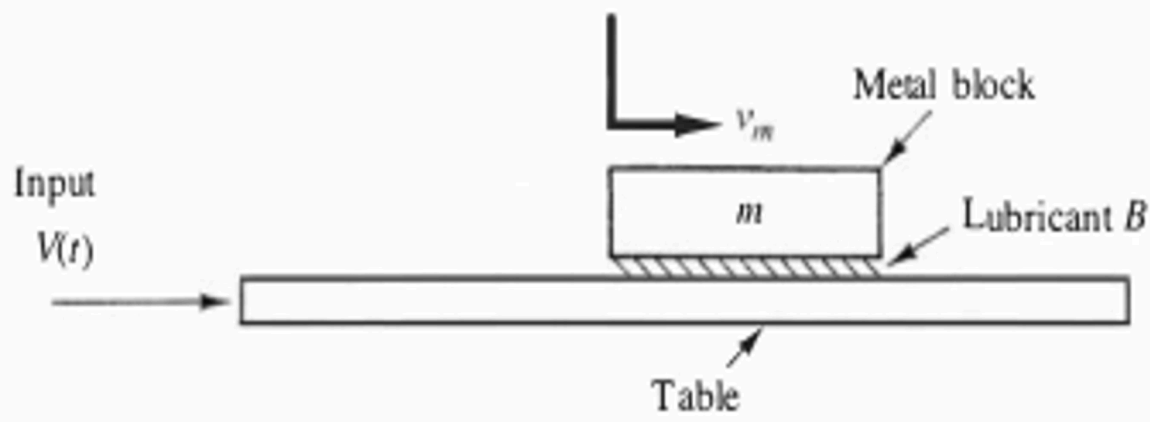**5.1.** A metal block of mass m sits on a table. Vibrations in the floor cause the table to move horizontally with a velocity $V(t)$. A thin film of lubricant allows the block to slide on the table with an effective viscous frictional coefficient B, as shown in Fig. 5.23.

Figure 5.23: A mass element sliding on a table.

(a) Draw the system linear graph and normal tree.

(b) Derive a state equation for the system.

(c) Derive an output equation for the force accelerating the mass.