Marks 7

- The major pollutants NO(g), CO(g), NO_2(g) and CO_2(g) are emitted by cars and can react according to the following equation.

$$NO_2(g) + CO(g) \rightarrow NO(g) + CO_2(g)$$

The following rate data were collected at 225 ^oC.

Experiment	$[NO_2]_0$ (M)	$[CO]_0$ (M)	Initial rate ($d[NO_2]/dt$, M s^{-1})
1	0.263	0.826	1.44×10^{-5}
2	0.263	0.413	1.44×10^{-5}
3	0.526	0.413	5.76×10^{-5}

Determine the rate law for the reaction.

Calculate the value of the rate constant at 225 ^oC.

Answer:

Calculate the rate of appearance of CO_2 when $[NO_2] = [CO] = 0.500$ M.

Answer:

Suggest a possible mechanism for the reaction based on the form of the rate law. Explain your answer.