

CHEMICAL AND PHYSICAL STRUCTURE OF OCEANS

Chapter 5 The Properties of Seawater

Oceanography

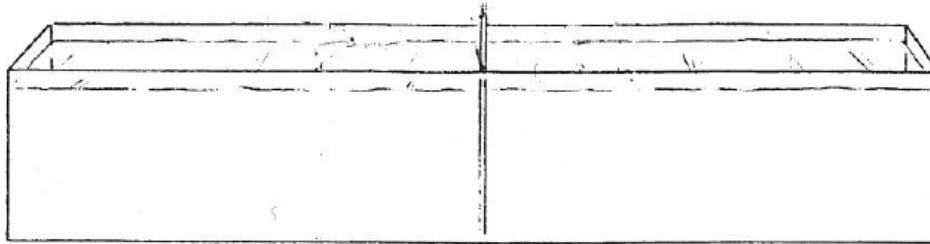
Name _____

Important equations: $^{\circ}\text{F} = (1.8 \times ^{\circ}\text{C}) + 32$ $\text{salinity} = \frac{(\text{mass of salt}) \times 1000}{((\text{mass of salt}) + (\text{mass of water}))}$

THERMOCLINE DEMONSTRATION

Part I - Internal Wave

Figure A. Model before the partition was removed.

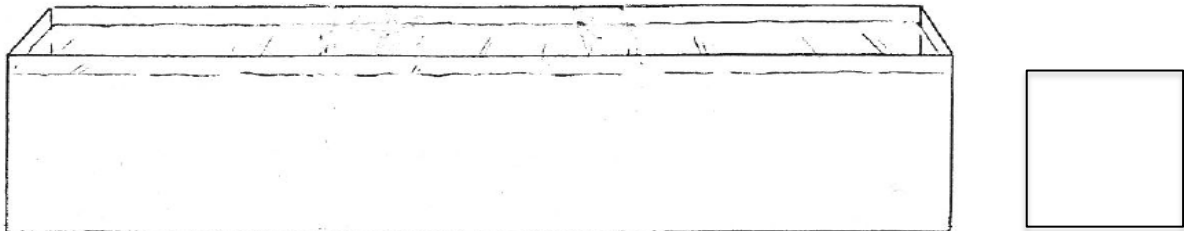


Hot Water (red) Temperature: _____ $^{\circ}\text{C}$ /_____ $^{\circ}\text{F}$

Cold Water (blue) Temperature: _____ $^{\circ}\text{C}$ /_____ $^{\circ}\text{F}$

Part II - Thermocline

Figure B. Model after the partition was removed and internal wave has settled.



_____ Layer (_____) Temperature: _____ $^{\circ}\text{C}$ /_____ $^{\circ}\text{F}$

_____ Layer (_____) Average Temperature: _____ $^{\circ}\text{C}$ /_____ $^{\circ}\text{F}$

_____ Layer (_____) Temperature: _____ $^{\circ}\text{C}$ /_____ $^{\circ}\text{F}$

Explain why the fluids changed position.

Post-Demo Questions

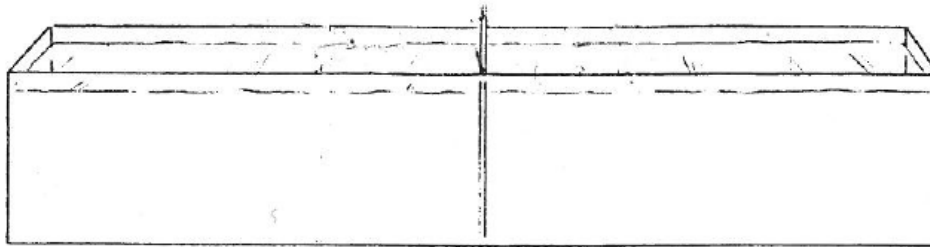
Post your answers to these questions online. The link can be found on the Assignment Board.

1. Define what an internal wave is.
2. Explain how convection is able to move heat throughout the Earth's surface waters.
3. Define density and explain how differences in temperature affect the density of water.
4. The water column of the ocean can be divided into three zones. What are they?
5. Define thermocline.

HALOCLINE AND WATER MASS DEMONSTRATION

Part I - Halocline and Determining Salinity

Figure C. Model before the partition was removed.



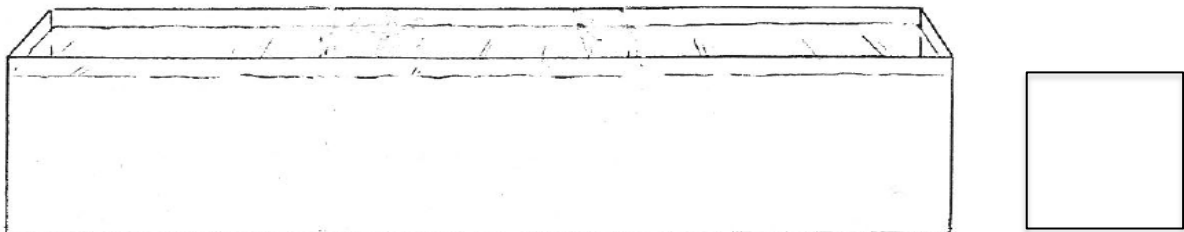
Freshwater (clear)

Saline Water (blue) with Salinity of _____ o/oo (ppt or parts per thousand)

the tank holds 5 L water

40 g of salt was added to one side of a partitioned tank

Figure D. Model after the partition was removed and internal wave has settled.



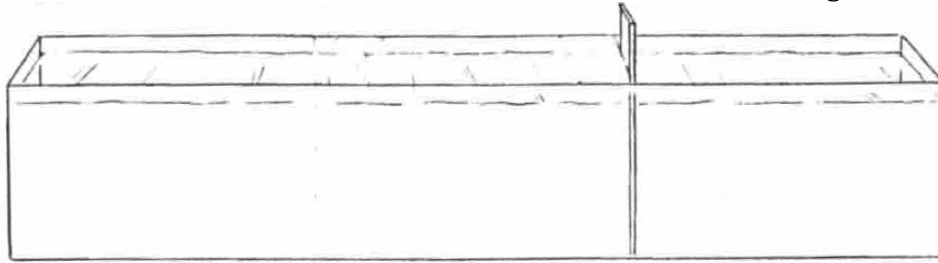
Freshwater (clear)

Saline Water (blue)

Explain why the fluids changed position.

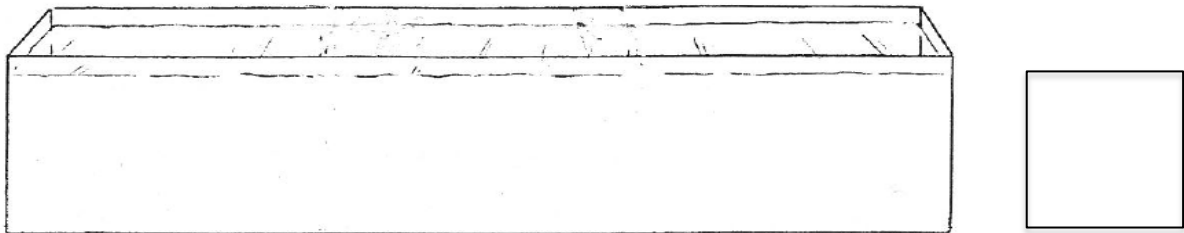
Part II – Water Masses and Determining Salinity

Figure E. Model after the partition was added and one side of tank was mixed with red and blue coloring.



Stratified Side, Freshwater (clear) and Saline Water (blue)
Mixed Side (purple)

Figure F. Model after the partition was removed and internal wave has settled.



Freshwater (clear)
Moderately Saline Water (purple)
Most Saline Water (blue)

Explain why the fluids changed position.

Determine the salinity of the moderately saline water.

How many total grams of salt would need to be added to 5,000 mL of freshwater in the tank to equal the average salinity of the oceans?

Post-Demo Questions

Post your answers to these questions online. The link can be found on the Assignment Board.

1. Define salinity.
2. Describe some conditions that cause salinity to vary.
3. Explain how differences in salinity affect the density of water.
4. Define halocline.
5. Define water masses.
6. Discuss ways in which density currents begin.