We present an investigation of dynamo in non-uniformly stratified spherical shells dependent on the Rayleigh number and thickness of a stable stratified sub-shell with emphasis on the case characterized by the identical thicknesses of both sub-shells. Our previous study of rotating convection showed that this case of stratification is a typical extreme case. However, the dynamo action in the shell characterized by the identical thicknesses of both sub-shells is not the typical extreme case. The generated magnetic field is close to the cases of uniform stratification and non-uniform one if the thickness of a stable stratified sub-shell is smaller than the thickness of an unstable stratified sub-shell. Similarly as in the case of rotating convection also in the case of dynamo action the multilayer convection ("teleconvection") is not developed in such a case because of the significant amount of stable stratification.