The excitation frequencies of parametric vibration of laminated non-homogeneous orthotropic conical shells (LNHOCSs) under axial load periodically varying with time, are determined using the classical shell theory (CST). The basic equations are found using the Donnell-Mushtari shell theory and reduce to the Mathieu-Hill type differential equation, in which the instability is examined by the Bolotin method. To validate of current results was made a comparison with the previous studies. The effects of stacking sequences, axial load factors, non-homogeneity, as well as the variation of geometric characteristics on the backward and forward excitation frequencies (BFEFs) of conical shells are studied in detail.