

Entrance on Sep 2018

Graduate School of Science and Engineering, Ehime  
University

Master Program in Earth's Evolution and  
Environment Course

Entrance Examination

Specialty: Earth Sciences

9:00 — 12:00

Answer any 4 out of the following [1]~[8] questions.

[1]. Answer the following questions on the Earth's crust.

(1) Explain the difference between the continental crust and the oceanic crust.

(2) How do you explain that the oldest large-scale oceanic crust found on Earth dates back to about 180 million years, whereas the oldest continental crust dates back to about 3.8 billion years?

[2]. What is the Cambrian explosion?

[3]. Explain the following terms. Answer any 3 out of 6.

(1) Fractional crystallization

(2) Regional metamorphism

(3) Xenolith

(4) Metamorphic grade

(5) Weathering of rocks

(6) Polymorphism

[4]. Explain the structure of a mid-ocean ridge and its magmatism.

[5]. Answer the following questions on seismic waves.

(1) What is the difference between body waves and surface waves?

(2) What is the difference between P-wave and S-wave?

(3) Why cannot S-wave travel through liquids?

[6]. Explain the phase transformations and seismic structures of the upper mantle and transition zone.

[7]. Explain the ocean current pattern and describe major surface-ocean currents.

[8]. Give an example of representative creatures in each kingdom and draw a phylogenetic tree.