Oceanography Practice Midterm Exam II

Water, Ocean Chemistry, Atmospheric and Ocean Circulation

This is a practice test for OCEA101 Exam II. The questions and format of this test closely resemble that of the real exam given in class. This test, like the real test, is to be completed using a scantron card. Please Note: 1) The actual midterm will consist of approximately 75 questions. 2) Some of the questions on the midterm will come from this practice test.

Section I. True or False

Answer true or false to the following questions or statements. Mark "a" for True and "b" for false on your Scantron sheet.

____1. **Increasing heat is an object's response to an increase in temperature.**
a. True
b. False

____2. **The seawater tends to become more dense with increasing depth in the ocean.**
a. True
b. False

____3. **It is possible for two samples of water to have the same density at different combinations of temperature and salinity.**
a. true
b. false.

____4. **In terms of meteorology, an “air mass” is a large body of air with nearly uniform temperature, humidity, and therefore density throughout.**
a. true.
b. false.

____5. **Tropical cyclones never leave the tropics.**
a. true.
b. false.

____6. **The amount of seawater water flowing in the geostrophic currents of the world ocean is approximately equal to the total amount of water flowing in all the Earth's fresh water rivers.**
a. true.
b. false.

____7 **Deep sea currents move purely horizontal and rarely move vertically.**
a. true.
b. false.

____8. ***Geostrophic gyre* is a fancy term for the deep ocean thermohaline circulation system.**
a. true
b. false

____9. **Ocean circulation transports most of Earth’s sun-derived, low-latitude, surface heat to the poles.**
a. true
b. false

____10. **Western boundary currents typically are deep and swift, and have well-defined edges and eddies**.
a. true.
b. false.

____11. **Geostrophic gyres are primarily driven by density differences of seawater masses.**
a. true
b. false

____12. **Atmosphere circulation transports one third of Earth's sun-derived, low-latitude, surface heat to the poles.**
a. true
b. false

____13. **Eastern boundary currents typically are warm and narrow, and have poorly-defined edges and eddies**.
a. true.
b. false.

____14. **Ocean circulation transports close to two thirds of Earth's sun-derived, low-latitude, surface heat to the poles.**
a. true
b. false

____15. **Western boundary currents typically are deep and swift, and have well-defined edges**.
a. true.
b. false.

____16. **The bond between a hydrogen atom and the oxygen atom *within* a *single* water molecule is termed a hydrogen bond.**
a. true
b. false

____17. **The unique thermal properties of water is attributed to a type of bonding called "hydrogen bonding".**
a. true
b. false

____18. **The *pycnocline* is *specifically* defined as a horizontal zone in the ocean that marks a sharp change in seawater *density***.
a. true.
b. false.

____19. **Blue and green wavelengths of sunlight are more greatly absorbed than red and orange wavelength sunlight as they travel through seawater.**
a. true
b. false

____20. **The minimum sound velocity layer (the *SOFAR* layer) in the ocean lies only several meters beneath the ocean's surface.**
a. true.
b. false.

Section II. Multiple Choice:

Identify the letter of the choice that best completes the statement or answers the question.

____21. **The hydrogen bonds of water molecules account for which of the following?**
a. Water is the universal solvent.
b. Water has a high surface tension.
c. Water has a high boiling point.
d. Water has a high heat capacity.
e. All of these are relevant.

____22. **The property of water that allows certain insects to walk on the surface is called _____**
a. viscosity.
b. density.
c. surface tension
d. latent heat of fusion.
e. latent heat of evaporation.

____23. **The ocean is slow to heat and slow to cool. This is related to a property of water known as __**
a. density.
b. high heat capacity.
c. low heat capacity.
d. residence time.
e. boiling point.

____24. **Transmission of sound through water is best described by which of the following statements?**
a. It is inefficient as compared with transmission by air.
b. It is the same as by air.
c. Sound does not travel in water - a property known as incompressibility.
d. It is more efficient than transmission by air.

____25. **The ocean is stratified with respect to _____.**
a. density
b. temperature
c. salinity
d. all of the above

____26. **Most of the world ocean (by volume) has the temperature properties of _____**
a. the mixed surface layer.
b. the middle thermocline layer.
c. the deep and bottom waters layer.
d. the compensation depth.

____27. **The density of a parcel of seawater will increase _____**
a. when the temperature increases.
b. when the salinity decreases.
c. when the salinity increases.
d. when the pressure decreases.
e. when it is exposed to high ambient sound levels.

____28. **The property of water that accounts for the ability of liquid water to absorb heat and change only very little in temperature is called _____**
a. Specific heat, or heat capacity.
b. Specific heat of evaporation.
c. Specific heat of fusion.
d. Freezing coefficient.
e. Dielectric constant.

____29. **If our planet were without its ocean, but otherwise the same as it is today, would surface temperatures be *more* extreme than they are now (that is, higher high temperatures in summer, and lower low temperatures in winter), of *less* extreme, or what?**
a. more extreme.
b. less extreme.
c. about the same as we know today.
d. impossible to tell without more information.

____30. **The ocean's deep sound channel (SOFAR layer) is characterized as a zone in which _____**
a. sound is horizontally concentrated rather than diffused as it moves through the water.
b. acoustical energy losses are relatively small.
c. sound waves travel great horizontal distances.
d. sound velocity is at a minimum.
e. (All of these statements apply.)

____31. **The depth to which light can penetrate the ocean depends on _____**
a. The dust, cloud cover, and gases in the atmosphere.
b. The angle of the sun above the horizon.
c. The smoothness or roughness of the sea surface.
d. The amount of suspended material in the water.
e. (All of these statements apply.)

____32. **The wavelengths of light that penetrate deepest into the ocean are _____**
a. red and violet.
b. red and yellow.
c. blue and orange.
d. green and blue.
e. (All wavelengths penetrate equally efficiently.)

____33. **The densest seawater is the _____**
a. coldest.
b. saltiest.
c. warmest and freshest.
d. freshest.
e. coldest and saltiest.

____34. **A zone in which the ocean's salinity increases rapidly with increasing depth is called _____**
a. a halocline.
b. a thermocline.
c. a pycnocline.
d. a metacline.
e. a salticline.

____35. **Seawater freezes _____ fresh water.**
a. at a higher temperature than
b. at a lower temperature than
c. at the same temperature as

____36. **About what percentage of the incoming sunlight is absorbed by the Earth's land and water surface?**
a. 20%
b. 33%
c. 51%
d. 67%
e. 89%

____37. **The main short-term carrier of heat between the warm tropics and the cold polar regions is _____**
a. the atmosphere.
b. ocean surface currents.
c. deep ocean currents.
d. oil and natural gas tankers.

____38. **The most pronounced *thermocline* (greatest vertical difference in seawater temperatures) exist in _____**

a. the temperate zones.
b. the polar regions.
c. the tropics.
d. anywhere -- it depends on water salinity.
e. anywhere -- it depends on water clarity.

____39. **About what percent of ocean water is contained in the "deep zone" beneath the pycnocline?**

a. 30%
b. 40%
c. 60%
d. 80%
e. 99%

____40. **The upper sunlit layer of the ocean is called _____ and extends to a depth of about _____**

a. the aphotic zone ... 100 meters
b. the euphotic zone ... 100 meters
c. the disphotic zone ... 1000 meters
d. the scattering zone ... 100 meters
e. the euphotic zone ... 1000 meters

____41. **The speed of sound in water is _____ the speed of sound in air.**

a. lower than
b. about the same as
c. much greater than

____42. **The "*afternoon effect*" involves _____ (Hint: has something to do with sun-warming of surface waters during low -wind days)**

a. the reduction of sound transmission in ocean surface waters.
b. the efficiency of light transmission in the afternoon.
c. the bending of sound waves by animals in the water.
d. the higher wind waves present in the afternoon.
e. the bending of sound waves by tiny plant-like organisms in the water.

____43. **Active sonar differs from passive sonar in that active sonar _____**

a. requires more attention on the part of the operator.
b. works at a greater distance.
c. can only be used on large ships.
d. uses sound to probe as well as listen.
e. is incapable of distinguishing whales from submarines.

____44. **The lower, weakly-sunlit layer of the ocean is called _____ and extends between depths of _____ and _____. Hint: it's called the "Twilight Zone")**

a. the aphotic zone ... 1000 meters; deeper
b. the disphotic zone ... 100 meters; 1000 meters
c. the euphotic zone ... zero; 100 meters
d. the scattering zone ... 1000 meters; 2000 meters
e. the euphotic zone ... 100 meters; 1500 meters

____45. **During hydrogen bonding, the hydrogen atoms in a water molecule tend to bond to _____**

a. each other.
b. oxygen atoms of another water molecule.
c. hydrogen atoms of another water molecule.
d. all nearby positively charged ions.
e. oil droplets in the water.

____46. **The average salinity of the world ocean is closest to which of the following** _____

a. 34.5 °/oo
b. 54.3 °/oo
c. 73.6 °/oo
d. 94.5 °/oo
e. Hey, everyone knows that the ocean is fresh!

____47. **Other than the hydrogen and oxygen atoms themselves, the two most abundant solids (ions) dissolved in seawater are** _____

a. fluorine and iodine.
b. gold and silver.
c. bromine and boron.
d. sodium and chloride
e. carbonate and sulfate.

____48. **The hydrogen and oxygen atoms in a water molecule are held together by** _____

a. electrostatic attraction (ionic bonding)
b. the two negative ions.
c. electron sharing (covalent bonding).
d. surface tension.
e. hydrogen bonds.

____49. **The term "salinity" refers to** _____

a. the total amount of dissolved solids and gases in the ocean.
b. the total amount of dissolved oxygen in seawater.
c. the total amount of solvent in the water.
d. the total amount of chloride ion in the water.
e. the total amount of sodium in the water.

____50. **Once a dissolved ion reaches the ocean,** _____

a. it will remain dissolved in the water forever.
b. it will settle to the seafloor in less than 100 years.
c. it will be removed quickly by the activities of organisms.
d. it may stay or be removed, depending on the individual ion's "*residence time*".

____51. **Which of the following statements best describes the *conservative* constituents of seawater?**

a. Conservative constituents, which include the major component ions in salinity; very stable with relatively long residence times.
b. Conservative constituents, which include the major component ions in salinity; very unstable with relatively short residence times.
c. Conservative constituents must be conserved for future generations.
d. Conservative constituents of seawater include gold and other valuable elements dissolved in seawater.

____52. **Where does seawater's dissolved oxygen come from?**

a. From the respiration of animals.
b. A byproduct of photosynthesis.
c. As a result of decomposition of plant and animal remains.
d. Through the oxidation of metal ions in seawater.

____53. **The amount of gas that seawater can hold in solution will be greater** _____

a. in colder water.
b. in warmer water.
c. in salty water.
d. under less pressure.

____54. **Two major sources of carbon dioxide in seawater are _____**
a. from photosynthesis by marine plants and bacteria decomposition.
b. from rain falling into the ocean and melting icebergs .
c. from silica oozes and pelagic clays.
d. respiration of marine animals and bacteria and atmospheric CO2.

____55. **Most seawater samples are taken _____**
a. in a plastic bucket with a long rope attached.
b. in a paper cup dipped in by hand.
c. in a mason jar lowered by a cable.
d. in a Nansen or Niskin sampling bottle attached to a "rosette" cage..
e. in a Rumple-Stillskin sampler attached to a submarine..

____56. **The property of seawater used in *conductivity meter* to measure salinity is _____**
a. density.
b. transmission of electricity.
c. surface tension.
d. heat capacity.
e. optical refraction.

____57. **The densest phase of water is _____**
a. gas.
b. liquid.
c. solid.
d. They are all the same density.

____58. **A "solution" is made of two components, a(n) _____ and a(n) _____.**
a. bond ... atom
b. atom ... molecule
c. solute ... solvent
d. ion ... atom
e. base ... acid

____59. **The dissolved ions present in seawater alter the characteristics of pure water in all of the following ways except _____**
a. The ions cause seawater to freeze at a lower temperature than fresh water.
b. The ions cause seawater to boil at a higher temperature than fresh water.
c. The ions cause seawater to evaporate more slowly (in equal conditions of temperature and pressure) than fresh water.
d. The ions cause the seawater to become less dense than freshwater.

____60. **The dissolved components of ocean water whose amounts are low, tend to get involved in seawater chemical reactions, and have relatively short residence times ate called _____**
a. excess volatiles.
b. zwitterions.
c. excess ionics.
d. nonconservative components
e. Forchhammer volatiles.

____61. **The Principle of Constant Proportions states _____**
a. that the total amount of dissolved solids in the ocean is a constant.
b. that the salinity of the ocean is a constant.
c. that the excess volatile ratio of the ocean is a constant.
d. that the ratio of major salts in samples of seawater from various places is a constant.

____62. **We can determine salinity if we know _____**

a. the density of a water sample.
b. the mass of a water sample.
c. the chlorinity of a water sample.
d. the exact color of a water sample.
e. the temperature of a water sample.

____63. ***Residence* time is _____**

a. The same for all dissolved solids and gases in the ocean.
b. The average length of time a dissolved ion spends in the ocean.
c. A measure of tenure for a professor of oceanography.
d. A function of Forschhammer's principle.
e. The same as mixing time.

____64. **What is the approximate mixing time of the world ocean?**

a. About 1,400 years.
b. About 150,000 years.
c. About 150,000,000 years.
d. About 1.5 billion years.
e. It has never been fully mixed…and never will be.

____65. **Which of the following statements about pH is not true?**

a. pH relates to acid-base balance.
b. a pH of 10 is alkaline, a pH of 3 is acid.
c. Buffers prevent large swings in pH.
d. As a whole, the pH of the ocean is mildly acidic.
e. pH will tend to rise in areas of rapid plant growth.

____66. **Water's slight blue color is caused by the absorption of red light by _____**

a. living things in the ocean.
b. the covalent bonds between hydrogen and oxygen in the water molecule.
c. the hydrogen bonds between water molecules.
d. a refractive illusion.

____67. **The salinity of the ocean, at the present time, seems to be _____**

a. increasing due to evaporation as the Earth warms up.
b. decreasing due to several years of excessive rainfall.
c. increasing due to pollution.
d. in equilibrium, with dissolved components entering equal to dissolved components leaving.

____68. **The most abundant gaseous components of the Earth's *atmosphere* are _____**

a. carbon dioxide and oxygen.
b. nitrogen and hydrogen.
c. nitrogen and carbon dioxide.
d. nitrogen and oxygen.
e. oxygen and carbon dioxide.

____69. **Hot air _____ and _____; while cool air _____ and _____.**

a. expands, rises; contracts, rises
b. contracts, sinks; expands, rises
c. expands, rises; contracts, sinks
d. Expands, rises ... expands, sinks

____70. **Seasons are caused by _____**
a. changes in the weather.
b. annual variation in the energy output of the sun.
c. the Earth's 23° rotational tilt relative to the plane of its orbit around the sun.
d. our being closer to the sun in summer.

____71. **Earth is "tilted" at about 23° relative to its orbital plane around the sun. This causes _____**
a. the change in temperature and climate known as the seasons.
b. the periods of illumination (or darkness) at the poles that last for six months.
c. longer day lengths around here in the summer.
d. higher summer temperatures.
e. all of these things.

____72. **Earth rotates eastward at about _____**
a. 1,000 miles per hour.
b. 500 miles per hour.
c. 55 miles per hour.
d. 10,000 miles per hour.
e. impossible to say without knowing the latitude.

____73. **According to the atmospheric circulation model developed in the text, air tends to _____**
a. rise at 30° north and fall at 60° north.
b. rise at 60° north and fall at 30° north.
c. rise at 30° north and fall at 0° north.
d. rise at 30° north and rise at 60° north.
e. none of the above.

____74. **There are _____ main wind bands in *each* hemisphere of the Earth.**
a. 2
b. 3
c. 4
d. 5
e. 6

____75. **The Coriolis effect causes objects moving in the *northern* hemisphere to veer off course**
a. to the right, or clockwise when viewed from above.
b. to the left, or counterclockwise when viewed from above.
c. in an upward direction.
d. in a downward direction.
e. they don't veer off course -- they continue straight.

____76. **If you were standing on top of a high mid-Pacific island at 15° north latitude, from which direction would you expect the wind to come? (Hint: don't forget to consider Coriolis effect!)**
a. north.
b. south.
c. northwest.
d. northeast.
e. southwest.

____77. **The dependable (persistent) surface winds of the Earth centered at about 15° north and south latitudes are called _____**
a. the westerlies.
b. the northerlies.
c. the trade winds.
d. the doldrum winds.
e. the ITCZ.

____78. **The meteorological equator** _____
a. is also called the "thermal equator."
b. is usually located about 5° north of the geographical equator.
c. represents the imaginary line of thermal equilibrium between hemispheres.
d. is a place where surface winds converge.
e. all of the above.

____79. **Winds (and winter storm systems) generally moves across the United States** _____
a. from north to south.
b. from east to west.
c. from south to north.
d. from west to east.
e. from high altitude to low altitude.

____80. **Hurricanes Andrew, Katrina and Marie, were three of the most costliest natural disaster to strike the United States. These storms are very violent examples of** _____
a. an extratropical cyclone.
b. a monsoon.
c. a tropical cyclone.
d. a tornado.
e. a frontal storm.

____81. **The dynamic boundary between warm and cold air masses is called a(n)** _____
a. Hadley line.
b. Bjerkens line.
c. Hadley cell.
d. front.
e. ITCZ.

____82. **Tropical cyclones are also called** _____
a. willi-willis.
b. typhoons.
c. hurricanes.
d. (All of these are the same things, just with different names.)

____83. "**Weather" may be defined as** _____
a. long-term temperature and rainfall trends.
b. long-term humidity and precipitation trends.
c. long-term changes in the composition of the atmosphere.
d. short-term changes in the composition of the atmosphere.
e. short-term, localized characteristics of the atmosphere.

____84. **Global-scale regions or belts of <u>vertical air movement</u> (either rising or falling) are primarily found on the Earth at latitudes** _____
a. 0° and 60°.
b. 45° and 75°.
c. 30° and 90°.
d. Both, a. and c.
e. None of these latitudes.

____85. **Which of these phenomena is NOT associated with tropical cyclones?**
a. storm surge and flooding
b. high winds
c. heavy rainfall
d. low atmospheric pressure
e. strong high atmospheric pressure

____86. **When warm and cold air masses come together in the mid-latitudes** _____
a. very little weather activity results.
b. a tropical cyclone forms.
c. one air mass may ride up and over the other and form a front.
d. one air mass may ride up over the other and form a storm surge.
e. (none of the above.)

____87. **The power for tropical cyclones comes from** _____
a. static electricity.
b. the condensation of warm, dry air over cold ocean waters.
c. the Coriolis effect.
d. the condensation of warm, moist air over very warm ocean waters.
e. the U. S. Department of Energy.

____88. **When viewed from above, tropical cyclones rotate** _____ **in the *southern* hemisphere.**
a. clockwise
b. counterclockwise
c. either way -- it depends on the individual storm.
d. only *northern* hemisphere tropical cyclones rotate.

____89. **Wintertime cyclonic systems typically form** _____
a. near the meteorological equator.
b. near the thermal equator.
c. at high latitudes, at the north or south pole.
d. at high latitudes, at the junction between the polar cells and the Ferrel cells.
e. In the tropics.

____90. **Tropical cyclones tend to move** _____
a. equatorward in both hemispheres.
b. eastward and poleward in both hemispheres.
c. westward and poleward in both hemispheres.
d. poleward in both hemispheres.
e. in completely unpredictable ways.

____91. **A system of four ocean currents (two boundary, two transverse) completing a flow circuit around the periphery of an ocean basin is collectively called** _____
a. a Ferrel cell.
b. a Coriolis pattern.
c. a geostrophic gyre.
d. a gimble swirl.
e. a wabe.

____92. **The *ultimate* source of the energy for ocean's currents is** _____
a. weather.
b. wind.
c. the sun.
d. the tides.

____93. **The direct source of the energy for ocean' surface currents is** _____
a. weather.
b. wind.
c. the sun.
d. the tides.

____94. **The Earth's rotation influences currents by an apparent force known as _____**
a. Franklin rotation.
b. geostrophism.
c. gyral nutation.
d. Coriolis effect.

____95. **Ocean surface currents (gyres) in the northern hemisphere move in great _____ patterns.**
a. irregular.
b. counterclockwise.
c. clockwise.
d. random.

____96. **The only major ocean surface current that continues in an uninterrupted circle around the circumference of the Earth without encountering land is the _____**
a. Gulf Stream.
b. Kuroshio, or Japan, Current.
c. West Wind Drift.
d. Canary Current.

____97. **Generally the fastest and deepest ocean surface currents are _____**
a. northern boundary currents.
b. eastern boundary currents.
c. western boundary currents.
d. southern boundary currents.

____98. **Britain's weather is _____ than would be expected at that latitude because of the influence of surface currents (Gulf Stream).**
a. colder.
b. drier.
c. less humid.
d. warmer and wetter.

____99. **San Francisco's characteristic cold and foggy weather is caused by a _____**
a. cold eastern boundary current.
b. warm eastern boundary current.
c. cold western boundary current.
d. warm western boundary current.

____100. **Countercurrents and undercurrents (such as the Cromwell Current) generally move _____ than the surface current above, and in _____ direction.**
a. faster ... the same
b. faster ... the opposite
c. slower ... the same
d. slower ... the opposite

____101. **The most dense water in ocean currents is the _____**
a. warmest and saltiest.
b. coldest and saltiest.
c. warmest and freshest.
d. coldest and freshest.

____102. **The Cromwell Current is _____**
a. a bottom current flowing in the same direction as an overlying surface current.
b. a shallow current below a surface current and flowing in the same direction.
c. a shallow current below a surface current and flowing in the opposite direction.
d. a theoretical current not yet discovered.

____103. **Benjamin Franklin was the first person to recognize the extent of the _____ off the Eastern Seaboard of the U.S. and to publish a navigational chart of it.**

a. North Equatorial Current.
b. Gulf Stream.
c. El Niño.
d. Kuroshio Current.
e. Canary Current.

____104. **Geostrophic gyres can be described by which of the following statements?**

a. They are powered by prevailing surface winds.
b. They depend on Coriolis effect and the position of continental land masses for their direction.
c. They form gyres around the perimeters of ocean basins.
d. They are physically large oceanic phenomena.
e. All of the above are true.

____105. **Which current within a Northern Hemisphere gyre would you expect to have the lowest salinity and temperature?**

a. a western boundary current.
b. an eastern boundary current.
c. a southern boundary current.
d. a northern boundary current.
e. All of these currents would be about equal in temperature and salinity.

____106. **El Niño is primarily due to a slowing down/reversal of the _____ current(s) in the central Pacific.**

a. Kuroshio
b. Equatorial
c. North Atlantic
d. West Wind Drift
e. Labrador

____107. **During an El Niño event, _____**

a. the trade winds strengthen.
b. the central eastern Pacific ocean becomes cooler.
c. sea level falls in the central eastern Pacific ocean.
d. a strong equatorial countercurrent develops in the Pacific.
e. the Peru Current strengthens.

____108. **Which of these is generally NOT an El Niño effect?**

a. A rise in the sea level off the coasts of the American Continents.
b. An increase in ocean surface temperature in the Eastern Pacific.
c. An increase in rainfall in west coastal countries or states of the American continents.
d. An often catastrophic decrease in the commercial fisheries of the affected countries.
e. A decline in the exotic, warm-water species of fish and other forms of marine life in the affected waters.

____109. **Which ocean surface current carries the greatest volume of water?**

a. The Kuroshio (or Japan) Current.
b. The North Equatorial Current in the Pacific.
c. The South Equatorial Current in the Pacific.
d. The West Wind Drift.
e. The Canary Current.

____110. **Wind moving from north to south along the California coast causes water moving along the coast to** _____

a. move south.
b. move toward shore (east) – producing downwelling.
c. move away from shore (west) – producing upwelling.
d. move north.

____111. **Most of the ocean's deepest bottom water *initially* forms** _____

a. near the ocean floor in the arctic.
b. near the ocean floor in the Antarctic.
c. near the ocean surface in the arctic.
d. near the ocean surface in the Antarctic.

____112. **The main force driving thermohaline circulation is** _____

a. wind.
b. the Coriolis effect.
c. seawater density and gravity.
d. plate tectonics.

____113. **CFCs (chlorinated fluorocarbons) are used to trace the movement of ocean currents because** _____

a. they are inexpensive.
b. they are long-lived and can be detected in very small quantities.
c. they are dangerous to marine organisms and must be removed.
d. they enter the ocean only at the ocean's surface.
e. (both b and d)

Section III.

Matching: Questions 114 through 123

Directions: *Match the oceanographic feature or concept with its associated term or relationship (letter(s))*

a. Formation of sea ice	**a+b** Western boundary current
b. The Trades	**b+c** Excessive warm water in the tropical Eastern Pacific
c. Coriolis effect	**c+d** Hydrogen bonding
d. Iron	**d+e** Sodium ion
e. Eastern boundary current	**a+e** Excessive cold water in the tropical Eastern Pacific

____ 114. **Deflects objects moving over Earth's rotating surface**

____ 115. **Attributed with most of water's remarkable thermal properties**

____ 116. **La Niña**

____ 117. **The Gulf Stream**

____ 118. **An abundant, conservative constituent in seawater**

____ 119. **Surface winds of the Hadley Cell**

____ 120. **A sparse, nonconservative constituent in seawater**

____ 121. **The California Current**

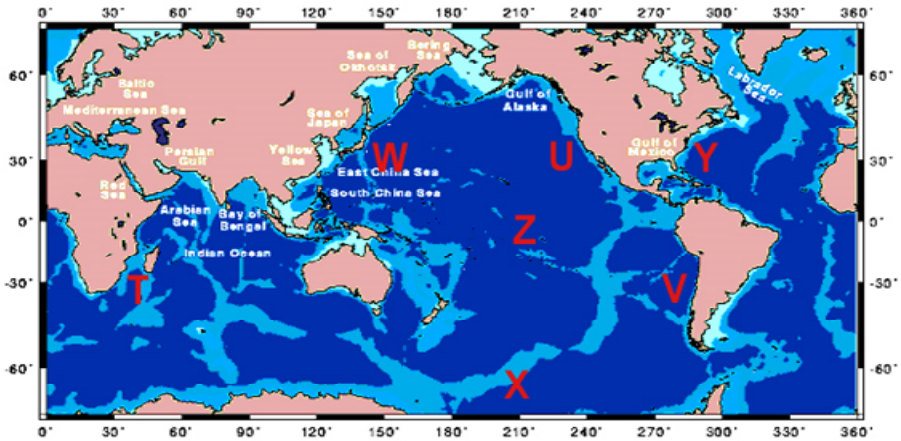
____ 122. **El Niño**

____ 123. **Downwelling of cold, salty polar waters**

Section IV. Matching: Questions 124 through 130

Directions: *Match each specified geographic locality (Letter) with its associated oceanographic current (letter)*. Note that one of the currents below is not assigned on the map.

a. West Wind Belt
b. Kuroshio
c. North Pacific Eastern Boundary
d. Gulf Stream
e. Labrador
a+b. Equatorial Transverse
b+c. Agulhas
c+d. Humboldt



____ 124. **Locality T**

____ 125. **Locality U**

____ 126. **Locality V**

____ 127. **Locality W**

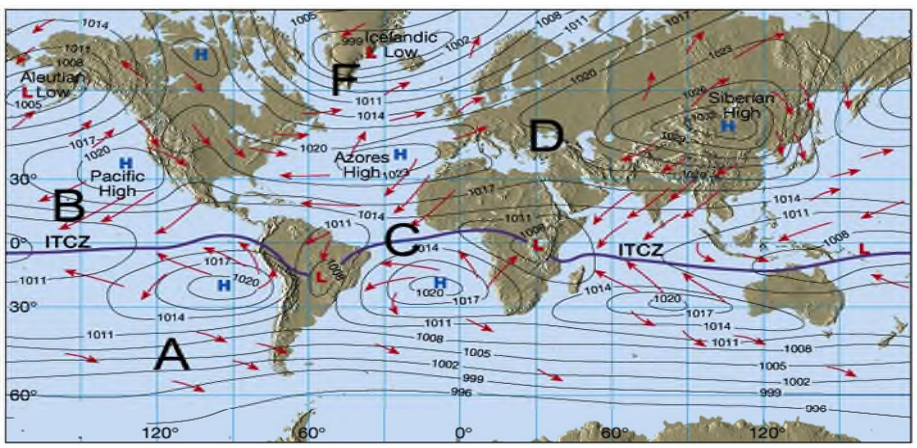
____ 128. **Locality X**

____ 129. **Locality Y**

____ 130. **Locality Z**

Section V. Matching: Questions 131 through 139 - **Directions:** *Correctly match a atmospheric feature or phenomena with its correct associated weather/wind condition or name. (answer choices a. through c+d)*. Use the weather map below to answer questions.

a. Wet weather
b. Dry weather
c. Westerly winds
d. Trade winds
e. Inter-Tropical Convergence Zone
a+b. Agulhas Current
b+c. Mild winds
c+d. Strong winds



____131. Prevailing wind belt at Location A

____132. Prevailing wind belt at Location B

____133. Weather associated with Siberian High

____134. Weather associated with Aleutian Low

____135. Weather associated with ITCZ

____136. Location C (the purple line)

____137. Relative wind strength at Location D

____138. Relative wind strength at Location F

____139. Southern California weather (wet or dry?