Name: _____

Physics 202 Quiz 2

Apr 15, 2013

Word Problems

Show all your work and circle your final answer. (Ten points each.)

1. A submersible pump is put under the water at the bottom of a well and is used to push water up through a pipe. What minimum output gauge pressure must the pump generate to make the water reach the nozzle at ground level, 71 meters above the pump?

2. A blood transfusion is being set up in an emergency room for an accident victim. Blood has a density of 1060 kg/m^3 and a viscosity of η is 4.0×10^{-3} Pa-s. The needle being used has a length of 3.0 cm and an inner radius of 0.25 mm. The doctor wishes to use a volume flow rate through the needle of 4.5×10^{-8} m^3/s. What is the distance h above the victim's arm where the level of the blood in the transfusion bottle should be located? As an approximation, assume that the level of the blood in the transfusion bottle and the point where the needle enters the vein in the arm have the same pressure of one atmosphere. (In reality, the pressure in the vein is slightly above atmospheric pressure.)