10 The photograph shows a cylinder of compressed air used to breathe underwater.

(a) Explain how the air causes a pressure on the inside of the cylinder.

Refer to particles in your answer.

(3)

(b) Explain what happens to the pressure of the air inside the cylinder as its temperature increases.

(3)

(c) A fixed mass of air has a volume of 43 000 cm^3 when its pressure is 100 kPa.

Calculate the pressure of this fixed mass of air when it is inside the cylinder.

[volume of air in cylinder = 8500 cm^3]

(3)

pressure = ... kPa

(Total for Question 10 = 9 marks)

11 A light ray can undergo total internal reflection.

(a) (i) State two uses of total internal reflection.

(2)

1 .....

.....

2 .....

.....

(ii) Describe the conditions required for total internal reflection to occur.

(2)

.....

.....

.....

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(b) The diagram shows a light ray entering a glass block from air and then incident on the flat side of the block at position A.