Oxford Cambridge and RSA

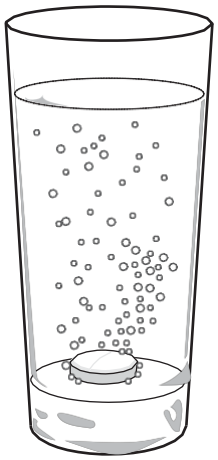
GCSE Physics B (Twenty First Century Science)

J259/03 Depth in physics (Higher Tier)

Question Set 9

Multiple Choice Questions

1 The picture shows a glass of water with a vitamin tablet at the bottom.



The tablet reacts with the water to produce bubbles of carbon dioxide.

The tablet stays at the bottom of the glass. The bubbles rise to the top of the glass.

(a) Which **two** of the statements below, taken together, explain why the bubbles rise but the tablet sinks?

Tick (✓) **two** boxes.

The bubbles are made of gas, but the tablet is solid ☐

The material in the tablet is denser than water. ☐

The tablet is heavier than the bubbles. ☐

The water pressure at the bottom of the glass is greater than the water pressure at the top. ☐

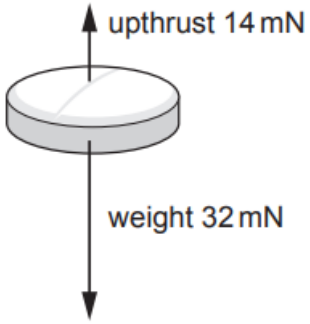
Water is denser than the gas in the bubbles. ☐

[1]

(b) The diagram below is a free-body diagram for the tablet resting on the bottom of the glass.

Two of the forces acting on the tablet have already been drawn.

Draw **one** further force for the tablet and label it with its name and magnitude.



[2]

(c) **(i)** Explain what causes the force of upthrust that acts on the tablet.

[2]

(ii) The upthrust on the tablet is bigger than the upthrust on any one bubble.

Give a reason for this.

[1]

Total Marks for Question Set 9: 6