$$\frac{\partial u}{\partial t} = a\frac{\partial^2 u}{\partial x^2} + b\frac{\partial^2 u}{\partial y^2} + \sin x \sin y(\mu \cos \mu\, t + (a+b)\sin \mu\, t),$$

$$u(0, y, t) = 0,$$

$$u_x(\pi, y, t) = -\sin y \sin(\mu t),$$

$$u(x, 0, t) = 0,$$

$$u_y(x, \pi, t) = -\sin x \sin(\mu t),$$

$$u(x, y, 0) = 0,$$