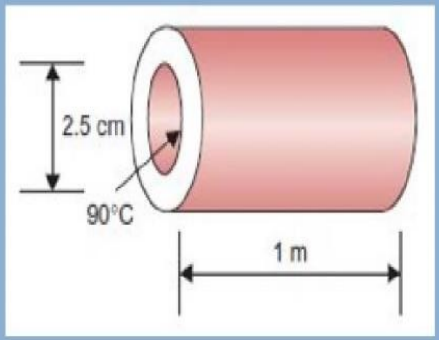
ASSIGNMENT

1. Water flowing at a rate of 0.02 kg/s is heated from 20 to 60 oC in a horizontal pipe (inside diameter52.5 cm). The inside pipe surface temperature is 90 oC (Figure below). Estimate the convective heat-transfer coefficient if the pipe is 1 m long.



{Hint: Find the Reynold's number value to know fluid characteristic and then apply appropriate correlation to calculate heat transfer coefficient}

2. What is the expected percent increase in convective heat-transfer coefficient if the velocity of a fluid is doubled while all other parameters are kept the same for turbulent flow in a pipe?

3. Air enters the tubes of a small single pass heat exchanger at 20 oC and leaves at 40 oC. On the shell side, the temperature is kept at 60 oC. What is the log mean temperature difference (LMTD)?