Higher Combined version — Higher Tier (★) included; Separate-only (◆) removed.

Q1. Explain the induced fit model of enzyme action.

[4 marks]

Q2. Explain the effect of pH on enzyme activity. Give a specific example.

[3 marks]

Q3. Explain the difference between an enzyme being inhibited and being denatured.

[3 marks]

Total: 10 marks

Enzymes (1.4–1.6)

Q1 (4 marks)

Explain the induced fit model of enzyme action.

- Substrate enters active site [1]
- Active site changes shape slightly to better fit substrate [1]
- Catalytic groups positioned → reaction occurs [1]
- Products released; enzyme unchanged and reusable [1]

Q2 (3 marks)

Explain the effect of pH on enzyme activity. Give a specific example.

- Each enzyme has an optimum pH [1]
- Extreme pH: ionic bonds in active site disrupted → shape changes (denaturation) [1]
- Example: pepsin — optimum pH 2 (stomach); amylase — optimum pH 7 (mouth) [1]

Q3 (3 marks)

Explain the difference between an enzyme being inhibited and being denatured.

- Inhibition: inhibitor molecule blocks active site or changes its shape → reversible (enzyme can function again if inhibitor removed) [1]
- Denaturation: permanent change in enzyme shape due to high temperature or extreme pH [1]
- Denatured enzyme cannot function at all; inhibited enzyme may function when inhibitor removed [1]