



QUESTION WORKBOOK

Lungs: seventy square metres, folded into a chest

Exchange surfaces and gas exchange · Unit B07

AQA 3.3.2 · OCR A 3.1.1 · CAIE 9.1

5 questions · 18 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

- A1** A section through an airway shows irregular blocks of cartilage in the wall, together with a ciliated epithelium containing goblet cells. Name this airway, and name the tissue that holds a bronchiole open instead of cartilage. [2]

SECTION B · Standard, 3 to 5 marks

- B1** A spirometer trace shows 21 complete breaths in 84 seconds, each moving 0.55 dm^3 of air. Calculate the pulmonary ventilation rate in $\text{dm}^3 \text{ min}^{-1}$. About 0.15 dm^3 of every breath stays in the dead space; calculate the volume of air reaching the alveoli each minute. [5]

- B2** Describe how air is drawn into the lungs during inspiration, giving the events in the order in which they happen. [4]

B3 Explain why inspiration always costs the body energy while quiet expiration costs almost none. [4]

B4 In emphysema the elastic fibres of the alveolar walls are destroyed and the walls themselves break down, so that many small alveoli are replaced by fewer, larger air spaces. Suggest why a person with emphysema becomes breathless on mild exertion. [3]
