Choosing Indicators for a Rinse Decision

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A print studio tests a clear rinse. The model uses indicators with sharp color changes at the listed pH values. Below its boundary each indicator has the lower-pH color. At or above the boundary it has the higher-pH color.

Indicator	Boundary pH	Color below boundary	Color at or above boundary
P	5	Yellow	Blue
Q	7	Red	Green
R	6	Clear	Purple

A sample turns P blue and Q red. The studio wants to know whether its pH is at least 6.

1 What pH range is established by P and Q together?

(1) Below 5

(2) At least 5 and below 7

(3) At least 6 and below 7

(4) At least 7

2 Explain how indicator R can resolve the studio’s decision on a fresh portion of the same rinse. [1]

Answer and work

Another sample turns P yellow and Q red. Its R reading is purple. Assume the sample portions have the same pH.

3 Explain which readings are incompatible in the model and why. [1]

Answer and work

4 Describe one check using a known pH sample that could test one of the conflicting indicator readings. [1]

Answer and work