Problem

A column 20 cm long, with an internal diameter of 5 cm, gives sufficient purification to merit scale-up. The column produces 3.2 g of purified protein per cycle, and a cycle takes 6 h, from equilibration through regeneration.

(a) To design a throughput of 10 g/h, what are the new column's dimensions if the superficial velocity is held constant and it is assumed that the gradient and particle size are not changed on scale-up?

(b) If available standard column diameters are 20 and 25 cm. What bed depths would apply to each of these columns?

Harrison Ex 7.8 & 7.9