

國立成功大學

112學年度碩士班招生考試試題

編 號： 53

系 所： 地球科學系

科 目： 科學英文

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節 次： 第 1 節

備 註： 不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

Multiple Choice Question (30%)

Find a proper/correct description or geological term corresponding to the question.

1. A block of crust that collided with a continent at a convergent margin and stayed attached to the continent.
 - A) accretionary prism
 - B) cratonic platform
 - C) accreted terrane
 - D) bedrock

2. Regolith
 - A) The original rock from which a metamorphic rock formed
 - B) Any kind of unconsolidated debris that covers bedrock
 - C) Rock made from fragments that were blown out of a volcano during an explosion
 - D) The geologic unit that serves as the primary source of groundwater in a region

3. A fragment or grain produced by the physical or chemical weathering of a pre-existing rock.
 - A) Clay
 - B) Chert
 - C) Chalk
 - D) Clast

4. A fault that does not intersect the ground surface
 - A) Transform fault
 - B) Blind fault
 - C) Strike-slip fault
 - D) Normal dip-slip fault

5. Assimilation
 - A) A process during which materials dissolve in water.
 - B) The process of magma contamination in which blocks of wall rock fall into a magma chamber and dissolve.
 - C) The mixing of sediment by burrowing animals such as clams and worms.
 - D) The process of two buoyant pieces of lithosphere converging and squashing together

6. Geochronology

- A) The science of dating geologic events in years.
- B) the study of the history of life on Earth as based on fossil.
- C) the scientific study of humanity, concerned with human behavior, human biology, cultures, societies, and linguistics.
- D) the scientific study of human activity through the recovery and analysis of material culture.

7. Plankton

- A) Thin soil, formed in arid climates. It contains very little organic matter, but significant precipitated calcite
- B) Tiny grains involved in plant reproduction.
- C) Tiny plants and animals that float in sea or lake water
- D) A layer of rotten rock created by chemical weathering in warm, wet climates

8. Rock formed during dynamic metamorphism and characterized by foliation that lies roughly parallel to the fault (shear zone) involved in the shearing process

- A) mylonite
- B) quartzite
- C) marble
- D) schist

9. Which one is the largest (longest) subdivision of geologic time?

- A) period
- B) epoch
- C) era
- D) eon

10. Albedo

- A) A map illustrating the shape of the ocean floor
- B) One of the fragments of solid material, left over from planet formation or produced by the collision of planetesimals, that resides between the orbits of Mars and Jupiter.
- C) The reflectivity of a surface
- D) Tiny solid particles or liquid droplets that remain suspended in the atmosphere for a long time.

Translation (40%)

Please translate the following paragraphs concisely into Chinese.

The silicate mineral class takes up 80 % volume of Earth and is the most abundant resource on Earth. The human being's use of silicates (ceramic) can be dated back to as early as 30,000 years ago. Nowadays, silicates have been applied to paints and coatings, food products, pharmaceutical products, and electronic applications. This is due to their bountiful crystal structures, from isolated-, chain-, sheet- to framework structure, which allows accommodating various sizes of cations within, resulting in their applicable properties.

The composition of Me_2SiO_4 , with isolated SiO_4 tetrahedra, adopts different crystal structures; olivine-, K_2SO_4 -related and phenacite-types when replacing different ionic sizes of 'Me'. For instance, the olivine mineral, $(\text{Mg}, \text{Fe})_2\text{SiO}_4$, is the most geologically significant member at upper mantle conditions; the phase transition of $(\text{Mg}, \text{Fe})_2\text{SiO}_4$ olivine to modified spinel structure is thought to be the cause of the observed seismic velocity discontinuity at a depth of 410 km at the Earth's mantle. Aside from existing in nature, like $(\text{Mg}, \text{Fe})_2\text{SiO}_4$ olivine, some of the orthosilicate family have been widely applied in various technologies, such as phosphor materials, dielectric and corrosion protective coatings, like Zn_2SiO_4 , $(\text{Ba}, \text{Sr}, \text{Ca})_2\text{SiO}_4$, Mn_2SiO_4 , MgCaSiO_4 , etc.

English Composition (30%)

Now you are the teaching assistant of the petrology course. In order to study mineralogy and petrography, a thin section of rock is needed for the purpose. The lecturer has asked you to lay out the instruction for preparing the thin section for students. Please write down the SOP (Standard Operation Procedure) step by step on how to prepare the thin section from the rock hand specimen using different tools or machines in the laboratory. In the end, you also need to instruct the students on how to determine the thickness of the thin section.

(P.S. Here are a few pieces of equipment you are going to need: glass slides, slab saw, grinder, hot plate, Canada balsam, sandpaper and lap wheels, etc. The working tools and machinery for the preparation of thin sections are not restricted mentioned above if you have more knowledge about making optical thin section.)