

Question 1

For ideal gas mixtures, the pressure fraction for any gas component is the same as its mole fraction.

Selected Answer: True

Question 2

Any intensive property of an ideal gas mixture can be computed from the arithmetic average of the intensive property for each individual gas component.

Selected Answer: False

Question 3

Which of the following statement is true?

Selected Answer: There is no entropy generation for reversible steady flow work.

Question 4

Pumps tend to require more power than compressors since liquids have a higher density than gases.

Selected Answer: False

Question 5

The inlet velocity is not considered when evaluating the isentropic efficiency of a nozzle.

Selected Answer: True

Question 1

Any intensive property of an ideal gas mixture can be computed from the arithmetic average of the intensive property for each individual gas component.

Selected Answer: True

Response Feedback: Intensive properties of gas mixtures must be calculated from the weighted average of the components' properties.

Question 2

Which of the following statements is false about isentropic efficiencies for flow devices?

Selected Answer: The processes are compared at the same outlet pressures and temperatures.

Question 3

For ideal gas mixtures, the pressure fraction for any gas component is the same as its mole fraction.

Selected Answer: True

Question 4

For ideal gas mixtures, the mole fraction for any gas component is the same as its mass fraction.

Selected Answer: False

Question 5

For Amagat's law of additive volumes, it refers to volume addition for each gas at any temperature or pressure.

Selected Answer: True

Response Feedback: The law of additive volume is only applicable for when the gases have the same pressure and temperature.

Question 1

Isentropic process for compressor work consumes less energy than an isothermal process for compressor work.

Selected Answer: True

Response Feedback: An isothermal compression process actually consumes less power than isentropic compression due to the continuous cooling of the fluid as it undergoes compression. However, when comparing between adiabatic compression processes, isentropic compression would be the most efficient.

Question 2

Which of the following statements is true for the ideal two stage compression process?

Selected Answer: The pressure ratio across each stage is the same.

Question 3

Which of the following statement is true?

Selected Answer: There is no entropy generation for reversible steady flow work.

Question 4

Which of the following statement is true?

Selected Answer: Dalton's law and Amagat's law are equivalent for ideal gases.

Question 5

For ideal gas mixtures, the pressure fraction for any gas component is the same as its mole fraction.

Selected Answer: True

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