

## Chemical Engineering Thermodynamics Quiz Questions

1. What happens in a reversible adiabatic compression?
  - a. heating occurs
  - b. cooling occurs
  - c. pressure is constant
  - d. temperature is constant

Ans: A

2. Which of the following has the least thermal efficiency?
  - a. steam engine
  - b. carnot engine
  - c. diesel engine
  - d. otto engine

Ans: A

3. Generation of heat by friction is an example of a/an \_\_\_\_\_ change.
  - a. isothermal
  - b. irreversible
  - c. adiabatic
  - d. reversible

Ans: B

4. For a system in equilibrium, at a given temperature and pressure, the
  - a. entropy must be a minimum

- b. enthalpy must be in minimum
- c. internal energy must be a minimum
- d. gibb's free energy must be minimum

Ans: D

5. A Carnot cycle consists of the following steps
- a. two isothermals and two isentropics
  - b. two isobarics and two isothermals
  - c. two isochorics and two isobarics
  - d. two isothermals and two isochorics

Ans: A

6. The necessary and sufficient condition for equilibrium between two phases is
- a. the concentration of each component should be same in the two phases
  - b. the temperature of each phase should be same
  - c. the pressure should be same in the two phases
  - d. the chemical potential of each component should be same in the two phases

Ans: D

7. The first law of thermodynamics is a statement of conservation of
- a. heat
  - b. momentum
  - c. energy

d. work

Ans: C

8. For a multi component system, chemical potential is equivalent to

a. molal concentration difference

b. molar free energy of the pure compounds

c. partial molar free energy

d. change in molar free energy due to phase change

Anss: C

9. In an ideal gas mixture, the fugacity of a component in the mixture is equal to

a. mole fraction

b. total pressure

c. partial pressure

d. chemical potential

Ans: C

10. In a surface condenser used in a steam power station undercooling of condensate is undesirable as this would

a. not absorbs the gases in steam

b. reduce efficiency of the plant

c. increase the cooling water requirement

d. increases thermal stresses in the condenser

Ans: C

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