RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B. Sc. (General) Degree in Applied Sciences
Third Year - Semester I Examination – June / July 2018

PHY 3203 – PHYSICAL OCEANOGRAPHY

Time: 2 hours

Answer all questions

1. (a) What is "Forchhammer's Principle of Constant Proportions"? [10 marks]

   (b) What is the "salinity of seawater" and explain how you determine the salinity of seawater using the "chlorinity of seawater". [15 marks]

   (c) What is acid-base balance in seawater? Explain how it prevents broad swings of pH in seawater? [15 marks]

   (d) Discuss the colligative properties of seawater. [10 marks]

2. (a) Discuss different types of ocean waves paying attention on their disturbing force and restoring force. [10 marks]

   (b) Distinguish between deep water waves and shallow water waves. [15 marks]

   (c) What are transitional waves? Discuss the behavior of transitional waves by way of a clear diagram. [10 marks]

   (d) What is "stokes drift" and explain how it contributes to the movement of wind driven surface currents. [15 marks]

Contd.

3. Explain the following statements.

(a) "Upon cooling, freezing starts from the surface to the bottom when the salinity of a certain water body is less than 24.7 $^{o}/_{oo}$" [15 marks]

(b) "Equatorial upwelling occurs due to westward flowing equatorial currents" [10 marks]

(c) "Wind blowing from the south along the west coast of a land mass can result in coastal downwelling" [15 marks]

(d) "Western boundary currents are deep and narrow whereas eastern boundary currents are shallow and broad" [10 marks]

4. Write short notes on the following.

(a) Methane formation in the ocean bottom. [12 marks]

(b) "Lengthening of day" due to the effect of tides. [12 marks]

(c) Pycnocline. [12 marks]

(d) Ekman spiral and Ekman transport. [14 marks]

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