Unit 8 - Week 6 : Energy and Its Forms

Assignment 6

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

Due on 2020-03-11, 23:59 IST.

1) The first law of thermodynamics deals with — *1 point*

- conservation of momentum
- conservation of mass
- conservation of pressure
- conservation of energy

No, the answer is incorrect.
Score: 0
Accepted Answers:
conservation of energy

2) A liquid is pumped from a storage tank through a tube of 2.5 cm inner diameter at the rate of 0.005 m^3/s. What is the specific kinetic energy of the water? Assume the density of water 1000 kg/m^3. — *1 point*

- 67.32 J/kg
- 51.92 J/kg
- 49.56 J/kg
- 36.45 J/kg

No, the answer is incorrect.
Score: 0
Accepted Answers:
51.92 J/kg

3) The change in enthalpy can occur because of — *1 point*

- change in temperature
- change in moles
- change in specific heat
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

4) The entropy of the universe always — *1 point*

- increases
- decreases
- constant
- maximum

No, the answer is incorrect.
Score: 0
Accepted Answers:
increases

5) Enthalpy of the system is expressed as — *1 point*

- $H = U - PV$
- $H = U + PV$
- $H = PV - U$
- $H = U - TV$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$H = U + PV$

6) Enthalpy of ideal gas depends on — *1 point*

- pressure
- temperature
- volume
- density

No, the answer is incorrect.
Score: 0
Accepted Answers:
temperature

7) What is the heat required to raise the temperature of 5 mole gas from 50 °C to 80 °C. Specific heat depends on temperature and is defined as $C_p = a + bT$ where T is in °C. The value of parameters $a = 0.04$ and $b = 0.2 \times 10^{-5}$ — *1 point*

- 5.21 kJ
- 6.01 kJ
- 4.65 kJ
- 5.31 kJ

No, the answer is incorrect.
Score: 0
Accepted Answers:
6.01 kJ

8) For ideal gases the values of $C_p - C_v$ is where C_p and C_v are the specific heat capacity at constant pressure and constant volume — *1 point*

- 0
- R/3
- R
- 5

No, the answer is incorrect.
Score: 0
Accepted Answers:
R

9) A brine solution having C_p = 3.12 kJ/kg K flowing at 50 g/s is heated from 40 °C to 90 °C. What is the change in enthalpy of the brine solution? — *1 point*

- 8.9 kJ/s
- 6.5 kJ/s
- 7.8 kJ/s
- 4.6 kJ/s

No, the answer is incorrect.
Score: 0
Accepted Answers:
7.8 kJ/s

10) Latent heat of vaporization is defined as — *1 point*

- the heat required to raise the temperature by 1 °C
- the heat required to change the phase from solid to liquid at constant volume
- the heat required to change the phase (liquid-vapour) at a constant temperature
- the heat required to change the phase at variable temperature

No, the answer is incorrect.
Score: 0
Accepted Answers:
the heat required to change the phase (liquid-vapour) at a constant temperature

11) Internal energy is a function of — *1 point*

- $f(T,P)$
- $f(P,V)$
- $f(T,V)$
- $f(V,C_v)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
f (T,V)

12) C_p is the specific heat at constant — *1 point*

- temperature
- pressure
- volume
- entropy

No, the answer is incorrect.
Score: 0
Accepted Answers:
pressure

13) Latent heat of vaporization is the — *1 point*

- the heat required to melt solid
- heat required to vaporize solid
- heat required to vaporize liquid
- both (b) and (c)

No, the answer is incorrect.
Score: 0
Accepted Answers:
heat required to vaporize liquid

14) The heat of formation is expressed as — *1 point*
where, $\Delta\hat{H}_i$ is the enthalpies of the mixture components. C_p is the specific heat capacity

- $\Delta H^{\circ}_{f,j} = \Delta\hat{H}_i - \int_{T_1}^{T_2} C_v dT$
- $\Delta H^{\circ}_{f,j} = \Delta\hat{H}_i + \int_{T_1}^{T_2} C_v dT$
- $\Delta H^{\circ}_{f,j} = \Delta\hat{H}_i + \int_{T_{ref}}^{T} C_p dT$
- $\Delta H^{\circ}_{f,j} = \Delta\hat{H}_i - \int_{Tref}^{T} C_p dT$

No, the answer is incorrect.
Score: 0
Accepted Answers:

$$\Delta H^{\circ}_{f,j} = \Delta\hat{H}_i - \int_{Tref}^{T} C_p dT$$

15) Zeroth law of thermodynamics states that — *1 point*

- the energy of a universe is always constant
- the entropy of the system at absolute zero temperature is zero
- the energy always transfer from high to low temperature
- if two systems are in equilibrium with the third system than they are in thermal equilibrium with each other

No, the answer is incorrect.
Score: 0
Accepted Answers:
if two systems are in equilibrium with the third system than they are in thermal equilibrium with each other