由付けにより得られるものである。

問2-2. 次の全文を英訳せよ.

19世紀末の放射能の発見は岩石や鉱物の年代を測定するための理論的な基盤を提供し、地球年代学の始まりとなった。最近50年間におけるこの分野の進展は、我々の住む惑星と太陽系の歴史の理解を根本的に変化させた。具体的には、隕石や月の岩石の年代測定が可能となり、惑星の成長速度を測定し、生物の絶滅や気候変化のタイミングを理解できるようになった。

(注) 地球年代学：geochronology