



**RAJARATA UNIVERSITY OF SRI LANKA  
FACULTY OF APPLIED SCIENCES**

**B. Sc. (General) Degree  
Third Year - Semester I Examination – March / April 2014**

**PHY 3203 – PHYSICAL OCEANOGRAPHY**

**Answer all questions**

**Time: 2 hours**

1. Explain the following in detail.

- (a) Clear ocean water looks blue. [6 marks]
- (b) *Cl* (Chlorine) is a conservative element in seawater whereas *Al* (Aluminium) is not. [6 marks]
- (c) Equatorial upwelling occurs due to the westward flowing of equatorial currents. [6 marks]
- (d) Capillary waves are deep-water waves whereas tsunami waves are shallow-water waves. [7 marks]

2. (a) What is salinity of seawater? [2 marks]

(b) Explain how the salinity of a given seawater sample is determined. [4 marks]

(b) Discuss the relationship among salinity, density and temperature of seawater, paying attention on the following salinity (S) conditions. [12 marks]

- (i)  $S < 24.7 \text{ ‰}$
- (ii)  $S = 24.7 \text{ ‰}$
- (iii)  $S > 24.7 \text{ ‰}$

(c) Explain why the process of freezing is slowed down if the salinity of seawater is greater than  $24.7 \text{ ‰}$ . [7 marks]

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3. Write a detailed account on "Sound in the ocean" paying special attention on SOFAR (Sound Fixing And Ranging) layer and Shadow Zones. [25 marks]
4. Write short notes on the following.
- (i) Intertropical Convergence Zone (The doldrums). [6 marks]
  - (ii) Surface currents and Ekman transport. [6 marks]
  - (iii) Colligative properties of solutions. [6 marks]
  - (iv) Mid-oceanic ridges. [7 marks]

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