Oxford Cambridge and RSA

GCSE Physics A (Gateway)

J249/03 Physics A P1-P4 and P9 (Higher Tier)

Question Set 18

18 (a) A depth of 10 m of water exerts the same amount of pressure as the entire Earth's atmosphere, which is ~120 km deep.

Suggest why.

water is denser than air.

[1]

(b) A diver takes pressure readings at different depths.

The results are in the table.

Depth of water (m)	Pressure (standard units)
0	1
10	2
20	3
30	4
40	5
50	6

Use the results to describe the relationship between the depth of water and pressure. as depth of water increases, pressure increases. An increase of 10m depth results in 1 standard unit in pressure.

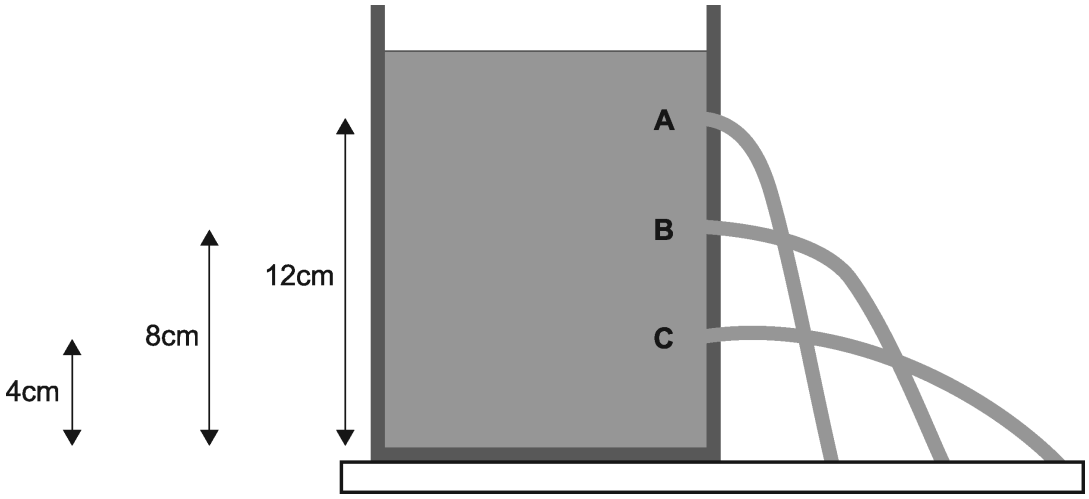
[2]

(c) Suggest why there is pressure at 0 metres.

Pressure exerted by the Earths atmosphere

[1]

(d) A container of vegetable oil has 3 holes in it (**A**, **B** and **C**).



The vegetable oil has a density of 9.1×10^2 kg/m^3.

Calculate the change in pressure from **A** to **B**.

Show your working.

Give your answer to **two** significant figures.

0·12 m to 0.08 m

Pressure = $h\rho g$

$= (0.12 - 0.08) \times 9.1 \times 10^2 \times 10$

$= 0.04 \times (9.1 \times 10^2) \times 10$

$= 364 \approx 360$ (2sf)

Answer = 360 Pa

[4]

Total Marks for Question Set 18: 8