國立臺灣大學95學年度碩士班招生考試試題

英文翻譯成中文 (每題 25 分)

1. The oldest and simplest method of determining speed and direction of ocean currents is to follow the position of drifting bodies relative to a fixed point. Basically, this method has provided the enormous amount of data that have served to construct mean sea surface current charts as they are found today in most geographical atlases. Information on worldwide ocean surface currents is almost exclusively derived from ship drifts reported in the log books of navigators since about the middle of the nineteenth century. Here, the ship itself is used as a tracer. The currents are determined from the difference between dead reckoning and astronomical fixes, if possible, at least 24 h apart. Although these drifts are inherent to great errors and are partly influenced by direct wind effects, a general picture of average flow conditions can be derived if a large number of observations is available.

2. The method of isentropic analysis was introduced to oceanography about 70 years ago. Isentropic analysis studies the spreading of water types by depicting notably salinity and temperature on surface of equal potential density and by following their changes. Although isentropic analysis requires reference surfaces of constant entropy which are difficult to define for sea water, the use of surfaces of potential density may serve as an approximation as long as the limits of applicability are considered.

3. El Nino is a well known oceanographic phenomenon characterized by the appearance of abnormally warm water off the coast of Peru. It usually coincides with the Southern Hemispheric summer, when the trade winds are weak, and with reduced upwelling off the Peruvian coast. It has been proposed that such a large-scale, transient phenomenon may also excite westward-propagating planetary waves. During the 1975 El Nino expedition current meters were deployed at the equator about 300 km west of the Galapagos Islands. From the current meter records, scientists observed a 25-day period oscillation which moved westward at 0.5 m/s with a wavelength of about 1000 km.

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4. 表層海水與大氣間的相互作用造成了地球上的氣候狀況。熱帶地區由於強烈的日照促成增暖以及蒸發，因此表層海水溫度、鹽度均較高。中緯度地區，表面海水特性固然會隨季節變化甚大，但仍比深層海水要暖且輕。高緯度極區海水本就很冷，每屆冬季表層水溫更爲降低，海水密度增大、下沈，並與深層海水相混合；這也就是深層海水之來源。

試題隨卷繳回