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Quiz 1

a.

1. I - Boundary
2. G - Property
3. B - Control Volume
4. E - Extensive Property
5. H - Intensive Property
6. D - Process
7. J - Zeroth Law
8. A - State
9. F - Surroundings
10. C – System

b. A system is said to be in equilibrium if none of its properties change with time.

c. A *control volume* is a system that allows mass and energy transfer.

d. What do you call the energy transfer for which the sole effect on everything external to the system could have been the raising of a weight? Work

e. What do you call the energy transfer which is induced only because of a temperature difference between a system and its surroundings? Heat

f. When a system undergoes a process, the terms work and heat do not refer to what is being transferred. Rather, energy is transferred when work and/or heat transfer occurs.

g. Calculate the specific volume of a system that comprises of a fluid with a mass of 1 kg inside   
a chamber with a fixed volume of 0.001 m3. Can you determine the type of fluid from this   
value?

This is the specific volume of water.

h. A metallic cylinder and piston arrangement contain 1 kg compressed gas at 20°C; the   
cylinder volume is 0.001 m3. How much work does the piston do on the environment?  
Explain briefly.

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