

## Drainage basins as open systems 3.1.1.2 ANSWERS

Q1	<i>True or False?</i>	
A	Glaciers can generate an input into a river system	True
B	Precipitation means rainfall in its various forms	False
C	Groundwater can operate as an input, a store and an output of drainage systems	True
D	Evaporation may be considered an output of a drainage basin	True
E	A lake is only considered a water store if it is contained by a dam.	False

Q2	<b>Match each term to the correct description</b>	
A	The loss of moisture to the atmosphere from plants via leaf stomata	Transpiration
B	Water being absorbed by soil	Infiltration
C	The transfer of water over impermeable material	Surface flow
D	The loss of moisture to the atmosphere that resides on leaf, stem and branch surfaces plus from the internal structures of plants	Evapotranspiration
E	The movement of water through porous rock into underground stores	Percolation

Select from: **Percolation**    **Transpiration**    **Surface flow**    **Evapotranspiration**    **Infiltration**

Q3	<b>Tick which of the alternative sequences is most likely</b>	
A	Precipitation – Throughflow – Surface flow	
	Surface flow – Throughflow – Precipitation	
	Precipitation – Surface flow – Throughflow	✓
B	Percolation – Infiltration – Groundwater store	
	Infiltration – Percolation – Groundwater store	✓
	Infiltration – Groundwater store – Percolation	
C	Transpiration – Infiltration – Precipitation	
	Infiltration – Precipitation – Transpiration	
	Precipitation – Infiltration – Transpiration	✓
D	Evaporation – Interception – Precipitation	
	Precipitation – Evaporation – Interception	
	Interception – Evaporation – Precipitation	✓
E	Soil storage – Infiltration – Evaporation	
	Infiltration – Soil storage – Evaporation	✓
	Evaporation – Soil storage – Infiltration	

## Drainage basins as open systems 3.1.1.2 ANSWERS

Q4	<b>Decide whether the resultant change in brackets will be an increase +, a decrease -, or no change =</b>		
A	Precipitation increases	(Surface flow?) <b>Increase +</b>	Rapid channel flow increase
B	Percolation reduces	Infiltration reduces	(Throughflow ?) <b>Decrease -</b>
C	Precipitation stays same	Vegetation increases	(Surface flow ?) <b>Decrease -</b>
D	Field capacity increases	(Infiltration ?) <b>Increase +</b>	Surface flow <b>Decrease -</b>
E	(Evaporation ?) <b>Decrease -</b>	Precipitation reduces	(Lake storage ?) <b>Decrease -</b>

Q5	<b>Classify physical and human factors that could cause the following to occur</b>
A	<p>A reduction in output of water from a river basin into a sea over a period of years.</p> <p>Physical:            Reduction in precipitation            Reduced melting of glaciers            Less evaporation due to cooler temperatures</p> <p>Human:            Greater water abstraction            Increased biomass from planting or reforestation            Depletion of groundwater stores feeding springs            Less transpiration through clearing of biomass leading to reduced precipitation</p>
B	<p>An increase in the store of water in underground aquifers over a period of decades.</p> <p>Physical:            Increased precipitation            Increased meltwater            Reduction in biomass coverage of surface due to environmental change.</p> <p>Human:            Clearing of surface biomass for pasture land.            Reduced abstraction of water from surface and underground stores            Construction of reservoirs and water storage basins            Irrigation systems putting water on land from elsewhere            Deliberate groundwater recharging strategies with waste water.</p>