

※ 考生請注意：本試題不可使用計算機

請勿在本試題紙上作答，否則不予計分

選擇題 (50 分，每題 5 分)

1. The combination of diurnal and semidiurnal tides produces a _____ tide.
A. diurnal B. semidiurnal C. mixed semidiurnal D. standing E. equilibrium
2. Using equilibrium tidal theory, the tide may be considered a wave with a wavelength approximately
A. the diameter of Earth. B. half the diameter of Earth. C. the circumference of Earth. D. half the circumference of Earth. E. the radius of Earth.
3. Tides of large amplitude occurring every two weeks at the new and full moon are called _____ tides.
A. equatorial B. neap C. spring D. declinational E. semidiurnal
4. The average energy of a wave is related to the square of its
A. height. B. wave length. C. period. D. speed. E. All of these are correct.
5. A group of waves is propagated at a speed that is _____ the speed of the individual waves in deep water. A. twice B. the same as C. one-half D. one-quarter E. one-tenth
6. Water particle orbits for a shallow water wave are
A. elliptic and flatten with depth. B. elliptic and enlarge with depth. C. circular and extend halfway to the seafloor. D. circular at the surface and elliptical at the sea floor. E. circular and extend to the seafloor.
7. When waves arrive at monitoring stations set up long distances from a storm center, which waves arrive first? A. long-period waves B. short-period waves C. steeper waves D. internal waves E. capillary waves
8. A beach that is fed by mixed sizes of rocks and particles but shows only large rocks on its surface is
A. an erosional beach. B. subjected to high waves and strong currents. C. an armored beach. D. All of these are correct. E. None of these are correct.
9. High-energy waves of winter storms
A. move sand from bars onto the beach. B. move sand from the beach out to bars. C. build sand spits and tombolos. D. hold sand on the beach and keep the beach stable. E. All of these are correct.
10. A beach in dynamic equilibrium
A. loses sand to the offshore area. B. gains sand. C. gains and loses sand in equal quantities. D. builds sand spits and tombolos. E. gains sand in the low tide terrace.

(背面仍有題目,請繼續作答)

※ 考生請注意：本試題不可使用計算機

簡答題(50 分，每題 10 分)

1. 潮汐發電需要有那些條件及其沒有普及的原因為何？
2. (a) 寫出適用於微小振幅波浪的頻散關係 (dispersion relation)，並說明其物理意義；(b) 在深水波 (deep-water waves) 及淺水波 (shallow-water waves) 的情形下，簡化上述頻散關係，並分別求出深水波及淺水波的波速。
3. A submarine earthquake produces a tsunami in the Gulf of Alaska. How long will it take the tsunami to reach Hawaii if the average depth of the ocean over which the waves travel is 3.8 km and the distance is 3600 km?
4. 簡單敘述海岸保護工法有那些。
5. 如圖所示，請標示出波浪在突堤附近所造成的砂粒淤積與侵蝕情形。

