b) $\bar{E} = -\bar{a}_z E_0$, B

$$\left.\begin{aligned} \frac{\partial u_x}{\partial t} &= \frac{e}{m} B_0 u_y = \omega_0 u_y , \\ \frac{\partial u_y}{\partial t} &= -\omega_0 u_x , \end{aligned}\right\} \text{Circular motion (see P. 6-1)}$$

$$\frac{\partial u_z}{\partial t} = \frac{e}{m} E_0 .$$

} Helical motion with constant acceleration eE_0/m in z-direction.