$$\begin{array}{cccc}
\mathbf{C}_{1} & \xrightarrow{f_{1}} & \mathbf{D}_{1} \\
F \downarrow \mathbf{Cat} & \mathbf{Cat} \uparrow G & \mathbf{C}_{1} & \xrightarrow{f_{1}} & \mathbf{D}_{1} \\
\mathbf{C}_{2} & \xrightarrow{\mathbf{Cat}} & \mathbf{D}_{2} & F \circ H \downarrow \mathbf{Cat} & \mathbf{Cat} \uparrow K \circ G \\
H \downarrow \mathbf{Cat} & \mathbf{Cat} \uparrow K & \mathbf{C}_{3} & \xrightarrow{\mathbf{Cat}} & \mathbf{D}_{3} \\
\mathbf{C}_{3} & \xrightarrow{f_{2}} & \mathbf{D}_{3}
\end{array}$$