



Arjuna NEET (2024)

Thermodynamics

DPP-02

- Which of the following is not a state function?
(1) Pressure (2) Volume
(3) Temperature (4) Heat
- Both q and w are _____ function and $q + w$ is a _____ function:
(1) State, State (2) State, path
(3) Path, state (4) Path, path
- Internal energy is an example of
(1) Path function (2) State function
(3) Both (1) and (2) (4) None of these
- Which of the following is a state function and also an extensive property?
(1) Internal energy
(2) Pressure
(3) Molar heat capacity
(4) Temperature
- If 400 kJ work is done by the system and 150 kJ heat is given to system then what will be effect on internal energy?
(1) Increases by 250 kJ
(2) Decreases by 250 kJ
(3) Increases by 600 kJ
(4) Decreases by 600 kJ
- In Isobaric process
(1) Pressure is constant
(2) Temperature is constant
(3) No heat is exchanged
(4) Volume is constant
- For an adiabatic process which of the relations is correct
(1) $\Delta U = 0$
(2) $P\Delta V = 0$
(3) $q = 0$
(4) $q = + W$
- Under isothermal condition, a gas at 300 K expands from 0.1 L to 0.25 L against a constant external pressure of 2 bar. The work done by the gas is (Given that 1 L bar = 100 J)
(1) -30 J (2) 5 kJ
(3) 25 J (4) 30 J
- A gas is allowed to expand in a well insulated container against a constant external pressure of 2.5 atm from an initial volume of 2.50 L to a final volume of 4.50 L. The change in internal energy ΔU of the gas in joules will be:
(1) -500 J (2) -505 J
(3) +505 J (4) 1136.25 J
- A gas expands from 3.0 L to 3.5 L against an external pressure of 1 atm. Calculate the PV work done.
(1) -0.5 L-atm (2) -1 L-atm
(3) -100 J (4) -200 J
- When 1 mole of a gas is heated at constant volume, temperature is raised from 298 to 308 K. If heat supplied to the gas is 500 J then which statement is correct?
(1) $q = w = 500 \text{ J}, \Delta U = 0$
(2) $q = \Delta U = 500 \text{ J}, w = 0$
(3) $q = -w = 500 \text{ J}, \Delta U = 0$
(4) $\Delta U = 0, q = w = -500 \text{ J}$
- A system is provided 50 J of heat and work done on the system is 10 J. The change in internal energy during the process is
(1) 40 J (2) 60 J
(3) 80 J (4) 50 J
- The first law of thermodynamics is represented by the equation:
(1) $\Delta E = Q + W$ (2) $\Delta E = Q - W$
(3) $\Delta E = Q$ (4) $Q = W - \Delta E$



14. The net internal energy change in reversible cyclic process is:
- (1) $\frac{3}{2}RT$ (2) Zero
(3) Greater than zero (4) Less than zero
15. A system absorbs 600 J of heat and does work equivalent to 300 J on its surroundings. The change in internal energy is
- (1) 200 J (2) 300 J
(3) 400 J (4) 600 J
16. A piston filled with 0.04 mol of an ideal gas expands reversibly from 50.0 mL to 375 mL at a constant temperature of 37.0°C. As it does so, it absorbs 208 J of heat. The values of q and w for the process will be
($R = 8.314 \text{ J/mol K}$, $\ln 7.5 = 2.01$)
- (1) $q = +208 \text{ J}$, $w = +208 \text{ J}$
(2) $q = +208 \text{ J}$, $w = -208 \text{ J}$
(3) $q = -208 \text{ J}$, $w = -208 \text{ J}$
(4) $q = -208 \text{ J}$, $w = +208 \text{ J}$
17. Which of the following is correct option for free expansion of an ideal gas under adiabatic condition?
- (1) $q = 0$, $\Delta T < 0$, $w \neq 0$
(2) $q = 0$, $\Delta T \neq 0$, $w = 0$
(3) $q \neq 0$, $\Delta T = 0$, $w = 0$
(4) $q = 0$, $\Delta T = 0$, $w = 0$
18. Which one of the following equation does not correctly represent the first law of thermodynamics for the given process?
- (1) Isothermal process: $q = -w$
(2) Cyclic process: $q = -w$
(3) Isochoric process: $\Delta E = q$
(4) Adiabatic process: $\Delta E = -w$



Note: Kindly find the Video Solution of DPPs Questions in the DPPs Section.

Answer Key

1. (4)
2. (3)
3. (2)
4. (1)
5. (2)
6. (1)
7. (3)
8. (1)
9. (2)

10. (1)
11. (2)
12. (2)
13. (1)
14. (2)
15. (2)
16. (2)
17. (4)
18. (4)



PW Web/App - <https://smart.link/7wwosivoicgd4>

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