Date Planned : __ / __ / __	Daily Tutorial Sheet-1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-1	Exact Duration :_____

1. The work done during the expansion of a gas from a volume of $4dm^3$ to $6dm^3$ against a constant external pressure of 3 atm is:

(A) $-6\,J$ **(B)** $-608\,J$ **(C)** $+304\,J$ **(D)** $-304\,J$

2. In an adiabatic process :

(A) $p \cdot \Delta V = 0$ **(B)** $q = +W$ **(C)** $\Delta E = q$ **(D)** $q = 0$

3. In an isothermal process for ideal gas:

(A) $q = 0$ and $\Delta E = 0$ **(B)** $q \neq 0$ and $\Delta E = 0$

(C) $q = 0$ and $\Delta E \neq 0$ **(D)** $q \neq 0$ and $\Delta E \neq 0$

4. A gas can expand from 100 mL to 250 mL under a constant pressure of 2 atm. The work done by gas is :

(A) 30.38 J **(B)** 25 J **(C)** 5 kJ **(D)** 16 J

5. What is ΔE for system that does 500 cal of work on surrounding and 300 cal of heat is absorbed by the system ?

(A) $-200\,cal$ **(B)** -300 cal **(C)** $+200\,cal$ **(D)** $+300\,cal$

6. For the reaction $A \rightarrow B$; $\Delta H = +24\,kJ/mol$ and $B \rightarrow C$; $\Delta H = -18\,kJ/mol$,the decreasing order of enthalpy of A, B, C follows the order :

(A) A, B, C **(B)** B, C, A **(C)** C, B, A **(D)** C, A, B

7. The cooling in refrigerator is due to :

(A) Reaction of the refrigerator gas **(B)** Expansion of ice

(C) The expansion of the gas in the refrigerator **(D)** The work of the compressor

8. Heat required to raise the temperature of 1 mole of a substance by 1°C is called :

(A) Specific heat **(B)** Molar heat capacity

(C) Water equivalent **(D)** Specific gravity

9. An ideal gas expands in volume from $1 \times 10^{-3} m^3$ to $1 \times 10^{-2} m^3$ at 300 K against a constant pressure of $1 \times 10^5\,Nm^{-2}$. The work done is :

(A) $-900\,J$ **(B)** $-900\,kJ$ **(C)** $270\,kJ$ **(D)** $+900\,kJ$

10. Match the entries of Column-I with appropriate entries of Column-II and choose the correct option out of the four option (A), (B), (C) and (D).

Column-I		Column-II	
(a)	Isothermal	**(p)**	$\Delta T = 0$
(b)	Isobaric	**(q)**	$\Delta V = 0$
(c)	Adiabatic	**(r)**	$\Delta P = 0$
(d)	Isochoric	**(s)**	$q = 0$

Code:

	(a)	(b)	(c)	(d)		(a)	(b)	(c)	(d)
(A)	p	q	r	s	**(B)**	p	r	s	q
(C)	s	p	r	q	**(D)**	s	p	q	r

11. Which of the following is true for an adiabatic process ?

(A) $\Delta H = 0$ **(B)** $\Delta W = 0$ **(C)** $dq = 0$ **(D)** $\Delta V = 0$

12. Consider the reaction at 300 K

$$C_6H_6(\ell) + \frac{15}{2}O_2(g) \longrightarrow 6CO_2(g) + 3H_2O(\ell);\ \Delta H = -3271\,kJ$$

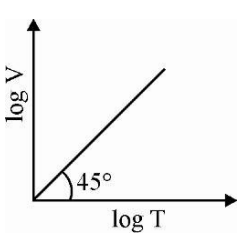
What is ΔU for the combustion of 1.5 mole of benzene at $27^\circ C$?

(A) –3267.25 kJ **(B)** –4900.88 kJ **(C)** –4906.5 kJ **(D)** –3274.75 kJ

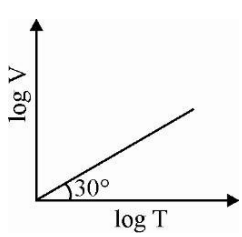
13. An ideal gas expand against a constant external pressure at 2.0 atmosphere from 20 litre to 40 litre and absorb 10 kJ of energy from surrounding. What is the change in internal energy of the system ?

(A) 4052 J **(B)** 5948 J **(C)** 14052 J **(D)** 9940 J

14. For a closed container containing n = 100 mole of an ideal gas fitted with movable, frictionless, weightless piston operating such that pressure of gas remains constant at 8.21 atm, which graph represents correct variation of log V and log T where V is in litre and T in kelvin.



(A)



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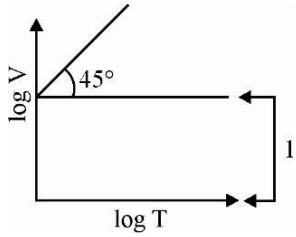
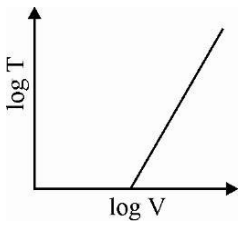


(C)



(D)

15. 10 mole of ideal gas expand isothermally and reversibly from a pressure of 10 atm to 1 atm at 300 K. What is the largest mass which can lifted through a height of 100 meter ?

(A) 31842 kg **(B)** 58.55 kg **(C)** 342.58 kg **(D)** None of these