

系所組別 水利及海洋工程學系乙組

考試科目 海岸工程

考試日期：0307·節次：1

※ 考生請注意：本試題 可 不可 使用計算機

## I. 選擇題 (40%·每題 4 分)

- The speed of a surface gravity wave is described by the
  - wavelength times the period.
  - wave period divided by wavelength.
  - wavelength divided by wave period.
  - square of the depth.
  - earth's gravity.
- Water protected from direct wave influence behind a breakwater can be placed in motion by wave
  - diffraction.
  - refraction.
  - reflection.
  - All of these are correct.
  - None of these are correct.
- In a closed basin, a single-node standing wave oscillation tends to have a wavelength that is \_\_\_\_\_ the basin length.
  - one-quarter
  - one-half
  - the same as
  - twice
  - four times.
- Swell is more regular than waves in the wind-generated area because
  - waves have been sorted by dispersion.
  - some small waves have been damped out by friction.
  - packets of swell are all at the same depth at the same time.
  - waves have been sorted by dispersion and some small waves have been damped out by friction.
  - waves have been sorted by dispersion, some small waves have been damped out by friction, and packets of swell are all at the same depth at the same time.
- The combination of diurnal and semidiurnal tides produces a \_\_\_\_\_ tide.
  - diurnal
  - semidiurnal
  - mixed semidiurnal
  - standing
  - equilibrium.

(背面仍有題目,請繼續作答)

系所組別 水利及海洋工程學系乙組

考試科目 海岸工程

考試日期：0307，節次：1

※ 考生請注意：本試題 可 不可 使用計算機

6. The \_\_\_\_\_ tide component tends to make high tides appear about one hour later each day.
- diurnal
  - semidiurnal
  - lunar
  - solar
  - declinational.
7. Diurnal tides are more prevalent at middle latitudes when the tide-raising bodies are
- at low declination.
  - at high declination.
  - in line with each other.
  - 90 degrees to each other.
  - 180 degrees to each other.
8. A coral reef coast is a product of
- volcanism.
  - erosion.
  - a change in current direction.
  - living organisms.
  - wave action.
9. High-energy waves of winter storms
- move sand from bars onto the beach.
  - move sand from the beach out to bars.
  - build sand spits and tombolos.
  - hold sand on the beach and keep the beach stable.
  - All of these are correct.
10. Sand dunes are found along coasts in which the sand is transported
- from the beach toward the sea.
  - from the beach toward inland areas.
  - from inland areas toward the sea.
  - from the beach toward inland areas and from inland areas toward the sea.
  - from the beach toward the sea, from the beach toward inland areas, and from inland areas toward the sea.

系所組別： 水利及海洋工程學系乙組

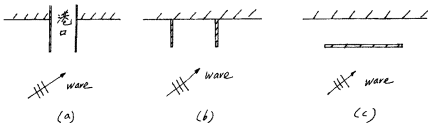
考試科目： 海岸工程

考試日期： 0307， 節次： 1

※ 考生請注意：本試題 可 不可 使用計算機

## II. 簡答題 (60%，每題 12 分)

- (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) 的情形下，簡化上述頻散關係，並求出波速，(c) 在淺水波 (shallow-water waves) 的情形下，簡化上述頻散關係，並求出波速，(d) 若考慮表面張力的影響，則(a)中之頻散關係，應如何修正？
- 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 4600 km?
- A wave field is observed by satellite. The wave lengths are determined to be 312 m in deep water and 200 m over the continental shelf. What is the shelf depth?
- 建築海岸工程常會造成海岸砂粒之淤積與侵蝕，試繪出在圖示波浪作用下，下列海岸工程：(a) 突堤 (jetty)、(b) 防砂突堤 (groin)、及(c) 離岸堤 (detached breakwater)，可能造成淤積與侵蝕之處。



- 近年來因地球暖化，格陵蘭 (Greenland) 及南極大陸上的冰川 (glacier) 及冰冠 (ice cap) 不斷融化，加上海水體積膨脹，造成海水位持續上升。試繪圖表示，如圖所示之海岸斷面，在海水位上升後，其斷面可能會有何種變化？並敘述產生此新斷面的物理機制。

