Algebraic Topology: Problem Set 2

Due: Thursday, July 10.

Let (F, G, a) be an adjunction from a model category $\mathscr{C}$ to a model category $\mathscr{D}$. Suppose that $\mathscr{C}$ is cofibrantly generated and let I and J be sets of generating cofibrations and generating trivial cofibrations, respectively. Show that the following are equivalent:

(i) F is a left Quillen functor.

(ii) F takes the maps in I (reps. J) to cofibrations (resp. trivial cofibrations) in $\mathscr{D}$.