Assignment1

1. Which of the following statements are TRUE?

a) The maximum amount of moisture air can hold depends upon its temperature and barometric pressure
b) Perfect gas model can be applied to air-water mixtures when the total pressure is high
c) The minimum number of independent properties to be specified for fixing the state of moist air is two
d) The minimum number of independent properties to be specified for fixing the state of moist air is three

Ans.:

2. Which of the following statements are TRUE?

a) When the dry bulb temperature is equal to dew point temperature, the relative humidity of air-water mixture is 1.0
b) All specific psychrometric properties of moist air are based on unit mass of water vapour
c) All specific psychrometric properties of moist air are based on unit mass of dry air
d) All specific psychrometric properties of moist air are based on unit mass of moist air

Ans.:

3. Which of the following statements are TRUE?

a) Thermodynamic WBT is a property of moist air, while WBT as measured by wet bulb thermometer is not a property
b) Both the thermodynamic WBT and WBT as measured by wet bulb thermometer are properties of moist air
c) Under no circumstances, dry bulb and wet bulb temperatures are equal
d) Wet bulb temperature is always lower than dry bulb temperature, but higher than dew point temperature

Ans.: a)

4 On a particular day the weather forecast states that the dry bulb temperature is $37^{o}C$, while the relative humidity is 50% and the barometric pressure is 101.325 kPa. Find the humidity ratio, dew point temperature and enthalpy of moist air on this day.

Ans.:

5. Will the moisture in the above air condense when it comes in contact with a cold surface whose surface temperature is 24°C?

Ans.:

6. Moist air at 1 atm. pressure has a dry bulb temperature of 32°C and a wet bulb temperature of 26°C. Calculate a) the partial pressure of water vapour, b) humidity ratio, c) relative humidity, d) dew point temperature, e) density of dry air in the mixture, f) density of water vapour in the mixture and g) enthalpy of moist air using perfect gas law model and psychrometric equations.

Ans.: