3-b-5

For an amount of water is given: $T = 50\,°C$ and $P = 12.352\,kPa$. What is the phase of the water?

Answer: You cannot determine this from the given information

At 50 degrees Celsius the saturation pressure (the pressure at which the water starts to boil) is 12.352 kPa (table A-4 Cengel and boles, 7th edition, other tables can give a slightly different number). So, the water can be saturated liquid, saturated vapor or a mixture. You need more info to determine which of the three it is. Although two properties are given it does not provide enough information. These two properties are not independent. You need two independent properties. Besides the temperature or pressure, you need for example the mass fraction, the enthalpy or the volume.