Marks 4

- Phosgene is a toxic gas prepared by the reaction of carbon monoxide with chlorine.

$$CO(g) + Cl_2(g) \rightarrow COCl_2(g)$$

The following data were obtained in a kinetics study of its formation at 150 °C.

Experiment	Initial [CO] (mol L^{-1})	Initial [Cl_2] (mol L^{-1})	Initial rate (mol L^{-1} s^{-1})
1	1.00	0.100	1.29×10^{-3}
2	0.100	0.100	1.33×10^{-4}
3	0.100	1.00	1.30×10^{-3}
4	0.100	0.0100	1.32×10^{-5}

Write the rate law for the formation of phosgene at 150 °C.

Calculate the value of the rate constant at 150 °C.

Answer:

Calculate the rate of appearance of phosgene when [CO] = [Cl_2] = 1.3 M.

Answer: