

## MARCH 2021 SOLUTIONS

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | A | R | G | U | E | R | I | T | E | P | E | R | E | Y |
| A |   | E |   | L |   | O |   | E |   | E |   |   |   | T |
| R | E | T | I | N | A | E |   | R | A | R | E | B | I | T |
| I |   | I |   | A |   | D |   | B |   | S |   | A |   | E |
| E | T | C | H |   | H | E | L | I | C | O | P | T | E | R |
|   |   | U |   |   |   |   |   | U |   | N |   |   |   | B |
| S | U | L | P | H | U | R |   | M | E | N | I | S | C | I |
| T |   | E |   | E |   |   |   |   |   | E |   | E |   | T |
| E | P | S | I | L | O | N |   | C | A | L | O | R | I | E |
| A |   |   |   | M |   | O |   | H |   |   |   | E |   |   |
| M | A | N | C | H | E | S | T | E | R |   | A | N | N | E |
| S |   | M |   | O |   | T |   | K |   | S |   | G |   | U |
| H | U | R | D | L | E | R |   | H | U | S | S | E | R | L |
| I |   |   |   | T |   | I |   | O |   | R |   | T |   | E |
| P | A | U | L | Z | E | L | A | V | O | I | S | I | E | R |

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | P | R | E | C | I | P | I | T | A | T | E | G | H | R | K | D | S |   |   |   |   |   |
| G | W | R |   | N | O | T | P | Y | R | K | J | O | R | J | P | P | I | C |   |   |   |   |
| K |   |   |   | U | N | S | A | T | U | R | A | T | E | D | A | L | P | F | N | S |   |   |
| U | Y | E | H | O | B | X | N | P | J | L | N | P | Y | O | A | T | X |   |   |   |   |   |
| P |   |   |   | I | N | D | I | C | A | T | O | R | U | H | H | R | Y | C | R | X |   |   |
| O | V | E | R | O | Y |   |   | A | L | L | O | Y | T | I | C | Y | J | A | S |   |   |   |
| L | A | X | B | E | P | O | L | Y | M | E | R | T | S | K | K | M | U |   |   |   |   |   |
| L | C | N | P | W | D | E | D | O | R | T | C | E | L | E | D | O | B |   |   |   |   |   |
| U | U | J | W | R | B | U | C | P | E | T | R | O | L | U | D | L | L |   |   |   |   |   |
| T | U | E | T | H | O | H | C | O | X | A | K | B | P | F | E | E | I |   |   |   |   |   |
| I | M | X | Q | D | X | D | H | T | V | P | X | U | P | I | N | C | M |   |   |   |   |   |
| O | U | P | Z | Y | E | R | U | L | I | A | T | C | O | A | S | U | A |   |   |   |   |   |
| N | D | L | T | K | L | Q | D | C | L | O | L | P | W | R | I | L | T |   |   |   |   |   |
| X | I | O | A | J | E | G | X | U | T | C | N | E | U | Q | T | A | I |   |   |   |   |   |
| B | O | S | A | B | C | W | P | P | Z | E | Y | W | N | B | Y | R | O |   |   |   |   |   |
| L | L | I | G | S | H | E | H |   |   | M | U | I | N | E | H | T | U | R | N |   |   |   |
| H | Y | O | X | K |   |   |   |   |   | P | H | Y | T | O | M | I | N | I | N | G | M | Y |
| O | Z | N | L | K | Y |   |   |   |   | E | N | D | O | T | H | E | R | M | I | C | Z |   |

### Brainteaser

Dry air comprises about 80% N<sub>2</sub> and 20% O<sub>2</sub>. Does 'adding' water make it denser?

Avogadro's law states that if T and P remain the same then so must the number of particles. Imagine the dry air has 10 molecules in it, then the wet air has 10 molecules too.

**Wet air**

N<sub>2</sub> = 28 g mol<sup>-1</sup>

O<sub>2</sub> = 32 g mol<sup>-1</sup>

H<sub>2</sub>O = 18 g mol<sup>-1</sup>