Q14

What explains the eastward flow of the equatorial countercurrent? (a) The Earth's rotation on its axis (b) Convergence of the two equatorial currents (c) Difference in salinity of water (d) Occurrence of the belt of calm near the equator Official key: D.

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Explanation

(a)

(a) The Earth's rotation on its axis. Rotation supplies Coriolis, which shapes gyres, but it does not by itself explain why a narrow eastward countercurrent sits on the equator. Rotation is background, not the keyed mechanism.

(b)

(b) Convergence of the two equatorial currents. North and South Equatorial Currents are westward; their meeting is not the textbook reason UPSC keyed for the eastward countercurrent.

(c)

(c) Difference in salinity of water. Salinity gradients can drive local thermohaline flow, but they are not the standard explanation of the Equatorial Counter Current.

(d) Official key

(d) Occurrence of the belt of calm near the equator. Trade winds pile water westward; in the doldrums (equatorial belt of calms) that head of water returns east as the Equatorial Counter Current. The calm belt is the official key.

Summary

Official key is (d) Occurrence of the belt of calm near the equator. Westward trades stack water in the western ocean. Across the equatorial doldrums the piled water flows back east as the countercurrent. Rotation, current convergence and salinity are not the keyed explanation on this paper. The doldrums answer is the one that matches the official letter.

Related possible facts

These can be asked in a future Prelims paper.

Doldrums
Equatorial belt of calms / ITCZ

North Equatorial Current
Westward in the tropics

South Equatorial Current
Westward south of the equator

Equatorial Counter Current
Eastward return flow in the doldrums

Coriolis
Deflects moving water; weak on the equator itself