MEMS 0051 - Introduction to Thermodynamics
Quiz #2

Name: _____

Problem #1

Consider a 100 [kg] object moving at a velocity of 2 [m/s] with an internal energy of 300 [kJ]. Ignoring potential energy, determine:

a) the kinetic energy of the car in [kJ]

b) the total energy of the car in [kJ]

c) the specific internal energy of the car in [kJ/kg]

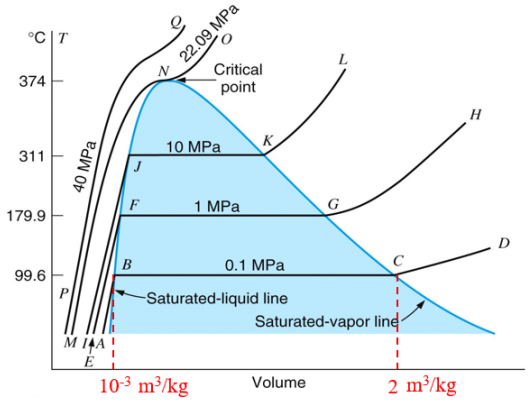
Problem #2

Answer the following questions based on the T-ν diagram for H_2O given. What phase(s) of H_2O are present in the following conditions?

a) 100 °C, 3 [m^3/kg]

b) 300 °C, 10^{-4} [m^3/kg]

c) 1 [MPa], 0.2 [m^3/kg]



Problem #3

a) Determine the phase(s) for each of the following states of water:

i.) 50 °C, 100 [kPa]

ii.) 100 °C, 0.1 [m^3/kg]

b) Determine the following properties for water:

i.) ν for saturated vapor at 100 °C

ii.) ν at 100 [kPa] and 400 °C