Problem 205F

A particular type of axial flow pump is to be used to pump water at a flow rate of $0.1m^3/sec$ from one reservoir to another whose surface elevation is $10m$ higher. The chosen type of pump has a design flow coefficient of 0.08 and produces a head coefficient of 0.2 at that design coefficient. Determine the diameter of the impeller of the pump (in m) and the rotational speed (in rpm) at which it should be driven. Neglect pipeline losses. [Acceleration due to gravity is $9.8m/sec^2$.]