Review: regulation and coordination

Student activity • observation and reasoning

YEAR 11 / LESSON 80 / BIOLOGY + SCIENCE (DOUBLE AWARD)

The question

Can you distinguish a signal, an effector and the response?

Use the supplied examples, record your reasoning and correct it using evidence.

Equipment

- Student booklet, pencil and ruler
- Earlier coordination work and correction paper

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Course coverage: Shared homeostasis and coordination; Biology-only kidney and ADH detail marked.

Plan, model or apparatus sketch

Draw and label the apparatus or biological model; identify one limitation.

Method and reasoning

Read the whole sequence before starting

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1. Draw a stimulus–receptor–coordination–effector pathway and apply it to a withdrawal reflex.

2. Compare synaptic transmission with a hormone carried in blood.

3. Explain near focus and bright-light pupil responses using the correct separate muscles.

4. Explain sweating and skin blood-flow changes without claiming that vessels move.

5. Biology extension: trace filtration and selective reabsorption and explain ADH feedback.

6. Correct two errors from earlier work and explain why the corrected mechanism fits the evidence.

Cleanup

- Return models and keep the corrected work.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Use separate diagrams for nervous, hormonal and kidney processes rather than merging them into one sequence. Detailed nephron/ADH content is Biology-only; general water balance as homeostasis is shared.

Example / trial	Observation / evidence	Explanation / limit
Evidence / comparison		
Explanation		
Limit / correction		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. What crosses a chemical synapse?

2. What is an effector?

3. Which muscle contracts for near focus?

4. Why does sweat cool only when it evaporates?

5. Biology: what is filtered initially?

6. Biology: what does more ADH do?