



DPP SOLUTION

- **Subject – Physical Chemistry**
- **Chapter – Thermodynamics and Thermochemistry**

DPP No.- 03



By – Amit Mahajan Sir

Question-



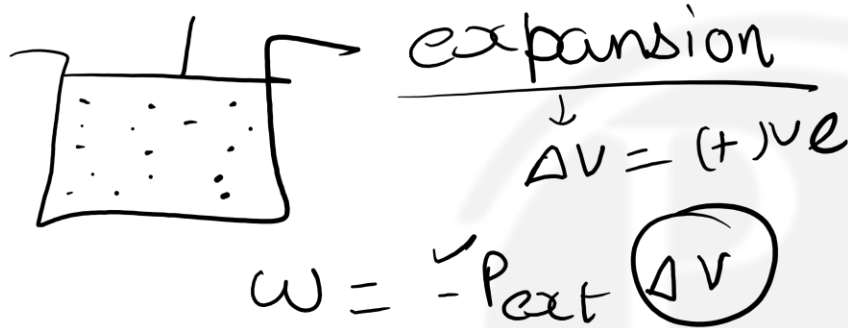
An ideal gas enclosed in a cylinder fitted with a frictionless and weightless piston, pushes it outside. What would be the sign convention for the work?

① Positive

☒ ② Negative

③ Zero

④ Cannot be predicted



Ans. (2)

Question-



In a constant volume process, internal energy change is equal to

~~1~~

Heat transferred

$$\Delta V = 0 \quad W = 0$$
$$\Delta U = q + \textcircled{W}$$

2

Work done

$$\underline{\Delta U} = \underline{q}$$

3

Zero

4

None of the mentioned

Ans. (1)

Question-



Which of the following is zero for an isochoric process?

① dP

~~② dV~~

$$\Delta V = 0$$
$$dV = 0$$

③ dT

④ dE



Ans. (2)

Question-



In an isochoric process the increase in internal energy is

$$\Delta V = 0$$

$$W = 0$$

$$\Delta U = q$$

- ☒ 1 Equal to the heat absorbed
- ☐ 2 Equal to the heat evolved
- ☐ 3 ~~Equal to the work done~~
- ☐ 4 ~~Equal to the sum of the heat absorbed and work done~~

Ans. (1)

Question-



The process, in which no heat enters or leaves the system, is termed as

① ~~X~~ Isochoric

② ~~X~~ Isobaric

③ ~~X~~ Isothermal

④ Adiabatic $q = 0$

Ans. (4)


Question-



Which of the following is true for an adiabatic process?

① $\Delta H = 0$

② $\Delta W = 0$

~~③ $\Delta Q = 0$~~ 

④ $\Delta V = 0$

Ans. (3)

Question-



The first law of thermodynamics is only

- ☒ 1 The law of conservation of energy
- ☐ 2 The law of conservation of mass
- ☐ 3 The law of conservation of momentum
- ☐ 4 Both (1) and (2)

Ans. (1)

Question-



The internal energy of a substance

$T \uparrow \Rightarrow U \uparrow$

- ☒ 1 Increases with increase in temperature
- ☐ 2 Decreases with increase in temperature
- ☐ 3 Remains constant
- ☐ 4 Calculated by $E = mc^2$

Ans. (1)

Question-



The process carried out in perfect insulation is

- ① Isothermal
- ② Isobaric
- ③ Isochoric
- ④ Adiabatic

Ans. (4)

Question-

During the adiabatic expansion of ideal gas, which is correct?

$q = 0$

- ① ~~Temperature increases~~
- ② ~~$q = 0$~~
- ③ ~~Temperature remains constant~~
- ④ ~~$\Delta E = 0$~~

Ans. (2)

Question-

For isothermal expansion of ideal gas which is correct?

$$\downarrow \Delta T = 0$$

① $\Delta H = 0$ $\Delta H = n C_{p,m} \Delta T = 0$

② $\Delta E = 0$ $\Delta U = n C_{v,m} \Delta T = 0$

③ $\Delta T = 0$

~~④ All~~

Question-



As per the First Law of thermodynamics, which of the following statement would be appropriate:

- ① ~~✗~~ Energy of the system remains constant
- ② ~~✗~~ Energy of the surroundings remains constant
- ③ ~~✗~~ Entropy of the universe remains constant
- ④ ~~✗~~ Energy of the universe remains constant

Ans. (4)

Question-



For a particular process $q = -10$ kJ and $w = +25$ kJ . Which of the following statements is true?

1 ☐ Heat flows from the surroundings to the system

2 ☐ The system does work on the surroundings

3 ☐ $\Delta E = -35$ kJ $\Delta U = q + w = -10 + 25 = +15$ kJ

4 ☒ None of the above is true



Thank

You...

