

熊本大学大学院自然科学研究科（博士前期課程）理学専攻地球環境科学講座入試問題（平成 23 年 1 月 20 日）  
英語

次の問[I], [II], [III]に答えよ。解答には、設問ごとに1枚の解答用紙を用い、各解答用紙の左上の[ ]に、解答する設問番号を記入すること。

[ I ] 次の英文を和訳せよ。

Our world is changing. In fact, Earth has always been changing and will continue to do so for ages to come. Yet, there is a difference between the changes occurring now and those that occurred previously. Earth is changing faster today than it has throughout most of its 4.6-billion-year history. Indeed, it may be changing faster than it ever has, except perhaps in the aftermath of giant meteorite impacts. The cause of this accelerated pace of change is simple: human activity. Human populations have expanded in numbers and in their technological abilities to the point at which we are now exerting a significant influence on our planet. The effects of our actions are seen most clearly in the thin envelope of gases that supports our existence, the atmosphere, but they are observable elsewhere as well. Forests, mountains, lakes, rivers, and even the oceans exhibit the telltale signs of human activity.

(出典 : “The Earth System”, Kump, Kasting and Crane)

[II] 次の英文を和訳せよ。

By measuring things indirectly, it is possible to infer a good deal about the interior portions of the Earth. One of the indirect measurements is the way the density of rock changes with depth; this can be calculated by measuring the speeds with which earthquake waves pass through the Earth. From such indirect measurements it can be deduced that the solid Earth does not consist of one single material, but must instead consist of distinct layers, like the layers of an onion. Unlike the onion, however, each layer has a different composition.

There are three such compositional layers. At the Earth’s center is the most dense of the three layers, the **core**. The core is a *spherical mass, largely of metallic iron, with admixtures of nickel, sulfur, silicon, and other elements*. It can be deduced that the admixed materials must be present because pure metallic iron would make the density of the core too high for the overall density of the Earth. The thick shell of dense, rocky matter that surrounds the core is called the **mantle**. The mantle is less dense than the core, but it is more dense than the outermost layer. Above the mantle lies the thinnest and outermost layer, the **crust**, which consists of *rocky matter that is less dense than the rocks of the mantle below*.

(出典 : “Physical Geology”, Skinner and Porter)

[III] 次の和文を英訳せよ。

地質学者達は、長期的視野を持っている。彼らは、しばしば低頻度で破壊的なイベントを研究する。地球の年齢が壮大で、相対的に人類の歴史が短い事を彼らはよく理解している。長期的視野で見ると、侵食のようなとてもゆっくりとした過程は、山を取り除いてしまうような巨大な変化をもたらさう。地球の歴史全体を通して考えたとき、洪水、火山噴火そして地すべりのような、頻繁ではないが強力な地質学的プロセスは、異常というよりはむしろ普通である。

長期的視野 : a long view of time, 頻度 : frequency