A centrifugal pump moves 10 l/s water from a pressure of 100 kPa to a pressure of 550 kPa in one stage. The section inlet has a diameter of 50 mm and the discharge has a diameter of 40 mm. The impeller diameter is 0.4 m and β_2 is 30°. The width b of the impeller is 30 mm. What power is required if there is an efficiency of 65%? What speed should the pump run at for the above condition? The discharge pipe is 0.3 m above the inlet pipe. Use theoretical torque in computing ω.

[7.26 kW, 1048 rpm]