Lesson 8 Test Bank – Water resources

Multiple Choice Questions

1. What percentage of Earth's water is found in the oceans?
   1. 90%
   2. 97%
   3. 75%
   4. 85%

Correct Answer: B

1. What percentage of Earth's surface is covered by water?
   1. 50%
   2. 71%
   3. 25%
   4. 90%

Correct Answer: B

1. What is the cryosphere composed of?
   1. Underground aquifers
   2. Saltwater lakes
   3. Frozen water such as glaciers, ice caps, and permafrost
   4. Subsurface rivers

Correct Answer: C

1. Which component of the Earth system helps regulate energy balance and is highly sensitive to climate change?
   1. Lithosphere
   2. Biosphere
   3. Cryosphere
   4. Hydrosphere

Correct Answer: C

1. Which statement best describes the distribution of land and water on Earth?
   1. The Southern Hemisphere has more ocean than land
   2. The Northern Hemisphere has more ocean than land
   3. Most water is in the Atlantic Ocean
   4. The Arctic Ocean holds the majority of Earth’s water

Correct Answer: A

1. Where is most of Earth's freshwater stored?
   1. In rivers and lakes
   2. In glaciers and ice caps
   3. In groundwater
   4. In the atmosphere

Correct Answer: B

1. Which of the following holds the greatest amount of freshwater?
   1. Soil moisture
   2. Rivers and streams
   3. Groundwater
   4. Glaciers and ice caps

Correct Answer: D

1. What is the primary store of liquid freshwater?
   1. Lakes
   2. Soil moisture
   3. Groundwater
   4. Rivers

Correct Answer: C

1. What is the hydrologic cycle?
   1. The continuous movement of water through Earth’s systems in all physical states
   2. The flow of freshwater through rivers and streams only
   3. The transfer of water from soil to atmosphere
   4. The circulation of groundwater beneath the surface

Correct Answer: A

1. What do we call the release of water vapor from plants to the atmosphere?
   1. Evaporation
   2. Precipitation
   3. Transpiration
   4. Condensation

Correct Answer: C

1. What happens when precipitation lands on vegetation or other cover before reaching the ground?
   1. Infiltration
   2. Interception
   3. Runoff
   4. Percolation

Correct Answer: B

1. What is the term for water that moves down plant stems to the ground?
   1. Throughfall
   2. Runoff
   3. Stemflow
   4. Drip loss

Correct Answer: C

1. What do we call precipitation that reaches the ground without being intercepted?
   1. Runoff
   2. Infiltration
   3. Throughfall
   4. Stemflow

Correct Answer: C

1. Which water store is most critical for plant growth?
   1. Ocean water
   2. Groundwater
   3. Soil moisture
   4. Atmospheric vapor

Correct Answer: C

1. Which of the following makes up the smallest fraction of Earth's total water storage?
   1. Groundwater
   2. Soil moisture
   3. Glaciers
   4. Atmospheric vapor

Correct Answer: D

1. What phase change process absorbs latent heat and cools the environment?
   1. Condensation
   2. Precipitation
   3. Evaporation
   4. Infiltration

Correct Answer: C

1. What is the dominant source of global evaporation?
   1. Rivers
   2. Soils
   3. Oceans
   4. Plants

Correct Answer: C

1. What happens during condensation?
   1. Vapor turns into ice
   2. Vapor turns into liquid, releasing latent heat
   3. Water droplets evaporate
   4. Ice turns into vapor

Correct Answer: B

1. What type of water interaction slows erosion by intercepting rainfall?
   1. Runoff
   2. Infiltration
   3. Interception
   4. Percolation

Correct Answer: C

1. What influences infiltration rate the most?
   1. Color of soil
   2. Temperature
   3. Soil texture and vegetation
   4. Latitude

Correct Answer: C

1. What happens when infiltration capacity is exceeded?
   1. Soil dries up
   2. Water evaporates
   3. Runoff occurs
   4. Groundwater forms

Correct Answer: C

1. What does the zone of saturation contain?
   1. Hygroscopic water
   2. Unsaturated air
   3. Groundwater
   4. Ice crystals

Correct Answer: C

1. What separates the zone of aeration from the zone of saturation?
   1. Bedrock
   2. Soil crust
   3. Water table
   4. Aquitard

Correct Answer: C

1. What is the term for water that drains through soil due to gravity?
   1. Capillary water
   2. Hygroscopic water
   3. Gravitational water
   4. Runoff water

Correct Answer: C

1. What is the most accessible water for plant roots?
   1. Hygroscopic water
   2. Gravitational water
   3. Capillary water
   4. Percolated water

Correct Answer: C

1. What is the wilting point?
   1. When all water has evaporated
   2. When soil is saturated
   3. When capillary water is no longer available to plants
   4. When the water table rises above root depth

Correct Answer: C

1. What type of soil holds the most plant-available water?
   1. Sand
   2. Clay
   3. Loam
   4. Silt

Correct Answer: C

1. Which soil has the lowest infiltration rate?
   1. Loam
   2. Sandy
   3. Silty
   4. Clay

Correct Answer: D

1. What affects how much water is stored in soil?
   1. Water table only
   2. Soil color
   3. Texture and structure
   4. Cloud cover

Correct Answer: C

1. What happens when rainfall exceeds field capacity?
   1. Capillary water increases
   2. Wilting point is reached
   3. Gravitational water drains downward
   4. Infiltration stops

Correct Answer: C

1. What term refers to water evaporated and transpired by vegetation?
   1. Precipitation
   2. Infiltration
   3. Interception
   4. Evapotranspiration

Correct Answer: D

1. What is potential evapotranspiration (PET)?
   1. Evaporation from oceans
   2. Actual water loss from soil
   3. Maximum water loss under ideal conditions
   4. Water used by animals

Correct Answer: C

1. What is actual evapotranspiration (AET)?
   1. Water lost from soil only
   2. Water used by plants only
   3. Water actually evaporated and transpired
   4. Runoff volume

Correct Answer: C

1. What causes a water deficit?
   1. Precipitation exceeds evapotranspiration
   2. Soil is saturated
   3. Evapotranspiration exceeds precipitation
   4. Snowmelt occurs

Correct Answer: C

1. What leads to a water surplus?
   1. High winds
   2. PET exceeds AET
   3. Soil is below field capacity
   4. Precipitation exceeds evapotranspiration and soil storage is full

Correct Answer: D

1. What process recharges groundwater?
   1. Percolation
   2. Runoff
   3. Evaporation
   4. Condensation

Correct Answer: A

1. What is the process where water moves from soil to groundwater?
   1. Precipitation
   2. Infiltration
   3. Percolation
   4. Transpiration

Correct Answer: C

1. What are aquifers?
   1. Layers of impermeable rock
   2. Natural lakes
   3. Underground water-bearing rock layers
   4. Surface water bodies

Correct Answer: C

1. What is an unconfined aquifer?
   1. Surrounded by impermeable rock
   2. Fully saturated
   3. Directly recharged by surface infiltration
   4. Man-made

Correct Answer: C

1. What is an aquiclude?
   1. A highly porous rock
   2. A water table boundary
   3. An impermeable layer preventing water flow
   4. A zone of percolation

Correct Answer: C

1. What is a confined aquifer?
   1. Easily accessed
   2. Fed only by rainwater
   3. Sandwiched between impermeable layers
   4. Found at the surface

Correct Answer: C

1. What is the water table?
   1. Top of an aquiclude
   2. Top of the zone of saturation
   3. Zone of percolation
   4. Capillary fringe

Correct Answer: B

1. What human activity has significantly lowered water tables?
   1. Deforestation
   2. Agriculture
   3. Overpumping groundwater
   4. Cloud seeding

Correct Answer: C

1. What is drawdown in groundwater terms?
   1. Water loss from plants
   2. Temporary streamflow
   3. Decline in water table from pumping
   4. Increase in aquifer pressure

Correct Answer: C

1. What causes saltwater intrusion?
   1. Acid rain
   2. Urban development
   3. Excessive groundwater withdrawal near coasts
   4. Forest fires

Correct Answer: C

1. What is desalinization?
   1. Conversion of wastewater to clean water
   2. Process of removing salt from seawater
   3. Freezing seawater
   4. Adding salt to soil

Correct Answer: B

1. What makes water a renewable resource?
   1. Fixed quantity on Earth
   2. It can be purified
   3. It is naturally replenished through the hydrologic cycle
   4. It exists in solid, liquid, and gas forms

Correct Answer: C

1. What is water stress?
   1. Lack of ocean access
   2. Seasonal drought
   3. Demand exceeds available supply
   4. Water pollution

Correct Answer: C

1. What is water scarcity?
   1. Low seasonal rainfall
   2. Long-term shortage of water
   3. Saltwater in wells
   4. Poor irrigation

Correct Answer: B

1. What sector uses the most freshwater globally?
   1. Industry
   2. Domestic use
   3. Agriculture
   4. Recreation

Correct Answer: C

1. What is the global goal of sustainable water use?
   1. To industrialize more regions
   2. To ensure adequate quality and quantity for current and future generations
   3. To reduce groundwater entirely
   4. To shift reliance to bottled water

Correct Answer: B

1. In soil moisture budgeting, potential evapotranspiration is largely dependent on
   * 1. soil texture
     2. energy input
     3. plant type
     4. all the above

Correct Answer: B

1. The largest store of fresh water in the hydrosphere is
   * 1. the ocean
     2. glaciers
     3. the Great Lakes
     4. ground water

Correct Answer: B

1. Over pumping of ground water could lead to
   * 1. lowered water tables
     2. land subsidence
     3. decreased aquifer permeability
     4. all the above

Correct Answer: D

1. Infiltration of water into the soil
   * 1. is higher for coarse textured soil
     2. is higher when the soil is dry
     3. is higher for vegetated surfaces
     4. is affected by all the above

Correct Answer: D

1. Which of the following soil texture classes would have the largest available water?
   * 1. sand
     2. silt
     3. clay
     4. loam

Correct Answer: D

1. The water held that is "bound" the tightest to soil particles is
   * 1. hydroscopic water
     2. capillary water
     3. gravity water
     4. pore water

Correct Answer: A

1. The process whereby water drips from leaf-to-leaf finally making it to the ground is called
   * 1. through flow
     2. stem flow
     3. through fall
     4. interception

Correct Answer: A

1. The zone of saturation is the
   * 1. soil water zone
     2. intermediate zone
     3. aeration zone
     4. ground water zone

Correct Answer: D

1. The point at which plants can no longer extract water from the soil is called the
   * 1. field capacity point
     2. dryness point
     3. wilting point
     4. none of the above

Correct Answer: C

1. If PE is greater than AE and P, and the soil is dry, then
   * 1. soil water recharge is likely to occur
     2. soil water surplus is likely to occur
     3. soil water utilization is likely to occur
     4. soil water deficit is likely to occur

Correct Answer: D

1. What is the primary cause of water table decline in many agricultural regions?
   1. Reduced rainfall
   2. Urban development
   3. Groundwater over-extraction
   4. River diversion

Correct Answer: C

1. Which type of aquifer is recharged directly from the surface?
   1. Artesian aquifer
   2. Confined aquifer
   3. Fossil aquifer
   4. Unconfined aquifer

Correct Answer: D

1. What is the main driver of saltwater intrusion into coastal aquifers?
   1. Sea level rise
   2. Groundwater pumping
   3. Wind-driven waves
   4. Rainfall increase

Correct Answer: B

1. What happens when actual evapotranspiration equals potential evapotranspiration?
   1. Surplus occurs
   2. Deficit occurs
   3. Balance is achieved
   4. Groundwater is depleted

Correct Answer: C

1. Why is loam considered ideal for agriculture?
   1. Drains quickly and retains little water
   2. Retains water tightly, making it always saturated
   3. Balances water retention and drainage well
   4. Mostly made of clay minerals

Correct Answer: C

1. What is the primary water issue in arid and semi-arid climates?
   1. Soil erosion
   2. Groundwater flooding
   3. High evaporation and low precipitation
   4. Monsoon variability

Correct Answer: C

1. Which of the following best describes sustainable water management?
   1. Maximizing extraction regardless of recharge
   2. Diverting rivers for agriculture
   3. Balancing human needs with ecosystem preservation and recharge rates
   4. Building more reservoirs

Correct Answer: C

Written Response Questions

1. Briefly describe what the hydrologic cycle is.

Correct Answer: The hydrologic cycle or water cycle is the pathway through which water moves in the Earth system. It is a cycle of energy as well as moisture.

1. Describe the role of the cryosphere in Earth's energy balance.

Correct Answer: The cryosphere reflects solar radiation and stores water in frozen form, which moderates Earth's temperature and is sensitive to climate change.

1. Compare and contrast soil water and groundwater.

Correct Answer: Soil water is held in the soil moisture zone that lies in the zone of aeration. Groundwater is held in the zone of saturation. Soil water is directly available for plants to use, ground water is not.

1. How do plants affect the hydrologic cycle?

Correct Answer: Plants affect the water cycle though by extracting water from the soil moisture zone and passing it to the atmosphere. Water moves as through fall through plant canopy.

1. Compare hygroscopic, capillary, and gravitational water in soil.

Correct Answer: Hygroscopic water is tightly bound and unavailable to plants, capillary water is available until the wilting point, and gravitational water drains freely through soil.

1. What impact does soil texture have on field capacity?

Correct Answer: The field capacity is the maximum amount of water held in the soil after it has bee drained by gravity. Field capacity is higher in fine textured soils because there is more pore space per unit volume than for coarse textured soils.

1. What affects the permeability of subsurface earth materials?

Correct Answer: Permeability is the ability for water to move through earth material. The connectivity of pore spaces largely controls permeability. Large, well-connected pore space results in greater permeability. Thus, coarse soils are more permeable than fine textured soils.

1. How does soil texture affect available water?

Correct Answer: Finer textured soils hold more water and thus have more available water than coarse textured soils.

1. Explain the importance of groundwater as a freshwater resource.

Correct Answer: Groundwater provides the majority of drinking and irrigation water worldwide and is critical in areas with low surface water availability.

1. Compare and contrast an aquiclude with an aquifier.

Correct Answer: An aquifer is a body of earth material able to hold and transmit groundwater in economical amounts. An aquiclude is far less permeable and cannot transmit water through it.

1. Describe the effect of urbanization on a stream hydrograph.

Correct Answer: Urbanization can decrease the lag time between maximum precipitation and runoff, and increase and steepen the recessional limb of a hydrograph.

1. What is potential evapotranspiration?

Correct Answer: Evapotranspiration is the amount of water evaporated and transpired under an unlimited supply of water. Fundamentally it is determined by energy input to the environment. Evapotranspiration can be thought of as "water need”.

1. Under what conditions does a soil water deficit occur?

Correct Answer: A soil water deficit occurs when potential evapotranspiration exceeds precipitation and the soil water storage is zero (dry soil).

1. Under what conditions does a soil water surplus occur?

Correct Answer: A soil water surplus occurs when precipitation exceeds potential evapotranspiration and the soil is at field capacity.

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