$$\begin{split} \frac{\partial u}{\partial t} &= a \frac{\partial^2 u}{\partial x^2} + b \frac{\partial^2 u}{\partial y^2} + \sin x \sin y (\mu \cos \mu t + (a+b) \sin \mu t), \\ u(0,y,t) &= 0, \\ u_x(\pi,y,t) &= -\sin y \sin(\mu t), \\ u(x,0,t) &= 0, \\ u_y(x,\pi,t) &= -\sin x \sin(\mu t), \\ u(x,y,0) &= 0, \end{split}$$