

※ 注意：選擇題請於試卷之「選擇題作答區」依序作答。

**Part A: 選擇題-單複選混合(Single/Multiple Choice) 30pts**

- (1) Who published a map in 1858, showed the rearrangement of the continents into a large land mass ? (a) Alfred Wegener, (b) Antonio Snider, (c) Alonzo Morning, (d) Paul Pinet, (e) Wallace Broecker (2 pts)
- (2) Geologists use the term "ocean basin" to refer to the large portion of the oceans' floor that lies deeper than ? (a) ~2000 m (b) ~3000 m, (c) ~5000 m, (d) ~6000 m, (e) ~1000 m, (2 pts)
- (3) During the course of several hundred million years, ocean basins have evolved through distinct stages of development that are directly link to global plate tectonic. This sequence of ocean-basin evolution is named as ? (a) Redfield cycle, (b) Gondwanaland cycle, (c) William cycle, (d) Wilson cycle (e) Wallace cycle, (2 pts)
- (4) Please select the marginal seas that are within Pacific Ocean ? (a) Bering Sea, (b) Coral Sea, (c) Red Sea, (d) Yellow Sea, (e) Sulu Sea (2 pts)
- (5) What is the average density of marine sediment ? (a) 2.4 g/cm<sup>3</sup>, (b) 3.3 g/cm<sup>3</sup>, (c) 1.03 g/cm<sup>3</sup>, (d) 2.8 g/cm<sup>3</sup>, (e) 2.9 g/cm<sup>3</sup> (2 pts)
- (6) What is the average width of the continental shelf ? (a) 78 km, (b) 85 km, (c) 65 km, (d) 75 km, (e) 55 km (2 pts)
- (7) What is the mean temperature of the world ocean ? (a) 3.00°C, (b) 3.98°C, (c) 3.50°C, (d) 4.30°C, (e) 2.05°C (2 pts)
- (8) What is the mean salinity of the world ocean ? (a) 34.7, (b) 35.0, (c) 33.5, (d) 35.2, (e) 35.7 (2 pts)
- (9) An ocean wave is an undulation of the sea surface, usually created by ? (a) Gas diffusion, (b) Wind, (c) Respiration, (d) Southern Oscillation, (e) Early Diagenesis, (2 pts)
- (10) What is the temperature that the density of water decreases as temperature decreases until it freeze ? (a) 1.91°C, (b) 1.50°C, (c) 2.50°C, (d) 4.05°C, (e) 3.98°C (2 pts)
- (11) What are those principal factors control the variety and size of wind-generated waves ? (a) Wind velocity, (b) Seismic, (c) Precipitation, (d) wind duration, (e) fetch, (2 pts)
- (12) What are those major solutes in the ocean ? (a) Sodium, (b) Manganese, (c) Sulfate, (d) Strontium, (e) Floride, (2 pts)
- (13) What is the highest abundance gas found in the surface oceans ? (a) Helium (b) Oxygen, (c) Hydrogen, (d) Carbon Dioxide, (e) None of the above, (2 pts)
- (14) There are many ways for oceanographer to subdividing the ocean, one scheme relies solely on illumination. What is the name of such zone that plant photosynthesis is not possible, (a) Dysphotic zone, (b) Littoral zone, (c) Photic zone, (d) Epipelagic zone, (e) Aphotic zone (2 pts)
- (15) What is called for a sharp density gradient with depth in the ocean? (a) Halocline, (b) Thermocline, (c) Nutricline, (d) Pycnocline, (e) Hydrocline, (2 pts)

**Part B: 問答題(Essays) 70pts**

- (1) Please name at least five wind-driven surface currents in the ocean. (10 pts)
- (2) Please briefly describe the "AOU" !. (10 pts)
- (3) Please determine the salinity of a seawater sample with a chlorinity of 10‰. (10 pts)
- (4) On the basis of circulation, list and describe the different types of estuary. (10 pts)
- (5) What is the El Niño-Southern Oscillation ? (10 pts)
- (6) Describe the nitrogen cycles and, please determine the oxidation number and name the N species/forms found in seawater. (20 pts)