

Unit 5 - Week 3 Properties of pure substances

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Week 3 Properties of pure substances

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Assignment 3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-08-21, 23:59 IST.

1) Among the following statements, which one is TRUE for a substance which expands on freezing? 1 point

- It can stay as liquid below its triple point temperature.
 It can stay as liquid below its triple point pressure.
 It can stay as solid above its triple point temperature.
 It cannot stay as vapor below its triple point pressure.

No, the answer is incorrect.

Score: 0

Accepted Answers:

It can stay as liquid below its triple point temperature.

2) Compressibility factor for an ideal gas is 1 point

- zero
 positive, but less than one
 one
 greater than one

No, the answer is incorrect.

Score: 0

Accepted Answers:

one

3) A real gas is likely to resemble the ideal gas behavior at 1 point

- low temperature and low pressure
 low temperature and high pressure
 high temperature and low pressure
 high temperature and high pressure

No, the answer is incorrect.

Score: 0

Accepted Answers:

high temperature and low pressure

4) Density of a sample of water is found to be greater than the density of saturated liquid water at the same temperature. Then the thermodynamic state of this sample is 1 point

- compressed liquid
 saturated liquid
 saturated liquid-vapor mixture
 superheated vapor

No, the answer is incorrect.

Score: 0

Accepted Answers:

compressed liquid

5) Some quantity of water is supplied with 10 MPa pressure and 0.003 m³/kg specific volume. The thermodynamic state of this particular sample can be identified as 1 point

- compressed liquid
 saturated liquid
 saturated liquid-vapor mixture
 superheated vapor

No, the answer is incorrect.

Score: 0

Accepted Answers:

saturated liquid-vapor mixture

6) Vapour pressure of solid ammonia (in mm of mercury) is given by, $\ln P = 23.03 - \frac{3754}{T}$ That of liquid ammonia is given as, $\ln P = 19.49 - \frac{3063}{T}$ Here P is in in mm of mercury and T is in K. Then the temperature of ammonia at the triple point (correct to 1 decimal place) is _____ K.

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 194.5,195.9

1 point

7) If water at 120°C with a quality of 0.25, is heated till its temperature rises by 20°C in a constant volume process, its new quality (correct to 2 decimal places) will be _____.

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.43,0.45

1 point

8) An isentropic steam turbine receives 2 kg/s of steam at 6 MPa & 500°C, and leaves at a pressure of 0.3 MPa. If the expansion process can be assumed to be isentropic, then the work output from the turbine (correct to 2 decimal places) is _____ MW.

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 1.30,1.65

1 point

9) A pressure gage on a 1.2 m³ oxygen tank reads 500 kPa. If the temperature is 24 °C and the atmospheric pressure is 97 kPa, then the mass of oxygen in the tank (correct to 1 decimal place) is _____ kg.

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 9.2,9.4

1 point

10) A 1 m³ tank contains 2.841 kg of steam at 0.6 MPa. Using the critical-point properties of water and the van der Waals equation of state, the temperature of steam (correct to 1 decimal place) can be calculated to be _____ K.

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 460,470

1 point