

# 2024 Bi H1 Q8

## Section: Metabolism and Survival

### Topic: Enzymes (Experimental Design)

#### Question Summary:

An amylase-starch agar experiment uses wells with different amylase concentrations (0%, 5%, 10%, 15%, 20%). As amylase diffuses, it clears starch, forming a clear zone measured after incubation. Which feature ensures the results are valid?

#### Worked Solution:

- Validity is about whether the experiment measures the intended effect (here, effect of enzyme concentration) by controlling relevant variables.
- Keeping the same volume of amylase in each well controls for volume as a variable so that only concentration differs. This makes comparisons valid.
- Using three plates improves reliability (repeats). Different concentrations define the independent variable. Using a ruler relates to accuracy/precision of measurement.

Final Answer: **B** (The same volumes of amylase were used in each well).

#### Revision Tips:

- Validity -> control of variables other than the independent variable.
- Reliability -> repeats/replicates.

- Accuracy -> quality of measuring instrument and technique.