

NOSB Scrimmage Questions (Woodbridge Scrimmage)

TU #1 - Multiple Choice – Physical

Tropical cyclones rotate counterclockwise in the northern hemisphere and clockwise in the southern hemisphere. This rotation is the result of the Coriolis effect acting upon:

- W. cold, sinking air
- *X. warm, rising air
- Y. dry, rising air
- Z. moist, falling air

Bonus #1 – Short Answer - Physical

Tropical cyclones are called hurricanes in the North Atlantic Ocean. By what names are they referred to as in the Western Pacific?

Answer = Typhoons

TU #2 – Multiple Choice – Biological

Fish consumption warnings issued for many pelagic predators (i.e. sharks and tuna) have increased worldwide due to the presence of which of the following biomagnifying elements?

- W. PCB's
- X. CFC's
- Y. DDT
- *Z. mercury

Bonus #2 – Short Answer – Biological

Named for its ability to reflect sound pulses, this phenomenon is found in all oceans except for the Arctic and fools echo sounders on a daily basis by creating the image of false bottom.

Answer = Deep Scattering Layer

TU #3 – Multiple Choice – Chemical

The components of ocean water whose proportions are not accounted for by the weathering of surface rocks are called

- W. Trace elements
- X. Forchhammer ions
- Y. Excess volatiles
- Z. Colligative elements

Bonus #3 – Multiple Choice – Chemical

The residence time of an element is a function of the amount of that element in the ocean:

- W. Multiplied by the revolution rates of oceanic gyres
- X. Divided by the amount of annual precipitation
- Y. Multiplied by the average annual rate of evaporation
- *Z. Divided by the rate at which the element is added or removed from the ocean

TU #4 - Multiple Choice – Geological

The Aleutian and Marianas islands are the result of what specific type of plate convergence:

- W. oceanic vs. continental
- X. continental vs. continental
- Y. continental vs. oceanic
- *Z. oceanic vs. oceanic

Bonus #4 – Short Answer – Geological

At the Marianas Islands, the Pacific plate subducts underneath the Philippine plate. Explain how this can happen when both plates are oceanic (i.e. basaltic)?

Answer = Pacific plate is relatively older, cooler, and thus is more dense than Philippine

TU #5 – Multiple Choice – Geological

The southeast coast of South America faces the edge of a diverging plate and has a broad continental shelf, thus classifying it as a(n):

- W. Turbidity risk site
- X. Primary coast
- Y. Secondary coast
- *Z. Passive margin

Bonus #5 – Short Answer – Geological

What do scientists believe to be the primary mechanism (or force) driving crustal plate movement?

Answer = Convection currents within the mantle/aesthenosphere

TU #6 – Multiple Choice – Chemical

Sediments on the ocean floor rarely come from a single source; most of the time there is a mixture of sediment types. However, the type of sediment responsible for covering the majority of the world ocean floor area is:

- *W. Biogenous
- X. Hydrogenous
- Y. Cosmogenous
- Z. Terrigenous

Bonus #6 – Short Answer – Chemical

Deep-ocean sediment containing at least 30% biogenous material is called a(n):

Answer = Ooze

TU #7 - Multiple Choice – General

You are marooned on an unknown island using a salvaged radio to listen to a show broadcast from Greenwich, England. The sun is directly overhead when the DJ announces that it is currently 10:00 a.m... You use this information to calculate your approximate longitude to be:

- W. 60 degrees west of Greenwich
- *X. 30 degrees east of Greenwich
- Y. 15 degrees south of Greenwich
- Z. 25 degrees west of Greenwich

Bonus #7 – Short Answer – General

That evening you search for Polaris (the North Star) to determine your latitude, but it is nowhere to be found! What must you conclude about your position on the Earth, and what should you now look for in the sky to determine your latitude?

Answer: You are in the southern Hemisphere; Use the Southern Cross

TU #8 – Multiple Choice – Biological

On your first day on the job as a Marine Biologist in Orange County, CA you are asked to perform a light bottle/dark bottle experiment off the coast of Laguna Beach. What might you determine from the data that you collect from this experiment?

- W. The packaging preferences of soft drink consuming Californians who litter
- X. The heat capacity of water with increasing depth
- Y. An approximate rate of gas dissolution according to Dalton's Law of partial pressures
- *Z. The rates of primary productivity vs., the rates of respiration with increasing depth

Bonus #8 – Short Answer – Biological

Explain the difference between the compensation depth and the oxygen minimum zone

Answer = Compensation depth: primary productivity=respiration (or no net primary productivity) A function of light; Oxygen minimum zone: Where oxygen is depleted by the respiration of animals and is not replaced by photosynthesis – A function of metabolism.

TU #9 – Multiple Choice – Physical

Which of the following open ocean phenomenon is a result of constructive interference?

- W. Maelstrom
- X. Doldrums
- Y. Rogue Waves
- Z. Internal Waves

Bonus #9– Short Answer - Physical

When will a deep water wave approaching a coastline transition into a shallow water wave?

Answer = when depth = $\frac{1}{2}$ wavelength

TU #10 - Multiple Choice – Physical

Which of the following statements does not reflect the correct relationship between a property of seawater with increasing depth?

- W. Sound velocity varies inversely to a depth of 3,000 ft, then becomes directly proportional
- X. Light/color vary inversely, attenuating all but the color blue by 300 ft
- *Y. Temperature varies directly, with the shallowest depths experiencing the greatest change
- Z. Density varies directly and is a result in changes to temperature and salinity

Bonus #10 – Short Answer – Physical

Explain what the sofar layer is and how it can transmit sound in the ocean for thousands of miles.

Answer: Sofar is the minimum velocity layer (~1,000 m deep) and it transmits sound within a narrow channel between a "slower" water mass on top (a function of low temp) and a "faster" water mass below (a function of pressure). The refraction of sound waves between these two water masses concentrates the sound, allowing it to travel over long distances.

TU #11 – Multiple Choice – Biological

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TU #12 – Multiple Choice – Physical

Which of the following illustrates the correct sequence of benthic zones you would experience traveling from the coast of Guam to the Marianas Trench?

- *W. Littoral zone, sublittoral zone, Bathyal zone, Abyssal zone, hadal zone
- X. Sublittoral zone, Littoral zone, Bathyal zone, hadal zone, Abyssal zone
- Y. Littoral zone, Sublittoral zone, hadal zone, Abyssal zone, Bathyal zone
- Z. Littoral zone, Bathyal zone, Abyssal zone, hadal zone, sublittoral zone

Bonus #12– Multiple Choice - Physical

In partially-mixed and well-mixed estuaries in the northern hemisphere, the incoming seawater tends to remain against the right side of the estuary, and outgoing freshwater tends to congregate on the opposite side of the channel. What is the most likely explanation for this pattern of water movement?

- W. The density gradient between the two masses forces them to stratify horizontally
- X. The Coriolis effect is acting upon the two independent moving water masses
- Y. Vanderwaals forces vary significantly due to differences in conductivity
- Z. The refraction coefficient favors the saltwater flood tide over the fresh ebbing tide

TU #13 - Multiple Choice – Biological

Which of these is not characteristic of members of the phylum Arthropoda?

- W. Articulated appendages
- X. Molting for growth
- *Y. An exoskeleton of protein
- Z. Striated muscle

Bonus #13 – Short Answer – Biological

Explain the difference between an ovoviviparous and a viviparous organism.

Answer = Ovovivi: internal hatching of eggs to a live birth; vivi: live birth

TU #14 – Multiple Choice – Biological

You are walking along the shores of Lake Michigan when you find the body of a fish. It has an eel-like body, no paired fins, a circular mouth, and smooth skin. You conclude that the organism is a(n):

- W. Sea snake
- X. Sargasso eel
- Y. Alewife
- *Z. Sea lamprey

Bonus #14 – Short Answer – Biological

The sea lamprey a parasitic fish from the class Agnatha. What are the other two major classes of the fishes?

Answer = Chondrichthyes (cartilaginous fish) and Osteichthyes (bony fish)

TU #15 – Multiple Choice – Physical

Due to the differences in heat capacity between land and water, and the fact that there is a larger proportion of land in the northern hemisphere, there is an intertropical convergence zone that does not fall on the equator. Instead there is a(n):

- W. Theoretical equator at 2 degrees south latitude
- X. Thermal equator at 5 degrees north latitude
- Y. Climatological equator at 7 degrees south latitude
- *Z. Meteorological equator at 5 degrees north latitude

Bonus #15 – Short Answer - Physical

What is the significance of the Tropic of Cancer and the Tropic of Capricorn with regards to seasons?

Toss-up
Multiple Choice
Biological

Number 1

Question: Corals are most closely related to...?

Answer W: barnacles

Answer X: sea anemones

Answer Y: clams

Answer Z: sea urchins

Correct Answer: X

Bonus
Multiple Choice
Biological

Number 1

Question: Bioluminescence is used for all the following except...?

Answer W: self-defense

Answer X: maintaining body temperature

Answer Y: attracting prey

Answer Z: species recognition

Correct Answer: X

Toss-up
Multiple Choice
Physical

Number 2

Question: A pycnocline (pik-noh-kline) is a significant change in ...?

Answer W: salinity

Answer X: density

Answer Y: light intensity

Answer Z: turbidity

Correct Answer: X

Bonus
Multiple Choice
Physical

Number 2

Question: The greatest declination of the moon is ...?

Answer W: 5°

Answer X: 18.5°

Answer Y: 23.5°

Answer Z: 28.5°

Correct Answer: Z

Toss-up
Multiple Choice
Technology

Number 3

Question: The draft of a ship is the ...?

Answer W: amount of water it displaces.

Answer X: depth of its cargo holds.

Answer Y: number of tons of cargo it can carry.

Answer Z: minimum depth of water in which it can float.

Correct Answer: Z

Bonus
Multiple Choice
Technology

Number 3

Question: Ships move from Lake Erie to Lake Ontario by ...?

Answer W: the Welland Canal.

Answer X: the Niagara River.

Answer Y: the St. Lawrence River.

Answer Z: the Detroit River.

Correct Answer: W

Toss-up
Multiple Choice
Biological

Number 4

Question: The phylum of marine organisms that uses stinging cells, or nematocysts, for protection and food gathering is ...?

Answer W: Ctenophora (*teen'-oh-fore'-uh*)

Answer X: Cnidaria (*nye-dair'-ee-uh*)

Answer Y: Mollusca

Answer Z: Echinodermata (*ee-kine-oh-der-mah-tah*)

Correct Answer: X

Bonus
Multiple Choice
Biological

Number 4

Question: The sea fans or fan corals belong to the ...?

Answer W: Order Gorgonacea (*gor-goh-nay'-see-uh*)

Answer X: Phylum Echinodermata (*ee-kine-oh-der-mah-tah*)

Answer Y: Class Hydrozoa

Answer Z: Kingdom Protista

Correct Answer: W

Toss-up
Multiple Choice
Geological

Number 5

Question: Thick unconsolidated sediments are usually encountered ...?

Answer W: in the rift valley of the mid-ocean mountains

Answer X: on the continental rise

Answer Y: in the deep marginal trenches

Answer Z: on the tops of guyots (*ghee'-ohs*)

Correct Answer: X

Bonus
Short Answer
Geological

Number 5

Question: If an earthquake occurs in the Japan Trench, some seismic stations receive no record of the event. What is the name given to those areas of the Earth that do not receive seismic waves from a particular earthquake event?

Answer W: It is called the "Shadow Zone".

Answer X:

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Geography

Number 6

Question: At your location it is 1630 Greenwich Mean Time (1630Z) at local astronomical noon, when the Sun is at its zenith. Your location is at what longitude?

Answer W: 45 degrees 30 minutes E

Answer X: 45 degrees 30 minutes W

Answer Y: 67 degrees 30 minutes W

Answer Z: 67 degrees 30 minutes E

Correct Answer: Y

Bonus
Multiple Choice
Geography

Number 6

Question: At dusk, the smallest angle between the horizon and the North Star (Polaris) is 22 degrees. Your latitudinal position is ...?

Answer W: 44 degrees N

Answer X: 78 degrees N

Answer Y: 22 degrees N

Answer Z: 46 degrees N

Correct Answer: Y

Toss-up
Multiple Choice
Physical

Number 7

Question: In temperate zones the thermocline will be most pronounced during ...?

Answer W: spring

Answer X: summer

Answer Y: fall

Answer Z: winter

Correct Answer: X

Bonus
Multiple Choice
Physical

Number 7

Question: The method of analyzing tides which takes into account the presence of the continents and their effect on tides is ...?

Answer W: harmonic analysis

Answer X: equilibrium tidal theory

Answer Y: dynamic tidal analysis

Answer Z: static tidal analysis

Correct Answer: Y

Toss-up
Multiple Choice
Biological

Number 8

Question: Spicules (*spik'-yools*) in the phylum Porifera serve as a primitive ...?

Answer W: digestive system

Answer X: skeletal system

Answer Y: excretory system

Answer Z: nervous system

Correct Answer: X

Bonus
Multiple Choice
Biological

Number 8

Question: The group of marine animals with the largest number of species identified as threatened or endangered is ...?

Answer W: fish

Answer X: mollusks

Answer Y: echinoderms

Answer Z: mammals

Correct Answer: Z

Toss-up
Multiple Choice
Social Sciences

Number 9

Question: Monterey California was a favorite haunt of this author of numerous books including "The Strange Case of Dr. Jekyll and Mr. Hyde". He was ...?

Answer W: John Steinbeck

Answer X: Robert Redford

Answer Y: James Michener

Answer Z: Robert Louis Stevenson

Correct Answer: Z

Bonus
Short Answer
Social Sciences

Number 9

Question: In order to maintain a "maximum sustainable yield" from a given fishery it is vital that the rate at which fish are taken from the sea not exceed what?

Answer W: The rate of reproduction / reproduction rate.

--OR--

Answer X: The rate of recruitment / recruitment rate.

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Biological

Number 10

Question: What does "eutrophication" (*yoo-troh-fih-cay-shun*) mean in reference to a lake?

Answer W: There is very little living material in the lake.

Answer X: There is an average amount of living material in the lake.

Answer Y: There is no living material in the lake.

Answer Z: There is a great deal of living material in the lake.

Correct Answer: Z

Bonus
Multiple Choice
Biological

Number 10

Question: The most common way that PCBs affect both fish and humans is in causing ...?

Answer W: tumors in the mouth.

Answer X: brain damage.

Answer Y: liver cancer.

Answer Z: a weak heart and blood vessels.

Correct Answer: Y

Toss-up
Multiple Choice
Physical

Number 11

Question: The effect of ebb currents on tides is ...?

Answer W: to cause the height to fluctuate in a regular pattern

Answer X: to decrease the height

Answer Y: to increase the height

Answer Z: to cause the height to fluctuate in an irregular pattern

Correct Answer: X

Bonus
Multiple Choice
Physical

Number 11

Question: Precession (*pre-ce-shun*) of the lunar orbit is responsible for variations in tidal range which have a period of 18.6 ...?

Answer W: days

Answer X: weeks

Answer Y: months

Answer Z: years

Correct Answer: Z

Toss-up
Multiple Choice
Biological

Number 12

Question: Kelp lacks ...?

Answer W: a stipe

Answer X: roots

Answer Y: blades

Answer Z: a holdfast

Correct Answer: X

Bonus
Short Answer
Biological

Number 12

Question: What are the two (2) major limiting factors controlling the vertical and horizontal distribution of the primary productivity of phytoplankton in the ocean?

Answer W: light & nutrients

Answer X:

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Geological

Number 13

Question: Groins are structures built mainly to ...?

Answer W: prevent local beach erosion

Answer X: serve as fishing locations.

Answer Y: mark property boundaries.

Answer Z: serve as boat docks.

Correct Answer: W

Bonus
Multiple Choice
Geological

Number 13

Question: Which of the following occurs along a seashore as a result of a rise in sea level?

Answer W: marine terraces

Answer X: wave-cut beaches

Answer Y: beach ridges

Answer Z: sand bars

Correct Answer: X

Toss-up
Multiple Choice
Physical

Number 14

Question: Each time a tidal current changes directions there is a period of no current known as ...?

Answer W: a flood current

Answer X: an ebb current

Answer Y: a reversed current

Answer Z: a slack current

Correct Answer: Z

Bonus
Multiple Choice
Physical

Number 14

Question: The primary process by which nutrients are returned to the surface waters is ...?

Answer W: heating of subsurface waters

Answer X: upwelling along coastlines

Answer Y: subsidence where ocean currents meet

Answer Z: deep dwelling organisms surfacing when they die

Correct Answer: X

Toss-up
Multiple Choice
Chemical

Number 15

Question: Water's uniqueness results from the water molecule's...?

Answer W: ionic nature

Answer X: isotopic nature

Answer Y: dipolar nature

Answer Z: caloric nature

Correct Answer: Y

Bonus
Multiple Choice
Chemical

Number 15

Question: The amount of heat required to raise the temperature of a substance 1 degree C is the...?

Answer W: heat content of the substance

Answer X: heat capacity of the substance

Answer Y: temperature of the substance

Answer Z: kinetic energy of the substance

Correct Answer: X

Toss-up
Multiple Choice
Biological

Number 16

Question: This toxic chemical led to the “walleye scare” of the 1970s. It is ...?

Answer W: mercury

Answer X: lead

Answer Y: sulfur

Answer Z: sodium

Correct Answer: W

Bonus
Multiple Choice
Biological

Number 16

Question: The spring turnover is important in a lake system because ...?

Answer W: the action stirs nutrients throughout the lake’s depth.

Answer X: temperature equalization throughout the lake is essential for spawning.

Answer Y: the turnover uncovers organisms buried during the winter months.

Answer Z: turnover allows light to reach the deepest, normally darkest part of the lake.

Correct Answer: W

Toss-up
Multiple Choice
Technology

Number 17

Question: The greatest danger to those few scientists brave enough to dive under Antarctic ice is ...?

Answer W: the negative-2-degree Celsius water

Answer X: losing track of the exit hole

Answer Y: large carnivorous predators

Answer Z: venomous benthic dwellers

Correct Answer: X

Bonus
Multiple Choice
Technology

Number 17

Question: Side-scanning sonar is towed above the sea floor when the researchers are seeking the location of what ocean floor feature?

Answer W: hydrothermal vents

Answer X: particulates

Answer Y: manganese concentrations

Answer Z: surface waves

Correct Answer: W

Toss-up
Multiple Choice
Biological

Number 18

Question: A parasitic fish found in the Great Lakes is the ...?

Answer W: sculpin

Answer X: livebearer

Answer Y: sea lamprey

Answer Z: sucker

Correct Answer: Y

Bonus
Multiple Choice
Biological

Number 18

Question: Which one of these is **not** an advantage of fish species spawning at different times of the year?

Answer W: There is less crowding of young.

Answer X: There is less competition for food among larvae.

Answer Y: There are different foods available at different times of the year.

Answer Z: It promotes genetic diversity.

Correct Answer: Z

Toss-up
Multiple Choice
Physical

Number 19

Question: One **likely** result of El Niño is ...?

Answer W: cooler coastal water off California

Answer X: **flooding in Peru**

Answer Y: increasing marine bird populations in Oregon

Answer Z: melting of icecaps

Correct Answer: X

Bonus
Multiple Choice
Physical

Number 19

Question: The Beaufort scale uses the condition of the sea to infer ...?

Answer W: water temperature

Answer X: water depth

Answer Y: **wind speed**

Answer Z: wave height

Correct Answer: Y

Toss-up
Multiple Choice
Geological

Number 20

Question: What percent of the world's fresh surface water is contained in the Great Lakes?

Answer W: 10

Answer X: 20

Answer Y: 50

Answer Z: 66

Correct Answer: X

Bonus
Multiple Choice
Geological

Number 20

Question: The waters in areas with limestone bedrock are usually not heavily acidified by acid rain because the acid rain in these areas is neutralized by the...

Answer W: buffering action of the rock.

Answer X: porous nature of the rock .

Answer Y: smoothness of the rock.

Answer Z: none of the above

Correct Answer: W

Toss-up
Multiple Choice
Biological

Number 21

Question: The non-indigenous fish species most often caught in Lake Michigan by commercial fishermen is ...?

Answer W: ruffe (*rough*)

Answer X: salmon

Answer Y: alewife (*ale-wife*)

Answer Z: white perch

Correct Answer: Y

Bonus
Short Answer
Biological

Number 21

Question: Two Great Lakes' fish do not have pectoral or pelvic fins. Name them.

Answer W: the eel & the lamprey

Answer X:

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Chemical

Number 22

Question: The energy represented by the latent heat of melting is being used to...?

Answer W: raise the temperature of the ice

Answer X: raise the temperature of liquid water

Answer Y: break hydrogen bonds

Answer Z: break Van der Waals bonds

Correct Answer: Y

Bonus
Multiple Choice
Chemical

Number 22

Question: The latent heat of vaporization of water is higher than its latent heat of melting because...?

Answer W: all the hydrogen bonds need to be broken at the boiling point.

Answer X: there are more hydrogen bonds present in the water at 100 degrees C than at 0 degrees C.

Answer Y: all hydrogen bonds need to be broken at the melting point.

Answer Z: water is less dense at 100 degrees C.

Correct Answer: W

Toss-up
Multiple Choice
Physical

Number 23

Question: Ekman transport predicts that in the Northern Hemisphere water will move...?

Answer W: to the right of the wind.

Answer X: to the left of the wind.

Answer Y: opposite to the wind.

Answer Z: in the same direction as the wind.

Correct Answer: W

Bonus
Short Answer
Physical

Number 23

Question: If you lowered a styrofoam cup to 100 meters, what would happen? And why?

Answer W: It would shrink in size, because the water pressure would compress the air bubbles within the styrofoam.

Answer X: *(underlined words indicate the key concepts that must be given for the answer to be correct)*

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Geological

Number 24

Question: Lead-210 with a half-life of 22 years is used to determine the rate of sediment accumulation. If the concentration or activity of lead-210 at a site is found to be reduced by half from the surface to a depth of 11 centimeters, the sediment accumulation rate is...?

Answer W: 2 cm/yr

Answer X: 1 cm/yr

Answer Y: 0.5 cm/yr

Answer Z: indeterminable

Correct Answer: Y

Bonus
Short Answer
Geological

Number 24

Question: What biogeochemical process or processes permitted the development of an O₂ containing atmosphere on Earth?

Answer W: Photosynthesis

Answer X:

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Biological

Number 25

Question: The world's largest fish is a filter-feeder that depends on plankton as a food source. This fish is the ...?

Answer W: Mola mola

Answer X: Blue whale

Answer Y: Whale shark

Answer Z: Megamouth shark

Correct Answer: Y

Bonus
Short Answer
Biological

Number 25

Question: In their natural habitat, penguins are never taken as prey by polar bears. What's the main reason for this?

Answer W: Polar bears are an Arctic species **and/or** penguins are limited to the southern hemisphere.

Answer X:

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Physical

Number 26

Question: During ebb current the level of the water along the shore...?

Answer W: rises

Answer X: falls

Answer Y: fluctuates

Answer Z: is unchanged

Correct Answer: X

Bonus
Multiple Choice
Physical

Number 26

Question: The movement of sediment along the shore by wave action is called...?

Answer W: rip current

Answer X: longshore transport

Answer Y: swash

Answer Z: longshore current

Correct Answer: X

Toss-up
Multiple Choice
Biological

Number 27

Question: What is the term for the light-producing organs of bioluminescent organisms?

Answer W: photosomes

Answer X: photochromes

Answer Y: photophores

Answer Z: photoblasts

Correct Answer: Y

Bonus
Multiple Choice
Biological

Number 27

Question: What is the term used to describe organisms which are planktonic only in the larval stage?

Answer W: holoplankton

Answer X: meroplankton

Answer Y: femtoplankton

Answer Z: picoplankton

Correct Answer: X

Toss-up
Multiple Choice
Geological

Number 28

Question: If a peat bed can be found beneath the ocean beach of a barrier island, it is evidence that the ...?

Answer W: beach is very young

Answer X: beach is becoming increasingly coarse

Answer Y: longshore transport is decreasing

Answer Z: barrier island is moving landward

Correct Answer: Z

Bonus
Multiple Choice
Geological

Number 28

Question: The Atlantic coast south of New York is generally in a state of subsidence due to tectonic processes and ...?

Answer W: extensive marine erosion

Answer X: high rates of sediment deposition

Answer Y: rising sea level

Answer Z: increasing hurricane activity

Correct Answer: X

Toss-up
Multiple Choice
Chemical

Number 29

Question: An alkaline solution has a pH of?

Answer W: 7

Answer X: 9

Answer Y: 0

Answer Z: 4

Correct Answer: X

Bonus
Multiple Choice
Chemical

Number 29

Question: Organic molecules are organized around the atom of...?

Answer W: oxygen

Answer X: carbon

Answer Y: hydrogen

Answer Z: nitrogen

Correct Answer: X

Toss-up
Multiple Choice
Technology

Number 30

Question: The chronometer developed by John Harrison was valuable because it made possible the accurate determination of ...?

Answer W: latitude

Answer X: true north

Answer Y: inclination

Answer Z: longitude

Correct Answer: Z

Bonus
Multiple Choice
Technology

Number 30

Question: Sixty kilometer-wide strips of the ocean floor can be mapped using ...?

Answer W: the GLORIA sonar system

Answer X: an echo sounder

Answer Y: explosion seismic surveys

Answer Z: SEASAT altimeter

Correct Answer: W

Toss-up
Multiple Choice
Physical

Number 31

Question: Salinity is expressed as...?

Answer W: parts per thousand by weight

Answer X: parts per million by weight

Answer Y: parts per hundred by volume

Answer Z: grams per cubic centimeter

Correct Answer: W

Bonus
Multiple Choice
Physical

Number 31

Question: Wavelengths of light represented by **this** color are absorbed at the shallowest depth by ocean water. This color is...?

Answer W: blue

Answer X: green

Answer Y: yellow

Answer Z: red

Correct Answer: Z

Toss-up
Multiple Choice
Biological

Number 32

Question: The coral symbiont zooxanthellae is a form of...?

Answer W: dinoflagellate

Answer X: diatom

Answer Y: bacteria

Answer Z: fungi

Correct Answer: W

Bonus
Multiple Choice
Biological

Number 32

Question: Which of the following organisms is classified as nekton?

Answer W: salps

Answer X: foraminifera

Answer Y: Portuguese Man o' War

Answer Z: striped marlin

Correct Answer: Z

Toss-up
Multiple Choice
Geological

Number 33

Question: One hundred eighty million years ago this super-continent began to break up. It was called...?

Answer W: Laurasia

Answer X: Gondwanaland

Answer Y: Tethys

Answer Z: Pangaea

Correct Answer: Z

Bonus
Multiple Choice
Geological

Number 33

Question: The approximate latitude at which rocks that contain magnetite particles were formed can be determined by measuring the ...?

Answer W: intensity of the rocks' magnetic field

Answer X: magnetic dip of the particles

Answer Y: the magnetic polarity of the particles

Answer Z: the apparent polar wander of the particles

Correct Answer: X

Toss-up
Multiple Choice
Social Sciences

Number 34

Question: The first Europeans known to have traveled to North America were the ...?

Answer W: Spanish

Answer X: Phoenicians

Answer Y: Portuguese

Answer Z: Vikings

Correct Answer: Z

Bonus
Multiple Choice
Social Sciences

Number 34

Question: An unusual voyage that attempted to reach the North Pole was initiated in 1893 aboard the vessel...?

Answer W: National

Answer X: Fram

Answer Y: H.M.S. Beagle

Answer Z: Meteor

Correct Answer: X

Toss-up
Multiple Choice
Physical

Number 35

Question: The greatest amount of heat loss from the world's ocean occurs through...?

Answer W: ocean currents

Answer X: conduction

Answer Y: radiation

Answer Z: evaporation

Correct Answer: Z

Bonus
Multiple Choice
Physical

Number 35

Question: Equatorial currents are driven primarily by...?

Answer W: the trade winds

Answer X: the doldrums

Answer Y: thermohaline conditions

Answer Z: heat from the Earth's interior

Correct Answer: W

Toss-up
Multiple Choice
Chemical

Number 36

Question: When carbon dioxide combines with ocean water, it produces...?

Answer W: carbonate

Answer X: bicarbonate

Answer Y: carbonic acid

Answer Z: calcium carbonate

Correct Answer: X

Bonus
Multiple Choice
Chemical

Number 36

Question: The "Rule of Constant Proportions" ...?

Answer W: allows oceanographers to determine salinity from the concentration of a single, major ion in seawater.

Answer X: means that net evaporation is constant at all distances on either side of the equator.

Answer Y: means that the temperature in the Arctic Ocean is constant below the "density floor".

Answer Z: says that the annual average of infrared radiation in the atmosphere remains constant.

Correct Answer: W

Toss-up
Multiple Choice
Geological

Number 37

Question: Linear or circular coral reefs separated from the island or mainland shore by a lagoon are called?

Answer W: atolls

Answer X: barrier reefs

Answer Y: fringing reefs

Answer Z: flat reefs

Correct Answer: X

Bonus
Multiple Choice
Geological

Number 37

Question: A classic example of hot spot-generated volcanic peaks that originated at least 70 million years ago is the ...?

Answer W: Line Islands

Answer X: Mariana Islands

Answer Y: St. Pauls Rocks

Answer Z: Hawaiian Islands

Correct Answer: Z

Toss-up
Multiple Choice
Physical

Number 38

Question: The maximum density of seawater at the surface of the world's oceans would occur ...?

Answer W: at 0° C

Answer X: at 4° C

Answer Y: at its freezing point

Answer Z: after it turns to ice

Correct Answer: Y

Bonus
Short Answer
Physical

Number 38

Question: What is the name given to the tides which have the smallest tidal range?

Answer W: neap tides

Answer X:

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Social Sciences

Number 39

Question: The theory of continental drift was first presented in 1912 by...?

Answer W: Harry Hess

Answer X: Frederick Vine

Answer Y: Alfred Wegener (*Veh'-geh-ner*)

Answer Z: Sir Edward Bullard

Correct Answer: Y

Bonus
Multiple Choice
Social Sciences

Number 39

Question: Benjamin Franklin's nephew, Timothy Folger, produced the first map of the ...?

Answer W: North Atlantic Ocean

Answer X: Gulf Stream

Answer Y: Labrador Currents

Answer Z: U.S. Coastal Waters

Correct Answer: X

Toss-up
Multiple Choice
Physical

Number 40

Question: The distance from crest to crest on adjacent wave forms is the ...?

Answer W: wave height

Answer X: wavelength

Answer Y: steepness

Answer Z: wave period

Correct Answer: X

Bonus
Multiple Choice
Physical

Number 40

Question: Particles move back and forth in the direction of energy transmission in a medium that is transmitting this kind of wave. This kind of wave is called a...?

Answer W: primary wave

Answer X: secondary wave

Answer Y: orbital wave

Answer Z: deep water wave

Correct Answer: W

Toss-up
Multiple Choice
Chemical

Number 41

Question: Salinity is a measure of the salt content in oceanic waters. Among this group, the oceanic region with the highest average salinity would be the...?

Answer W: Atlantic Ocean

Answer X: Mediterranean Sea

Answer Y: Arctic Ocean

Answer Z: Gulf of Mexico

Correct Answer: X

Bonus
Multiple Choice
Chemical

Number 41

Question: When sea ice forms in the Antarctic, the ...?

Answer W: decreased albedo leads to more energy being absorbed by the ocean.

Answer X: surface water becomes saltier because the ice rejects salt.

Answer Y: albedo increases and more solar energy will reach the ocean.

Answer Z: surface waters becomes less saline as salt is locked up in the ice.

Correct Answer: X

Toss-up
Multiple Choice
Physical

Number 42

Question: After swell "touches bottom" upon approaching the shore which of the following does **NOT** occur?

Answer W: wavelength decreases

Answer X: wave velocity decreases

Answer Y: **wave steepness decreases**

Answer Z: wave height increases

Correct Answer: Y

Bonus
Multiple Choice
Physical

Number 42

Question: The dominant restoring force for capillary waves generated in a sea area is...?

Answer W: gravity

Answer X: friction

Answer Y: Coriolis effect

Answer Z: **surface tension**

Correct Answer: Z

Toss-up
Multiple Choice
Geological

Number 43

Question: Sediment particles eroded from continental rocks are called...?

Answer W: authigenic

Answer X: hydrogenous

Answer Y: lithogenous

Answer Z: biogenous

Correct Answer: Y

Bonus
Short Answer
Geological

Number 43

Question: A guyot (*ghee-oh*) is a name for what?

Answer W: A flat-topped seamount

--OR--

Answer X: a flat-topped mountain under the ocean

Answer Y:

Answer Z:

Correct Answer:

Toss-up
Multiple Choice
Biological

Number 44

Question: A barnacle is an example of the type of feeder called a...?

Answer W: filter feeder

Answer X: opportunistic feeder

Answer Y: active predator

Answer Z: grazer

Correct Answer: W

Bonus
Multiple Choice
Biological

Number 44

Question: Green sea turtles are not green in color. The reason they are called Green sea turtles is that ...?

Answer W: the fat deposits inside them are green

Answer X: in their preferred habitat refracted light makes them appear green

Answer Y: they were first identified by biologist, Jacob Green

Answer Z: they feed primarily on green algae

Correct Answer: W

Toss-up
Multiple Choice
Physical

Number 45

Question: A tsunami is an example of a...?

Answer W: deep-water wave

Answer X: shallow-water wave

Answer Y: forced wave

Answer Z: capillary wave

Correct Answer: X

Bonus
Multiple Choice
Physical

Number 45

Question: The interference pattern resulting from swell that is generated in different locations coming together crest to crest (in phase) is...?

Answer W: reflective

Answer X: constructive

Answer Y: destructive

Answer Z: mixed

Correct Answer: X

Toss-up
Multiple Choice
Biological

Number 46

Question: Sponges belong to which of the following phyla?

Answer W: chrysophyta

Answer X: porifera

Answer Y: echinodermata

Answer Z: cnidaria

Correct Answer: X

Bonus
Multiple Choice
Biological

Number 46

Question: Which of the following is not a symbiotic relationship found among marine organisms?

Answer W: algal cells living within the tissue of flatworms

Answer X: bioluminescent bacteria living in the body cavities of squid

Answer Y: polychaete worms living among the gills of groupers

Answer Z: anemones attached to the shells of hermit crabs

Correct Answer: Y

Toss-up
Multiple Choice
Geological

Number 47

Question: Before it was possible to date the age of rocks in years, relative dating was achieved using the ...?

Answer W: lithology of rock layers

Answer X: fossil content of rock layers

Answer Y: thickness of rock layers

Answer Z: density of rock layers

Correct Answer: X

Bonus
Multiple Choice
Geological

Number 47

Question: A layer including crustal rock and upper mantle rock created by volcanism and other tectonic processes is called the ...?

Answer W: lithosphere

Answer X: asthenosphere

Answer Y: moho

Answer Z: basalt layer

Correct Answer: W

Toss-up
Multiple Choice
Physical

Number 48

Question: The time that elapses between new moon and full moon is roughly...?

Answer W: one week

Answer X: one month

Answer Y: two weeks

Answer Z: none of the above

Correct Answer: Y

Bonus
Multiple Choice
Physical

Number 48

Question: The difference between the heights of low tide and high tide is the...?

Answer W: tidal period

Answer X: tidal range

Answer Y: diurnal inequality

Answer Z: tidal precession

Correct Answer: X

Toss-up
Multiple Choice
Geological

Number 49

Question: An example of a primary coast is a...?

Answer W: volcanic coast

Answer X: wave-erosion coast

Answer Y: marine-deposition coast

Answer Z: coral-reef coast

Correct Answer: W

Bonus
Multiple Choice
Geological

Number 49

Question: Beach slope increases as beach sediment becomes...?

Answer W: more angular

Answer X: coarser

Answer Y: finer

Answer Z: none of the above

Correct Answer: X

Toss-up
Multiple Choice
Physical

Number 50

Question: The equilibrium theory of tides assumes an ocean...?

Answer W: is without friction

Answer X: lies in rectangular basins

Answer Y: has varying depths

Answer Z: contains water movements that are only vertical

Correct Answer: W

Bonus
Multiple Choice
Physical

Number 50

Question: Velocities of reversing tidal currents are at maximum values...?

Answer W: at high tide extremes

Answer X: at low tide extremes

Answer Y: half way between tidal extremes

Answer Z: during flood current

Correct Answer: Y

Toss up
Multiple Choice
Biological

Difficulty level- easy

| Question: To what family of animals do the Chinstrap, Macaroni, and Gentoo belong?

Answer W: squid

Answer X: **penguin**

Answer Y: orca

Answer Z: walrus

Correct answer: X

Bonus Toss up
Multiple Choice
Geological

Difficulty level-easy

Question: The mixing of freshwater streams and rivers with salty ocean tides in a partly enclosed body of water is called

Answer W: a jetty

Answer X: a sieche

Answer Y: **an estuary**

Answer Z: a guyot

Correct answer: Y

2 Toss up
Multiple Choice
Chemistry

Difficulty level- easy

Question: Water is the universal solvent and can dissociate many substances because of what property of water?

Answer W: **polar covalent bonds**

Answer X: van der Waals interactions

Answer Y: ionic bonds

Answer Z: nonpolar covalent bonds

Correct answer: W

Bonus Toss up

Difficulty level- moderate

Multiple Choice

Physical

Question: When river water meets sea water

Answer W: the denser fresh water sinks below the less dense sea water

Answer X: **the denser sea water sinks below the less dense fresh water**

Answer Y: the fresh water becomes less dense as it mixes with the sea water

Answer Z: the sea water becomes more dense as it mixes with the fresh water

Correct answer: X

3 Toss up

Difficulty level- moderate

Multiple Choice

History

Question: Which Roman naturalist, senator, and commander of the Imperial Fleet in the 1st century AD was the 1st to document that nets often behaved strangely because surface and bottom currents were flowing in opposite directions due to estuarine circulation?

Answer W: Gaius Marius the great man of the army

Answer X: Nero the madman

Answer Y: Trajan the kind hearted soldier

Answer Z: **Pliny the Elder**

Correct answer: Z

Bonus Toss up

Difficulty level- easy

Multiple Choice

Physical

Question: Opposing fresh and saltwater streams sometimes flow smoothly, one above the other but when this reaches a certain threshold, vigorous turbulence results.

Answer W: salinity

Answer X: temperature

Answer Y: density

Answer Z: **velocity**

Correct answer: Z

4 Toss up
Short answer
Physical

Difficulty level- moderate

Question: The landward intrusion of salt is carefully monitored by engineers because of the potential consequences to water supplies if the salt intrusion extends too far. The city of Poughkeepsie, N.Y., 60 miles north of the Hudson river, depends on the river for its drinking water. Roughly once per decade, what conditions cause the salt intrusion to approach the Poughkeepsie water intake so that they must release water from dams upstream to keep the salt from becoming a public health hazard?

Correct answer: Drought or water shortage

Bonus Toss up
Multiple Choice
Physical

Difficulty level- moderate

Question: Many larva of barnacles, lobsters, and clams hatch close to shore and are then carried by currents to deeper waters offshore. How do scientists think that they are returning to shore to settle as adults?

Answer W: crawling along the bottom

Answer X: carried in the gut of echinoderms

Answer Y: **costal fronts and internal waves**

Answer Z: upwelling and longshore currents

Correct answer: Y

5 Toss up
Multiple Choice
Biological

Difficulty level-easy

Question: Marine organisms produce bioluminescence in special organs called

Answer W: chromatophores

Answer X: **photophores**

Answer Y: statophores

Answer Z: merophores

Correct answer: X

Bonus Toss up
Multiple Choice
Biological

Difficulty level- moderate

Question: What enzyme catalyzes the reaction responsible for bioluminescence?

Answer W: petrogenase

Answer X: helicase

Answer Y: **luciferase**

Answer Z: matonase

Correct answer: Y

6 Toss up
Multiple Choice
Biological

Difficulty level- difficult

Question: What color of light is produced by the fish in the Malacosteid family also known as the loosejaws?

Answer W: green

Answer X: blue

Answer Y: brown

Answer Z: red

Correct answer: Z

Bonus Toss up
Short answer
Biological

Difficulty level- moderate

Question: Give one of the two reasons why most bioluminescent organisms produce blue-green light?

Correct answer: This is the color that penetrates water the easiest and most marine organisms are sensitive to these wavelengths of light (can see it.)

7 Toss up

Difficulty level-moderate

Multiple Choice

History

Question: 2005 was the 200yr anniversary of what famous maritime battle fought between the British fleet and Napoleon's combined French and Spanish fleet?

Answer W: Trinidad

Answer X: Waterloo

Answer Y: Battle of Britain

Answer Z: **Trafalgar**

Correct answer: Z

Bonus Toss up

Difficulty level- moderate

Multiple Choice

History

Question: Which legendary British naval hero lost his life in the battle of Trafalgar? His name is synonymous with his ship the Victory even though he had lost his arm and sight in one eye?

Answer W: **Lord Nelson**

Answer X: Alcala Galiano

Answer Y: Villeneuve

Answer Z: Sir Francis Drake

Correct answer: W

8 Toss up

Difficulty level- moderate

Multiple Choice

Geology

Question: What name does the ring of fire also go by in reference to its type of magma?

Answer W: rhyolitic line

Answer X: **andesite line**

Answer Y: mescaline line

Answer Z: basaltic line

Correct answer: X

Bonus Toss up
Short answer
Geology

Difficulty level- easy

Question: Why are the continents above sea level while the oceanic crust is below sea level?

End Round 1 Correct answer: Continental crust is less dense than oceanic crust

Round 2 #9 Toss up
Multiple Choice
Geology

Difficulty level- easy

Question: The crust and the uppermost part of the mantle collectively make up the

Answer W: hydrosphere

Answer X: **lithosphere**

Answer Y: asthenosphere

Answer Z: stratosphere

Correct answer: X (asthenosphere is the uppermost mantle underlying the lithosphere)

Bonus ~~Toss up~~
Multiple Choice
Geology

Difficulty level- easy

#2 Question: Oceans cover approximately what percent of the earth's surface?

Answer W: 48%

Answer X: 65 %

Answer Y: **75%**

Answer Z: 94%

Correct answer: Y

10 Toss up

Difficulty level- moderate

Multiple Choice

Geology

Question: The small research submersible ALVIN of the Woods Hole Oceanographic Institution of Massachusetts is capable of taking 3 oceanographers to a depth of about

Answer W: 1,000 meters

Answer X: **4,000 meters**

Answer Y: 6,000 meters

Answer Z: 8,000 meters

Correct answer: X

Bonus Toss up

Difficulty level- moderate

Multiple Choice

Geology

Question: Which ocean zones is the deepest and begins at a depth of 6000 meters

Answer W: **hadalpelagic**

Answer X: bathypelagic

Answer Y: mesopelagic

Answer Z: abyssopelagic

Correct answer: W

11 Toss up

Difficulty level- moderate

Multiple Choice

Geology

Question: An echo-sounder record of the continental shelf and slope may detect a moving line created by a dense concentration of small marine organisms known as the

Answer W: plumb layer

Answer X: scrub layer

Answer Y: subverting layer

Answer Z: **scattering layer**

Correct answer: Z

Bonus

~~Toss up~~

Multiple Choice

Ecology

Difficulty level- easy

Question: The exclusive economic zones of the ocean extend how many nautical miles from shore?

Answer W: 50

Answer X: 100

Answer Y: 150

Answer Z: **200**

Correct answer: Z

12

Toss up

Short Answer

Ecology

Difficulty level- moderate

Question: If a nautical mile is equivalent to 1.5 miles, how far do the EEZ's (exclusive economic zones) extend?

Correct answer: 300 miles

Bonus

~~Toss up~~

Multiple Choice

Ecology

Difficulty level- easy

Question: Which state in the union's exclusive economic zone covers 550,000 square miles which accounts for about 25% of our controlled exclusive economic zone area?

Answer W: **Hawaii**

Answer X: California

Answer Y: Florida

Answer Z: Texas

Correct answer: W

13

Toss up
Multiple Choice
Physics

Difficulty level- easy

Question: What term describes the distance that the wind blows over the water?

Answer W: run

Answer X: rise

Answer Y: term

Answer Z: **fetch**

Correct answer: Z

Bonus

~~Toss up~~
Multiple Choice
Physics

Difficulty level- moderate

Question: If the length of the wave is 150 meters, it will begin to feel the bottom at what depth?

Answer W: 300 meters

Answer X: 150 meters

Answer Y: **75 meters**

Answer Z: 25 meters

Correct answer: Y

14

~~Toss up~~
Multiple Choice
Physics

Difficulty level- easy

Question: The horizontal distance between two wave crests or troughs is known as the

Answer W: period

Answer X: **wave length**

Answer Y: wave height

Answer Z: speed

Correct answer: X

Bonus Toss-up

Difficulty level- easy

Multiple Choice

Physics

Question: A wave breaking early in comparison to the rest of the waves approaching shore is a sign of a

Answer W: low tide

Answer X: tsunami

Answer Y: longshore current

Answer Z: **rip current**

Correct answer: Z

15 Toss up
Multiple Choice
Geology

Difficulty level- moderate

Question: At a passive continental margin, what is the last feature encountered before reaching the abyssal plain when moving from land to sea?

Answer W: continental shelf

Answer X: **continental rise**

Answer Y: continental slope

Answer Z: rift valley

Correct answer: X

Bonus Toss-up
Multiple Choice
Geological

Difficulty level- moderate

Question: Ocean crust is about how many kilometers thick?

Answer W: 2

Answer X: 4

Answer Y: 5

Answer Z: **7**

Correct answer: Z

16

Toss up
Multiple Choice
Geology

Difficulty level- moderate

Question: Sea floor sediment that is land-derived is known as

Answer W: **terrigenous sediment**

Answer X: pelagic sediment

Answer Y: ophio sediment

Answer Z: base sediment

Correct answer: W

~~Bonus~~ Toss up

Multiple Choice
Geology

Difficulty level- easy

Question: Where is pelagic sediment absent?

Answer W: on the continental rise

Answer X: on seamounts

Answer Y: on the abyssal plain

Answer Z: **on the mid-ocean ridge crest**

Correct answer: Z

End Match

~~#1~~ Extra Question: if needed

Toss up
Multiple Choice
Geology

Difficulty level- easy

Question: When longshore transport forms a ridge of sediment that cuts off a bay from the ocean this sediment has formed a

Answer W: spit

Answer X: **baymouth bar**

Answer Y: sea arch

Answer Z: fringing reef

Correct answer: X

#17

Toss up
Multiple Choice
History

Difficulty Level:easy

Which famous navigator died during his expedition which was the first to circumnavigate the globe?

Answer W: James Cook

Answer X: Prince Henry the Navigator

Answer Y: Christopher Columbus

Answer Z: Ferdinand Magellan

Correct Answer: Z

Bonus
Multiple Choice
History

Difficulty Level:moderate

Question: Where along the expedition route did Magellan die.

Answer W: Hawaii

Answer X: **the Phillipines**

Answer Y: Cape Horn

Answer Z: Rio de Janeiro

Correct answer: X

#18

Toss up
Multiple Choice
Technology

Difficulty Level: easy

Question: What famous timekeeper used to determine longitude was created in 1728 by John Harrison?

Answer W: the sounder

Answer X: **the chronometer**

Answer Y: the altimeter

Answer Z: the starboard

Correct Answer: X

Bonus
Multiple Choice
Technology

Difficulty Level: moderate

Question: What did scientist Matthew Maury discover using a lightweight line and a lead weight?

Answer W: **the Mid-Atlantic ridge**

Answer X: the Challenger Deep

Answer Y: the Titanic

Answer Z: deep ocean currents

Correct answer: W

#19

Toss up
Multiple Choice
History

Difficulty Level: moderate

Question: What was the name of the first submarine to sink a ship in battle?

Answer W: the Tamaank

Answer X: the Maritime

Answer Y: the RedOctober

Answer Z: **the Hunley**

Correct answer: Z

Bonus
Shot answer
History

Difficulty Level: easy

Question: The Hunley was a Civil war submarine that mysteriously sank in Charleston harbor right after sinking the Housatonic. Which side was the Hunley on?

Answer: Confederate or South

#20

Toss up
Multiple Choice
Biology

Difficulty Level:

Question: New coasts in which the dominant processes are those that remove coastal material are called

Answer W: erosional coasts

Answer X: depositional coasts

Answer Y: slope coasts

Answer Z: barrier coasts

Correct Answer: W

Bonus
Multiple Choice
Geology

Difficulty Level: easy

Question: A student notices that their foot tends to sink whenever they stand on the beach and let water from a wave run over it. This process, termed scouring, is due to the ability of water to carry more sediment as it moves

Answer W: slower to move around the student's foot

Answer X: faster to move around the student's foot

Answer Y: underneath the student's foot to remove the obstacle

Answer Z: over the top of the student's foot where there is the least resistance

Correct answer: X

#21

Toss up
Multiple Choice
Biology

Difficulty Level: easy

Question: NASA's SeaWiFS satellite launched in 1997 can detect ocean productivity by measuring the amount of this photosynthetic pigment in the ocean's surface water

Answer W: retinol

Answer X: melanin

Answer Y: chlorophyll

Answer Z: carotene

Correct Answer: Y

Bonus
Short answer
Biology

Difficulty Level: moderate

Question: Which two elements are in the main inorganic nutrients required in primary productivity?

Correct answer: Nitrogen and Phosphorus

#22

Toss up
Multiple Choice
Biology

Difficulty Level: easy

Question: What does HAB stand for?

Answer W: hadal autotrophic bacteria

Answer X: host and base

Answer Y: hydrogenated acidic base

Answer Z: **harmful algal bloom**

Correct Answer: Z

Bonus
Short Answer
Biology

Difficulty Level: easy

Question: HAB is the replacement term for a red tide which is caused by what autotrophic organisms?

Correct answer: protists, dinoflagelates, or algae

#23

Toss up
Multiple Choice
Biology

Difficulty Level: moderate

Question: Coccolithophores are small, single-celled autotrophs covered with disks of

Answer W: **calcium carbonate**

Answer X: silica

Answer Y: silicon dioxide

Answer Z: protein

Correct Answer: W

Bonus
Multiple Choice
Biology

Difficulty Level: difficult

Question : The depth where respiration equals photosynthesis is known as the

Answer W: gross plane

Answer X: **compensation depth**

Answer Y: oxygen barrier

Answer Z: scattering layer

Correct answer: X

#24

Toss up
Multiple Choice
Biology

Difficulty Level: easy

Question: What are the most abundant and widely distributed animal in the world?

Answer W: **copepods**

Answer X: amoeba

Answer Y: krill

Answer Z: salmon

Correct Answer: W

Bonus
Multiple Choice
Biology

Difficulty Level: moderate

Question: Why does productivity at the high southern latitudes tend to be higher than at high northern latitudes?

Answer W: greater solar input

Answer X: warmer average temperatures

Answer Y: shallower waters allowing more benthic photosynthesis

Answer Z: **circumpolar current causing upwelling**

Correct answer: Z

End Match

Toss up
Multiple Choice
Geology

Difficulty Level: moderate

Question: Extensive white deposits of calcareous ooze have been built upon the seabeds from these organisms

Answer W: coccolithophorids

Answer X: diatoms

Answer Y: **foraminiferans**

Answer Z: cladocerans

Correct Answer: Y

Bonus
Multiple Choice
Biology

Difficulty Level:

Question: The name foraminiferan means

Answer W: ocean cornucopia

Answer X: coiled trumpet

Answer Y: **bearer of windows**

Answer Z: many layered snail

Correct answer: Y

Toss up
Multiple Choice
Physics

Difficulty Level: easy

Question: When is a sea breeze created?

Answer W: When cooler air from over the sea moves towards land

Answer X: When warmer air from over the land moves towards sea

Answer Y: When a storm front moves parallel to the shore

Answer Z: When the fetch is less than half the distance to shore

Correct Answer: W

Bonus
Short answer
Biology

Difficulty Level: easy

Question: Since land breezes and sea breezes are patterns of wind circulation that change due to the different heat capacities of land and water they are related to these seasonal changes of wind circulation often associated with rainy seasons.

Correct answer: monsoons

Toss up
Multiple Choice
Geology

Difficulty Level: moderate

Question: Gyres in balance with the pressure gradient and the Coriolis effect are called

Answer W: seismic gyres

Answer X: basin gyres

Answer Y: **geostrophic gyres**

Answer Z: euphotic gyres

Correct Answer: Y

Bonus
Multiple Choice
Geology

Difficulty Level: moderate

Question: Where is Coriolis effect the greatest?

Answer W: the equator

Answer X: **the poles**

Answer Y: 30 degrees latitude

Answer Z: 60 degrees latitude

Correct answer: X

Toss up
Multiple Choice
Geology

Difficulty Level: easy

Question: Equatorial currents are typically accompanied by these currents which flow on the surface in the opposite direction from the main current since air rises at the equator and trade winds do not blow.

Answer W: stabilizing currents

Answer X: Ekman currents

Answer Y: **countercurrents**

Answer Z: reverse currents

Correct Answer: Y

Bonus
Multiple Choice
Geology

Difficulty Level: moderate

Question: Countercurrents can also exist beneath surface currents. The first countercurrent was discovered in 1951 in the central Pacific by this man whose name the Pacific Equatorial Undercurrent can also go by

Answer W: Franklin

Answer X: Kamchatka

Answer Y: **Cromwell**

Answer Z: Zephyr

Correct answer: Y

Toss up
Multiple Choice
Geology

Difficulty Level: moderate

Question: Oceanographers name water masses according to their relative position. What water extends from about 200 meters deep to the bottom of the main thermocline?

Answer W: surface water

Answer X: intermediate water

Answer Y: deep water

Answer Z: **central water**

Correct Answer: Z

Bonus
Short Answer
Geology

Difficulty Level: moderate

Question: What is the name for the water mass in contact with the seafloor?

Correct answer: bottom water

Toss up
Multiple Choice
Geology

Difficulty Level: easy

Question: The major upwelling zones of the ocean include the equator, edge of Antarctica, and what coast of North America, South America and Africa?

Answer W: North

Answer X: South

Answer Y: East

Answer Z: West

Correct Answer: West

Bonus
Multiple Choice
Chemistry

Difficulty Level: moderate

Question: Scientists can determine the age of deep water by analyzing its content of

Answer W: oxygen

Answer X: carbon dioxide

Answer Y: nitrogen

Answer Z: helium

Correct answer: W

Toss up
Multiple Choice
Physics

Difficulty Level: easy

Question: An isopycnal is a line of

Answer W: **equal density**

Answer X: equal salinity

Answer Y: equal temperature

Answer Z: equal depth

Correct Answer: W

Bonus
Multiple Choice
Physics

Difficulty Level: difficult

Question: When two masses of seawater with differing temperatures and salinities but similar densities are combined, their combined density would be what in comparison to either of their separate densities?

Answer W: less

Answer X: the same

Answer Y: **greater**

Answer Z: zero

Correct answer: Y

Toss up
Multiple Choice
Geology

Difficulty Level: easy

Question: The great quantities of dense water sinking at ocean basin edges must be offset by equal quantities of water rising elsewhere. This entire process is known as

Answer W: geostrophic flow

Answer X: circumpolar flow

Answer Y: Ekman transport

Answer Z: **thermohaline flow**

Correct Answer: Z

Bonus
Multiple Choice
Geology

Difficulty Level: difficult

Question: A deep-water mass forms in which enclosed sea where the surface water is made more saline by the excess of evaporation over freshwater input which eventually spills over a sill to the ocean with a salinity of about 38 parts per thousand

Answer W: Red sea

Answer X: Bering Sea

Answer Y: **Mediterranean Sea**

Answer Z: Black Sea

Correct answer: Y

