

Volume 35, Number 4, April 2026

Activity

Practice exam questions

Andrew Parsons

Additional questions for the articles in this issue.

Towards greener agriculture (pp. 2–5)

- 1 State **one** reason why the Haber–Bosch process is carried out in a closed system. (1 mark)
- 2 Why is a temperature of around 450°C used in the Haber–Bosch process instead of a very low temperature, even though lower temperatures favour a higher yield of ammonia? (3 marks)
- 3 How does industrial ammonia production affect the nitrogen cycle? (2 marks)
- 4 Describe the benefits of producing ammonia electrochemically compared with the traditional Haber–Bosch process. (3 marks)

Sunscreen under the microscope (pp. 12–14)

- 1 What type of radiation do sunscreens protect against, and how do they work? (2 marks)
- 2 Oxybenzone contains a conjugated π system. Why is this important for its function as a UV filter? (2 marks)
- 3 Why has the use of oxybenzone raised environmental concerns? (2 marks)
- 4 What is meant by ‘reef-safe’ sunscreen, and are these products always safer? (2 marks)
- 5 Suggest why some studies on oxybenzone may have limitations when assessing environmental impact. (2 marks)

Advertising chemistry (pp. 21–23)

- 1 Micellar water uses surfactants. How do surfactants work to remove dirt and oil from the skin? (3 marks)
- 2 Why is hyaluronic acid effective at retaining moisture in skincare products? (2 marks)
- 3 Many disinfectants claim to ‘kill 99.9% of bacteria’. What factors affect the rate of bacterial kill in these products? (3 marks)

Sour science (pp. 28–30)

- 1 Citric acid is a triprotic acid. Explain why the first proton is more easily lost than the second or third. (2 marks)
- 2 Citric acid and its conjugate base form a buffer solution. Explain how this helps maintain pH in foods such as fruit juice. (2 marks)
- 3 Explain why carboxylic acids are more acidic than alcohols. (2 marks)