What is the character of the set of eigenvalues for an operator for angular momentum (and what is the reason, give the best answer)?

A) Continuous: It is like the position of a free particle, it can take on any value when measured.
B) Continuous: Since there are no boundary conditions for the eigenvalue problem.
C) Discrete: Since you only get discrete answers when you measure it.
D) Discrete: Since the eigenstates need to fulfill constructive interference with themselves upon rotation.