

## 國立東華大學招生考試試題

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招生學年度	九十八	招生類別	碩士班
系所班別	地球科學研究所		
科目	專業英文		
注意事項	本考科滿分為 50 分		

## 一、請將下列英文短文翻譯成中文(共二題，每題 15 分，合計 30 分)

1. The Earth is 4.5 billion years old. Some scientists think plate tectonics -- the geological phenomenon involving the movement of huge crustal plates that make up the Earth's surface over the planet's molten interior -- started 3.5 billion years ago, others that it began even more recently than that. The research by Professor Harrison and co-workers, is based on their analysis of ancient mineral grains known as zircons found inside molten rocks, or magmas, from Western Australia that are about 3 billion years old. Zircons are heavy, durable minerals related to the synthetic cubic zirconium used for imitation diamonds and costume jewelry. The zircons studied in the Australian rocks are about twice the thickness of a human hair. [原文節錄並修改自 @EurekAlert! , [www.eurekalert.org](http://www.eurekalert.org)] (15 分)

2. Unique chronostratigraphic marker in depositional fan stratigraphy on Mars: Evidence for ca. 1.25 Ma gully activity and surficial meltwater origin. (From Geology, March 2009, v. 37, no. 3, p. 207)

The origin of gullies on Mars is controversial (e.g., catastrophic groundwater release, debris flows, dry granular flows, or meltwater from surface ice and snow) and their ages are difficult to determine due to their small size. We describe a gully depositional fan that contains a unique chronostratigraphic marker (secondary crater clusters) between episodes of gully activity during fan development. This marker can be traced to its source, a 7-km-diameter rayed crater that we have dated as ca. 1.25 Ma. This age links gully activity to the emplacement of dust-ice mantling deposits interpreted to represent recent ice ages on Mars. This association, together with multiple episodes of depositional fan formation, favors an origin for these gullies from top-down melting of snow and ice during multiple favorable spin-axis and orbital variations. This melting mechanism is consistent with the occurrence of gullies in unique steep-sloped, poleward-facing insolation microenvironments that favor the melting of small amounts of surficial snow and ice. (15 分)

## 二、請將下列中文短文翻譯成英文(共二題，每題 10 分，合計 20 分)

1. 台灣島位於環太平洋區的地震帶，我們無法避免災害性地震的發生，但是藉由了解地震的原因及影響可以減輕傷害。台灣災害性地震肇因於斷層活動，因此，為了解讀斷層活動，可以利用地形變動觀測，長期監控台灣地區斷層兩側相對運動狀況，掌握斷層異常行為，以便適切地做出防災準備。[原文節錄並修改自經濟部中央地質調查所網頁](10 分)
2. 美崙溪由西北往東南流出中央山脈後，在花蓮市慈濟技術學院附近往北轉向約 60 度，沿東北方向流約 5 公里至花蓮市與新城鄉北埔交界處，再向東流約 1.5 公里沿米崙斷層轉向 90 度往南流過美崙山西側穿過花蓮市區，在美崙山最南端再向東切過米崙斷層出海。(10 分)