5 (a) An ideal gas initially at 300 K undergoes expansion at a constant pressure of 2.5 kPa. The volume of the gas increases from 1.0 m^3 to 3.0 m^3 and 12.5 kJ is transferred to the gas by heat.

Determine the change in the internal energy of the gas.

change in internal energy = …………..…………. J [2]

(b) By reference to the first law of thermodynamics, state and explain the change, if any, in the internal energy of:

(i) a lump of solid lead as it melts at constant temperature

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... [3]

(ii) some gas in a toy balloon when the balloon bursts.

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... [3]

[Total: 8]