6 A fixed mass of monatomic ideal gas has an initial volume of 0.075 m^3 at a pressure of 4.5×10^5 Pa and temperature of 60 °C.

(a) Calculate the number of moles of gas present.

number of moles = …….…… mol [2]

(b) The gas is subsequently heated to 150 °C. It expands at constant pressure.

(i) Determine the new volume of the gas.

new volume of gas = ……..…….. m^3 [2]

(ii) Calculate the change in internal energy of the gas.

change in internal energy = ……. J [2]

(iii) Determine the external work done by the gas.

work done by gas = …… J [2]

(iv) Hence, determine the amount of heat supplied to the gas.

heat supplied to gas = …… J [2]