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Q18

Consider the following statements: 1. Some microorganisms can grow in environments with temperature above the boiling point of water. 2. Some microorganisms can grow in environments with temperature below the freezing point of water. 3. Some microorganisms can grow in highly acidic environment with a pH below 3. How many of the above statements are correct? (a) Only one (b) Only two (c) All three (d) None Official key: C.

UPSC Civil Services Prelims 2023 · General Studies · 2 marks · Environment and Ecology
Environment, ecology, climate, biodiversity - Prelims GS Paper I.

Explanation

(a)

Only one. Extremophiles cover heat, cold and acid.

(b)

Only two. All three habitats have microbes.

(c) Official key

All three. Hyperthermophiles above 100 °C, psychrophiles below 0 °C, acidophiles below pH 3.

(d)

None. Each statement is standard microbiology.

Summary

Official key is (c) all three. Pyrococcus and similar archaea grow above the boiling point (under pressure). Psychrophiles grow in sea ice. Acidithiobacillus and Picrophilus grow below pH 3. All three statements hold.

Related possible facts

These can be asked in a future Prelims paper.

Hyperthermophile

Optimum often above 80 °C; many are archaea at vents.

Acidophile

Grows in strong acid; acid-mine drainage and volcanic springs.

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