Test Paper |JEE/NEET/ CBSE LEVEL 2/ Thermodynamics
TIME -1 HOUR/FULL MARKS-40/NEGATIVE MARKING 1/4

1   When a 60 W electric heater is immersed in a gas for 100s in a content volume container with adiabatic walls, the temperature of the gas rises by 5∘C. The heat capacity of the given gas is _____JK−1(Nearest integer)   **4**

2   When 2 litre of ideal gas expands isothermally into vacuum to a total volume of 6 litre, the change in internal energy is ...... J   **4**

3   One mole of an ideal gas is allowed to expand reversible and adiabatically from a temperatureof27∘C) if the work done during the process is3kJ,the final temperature will be equal to ($Cv=20JK^{-1}$)   **4**

4   An athlete is given 100 g of glucose ($C_6H_{12}O_6$) for energy. This is equivalent to 1800 KJ of energy. The 50% of this energy gained is utilized by the athlete for sports activities at the event . In order to avoid storage of energy, the weight of extra water he would need to perspire is _____g (Nearest integer) Assume that there is no other way of consuming stored energy Given: The enthalpy of evaporation of water is 45 KJ mol–1Molar mass of C, H & O are 12, 1 and 16 g mol–1   **4**

(d) the difference between the energy of the intermediate complex and the average energy of the reactants

5   One mole of an ideal monoatomic gas is subjected to changes as shown in the graph. The magnitude of the work done (by the system or on the system) is _____ J (nearest integer).   **4**

6   **4**
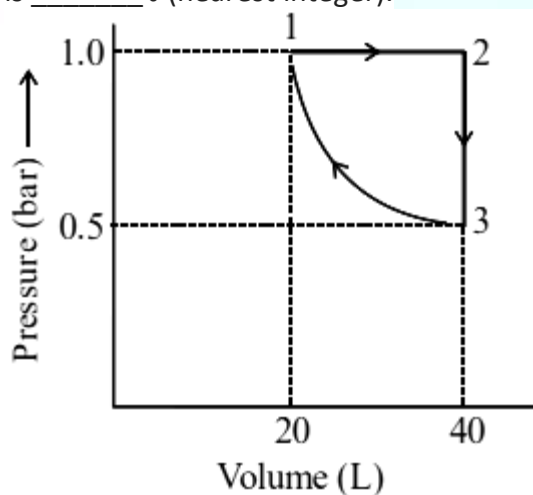
$2+B_2 \rightarrow 2AB$, $\Delta_fH^0 = -200$ kjmol^{-1}
AB, A_2 and B_2 are diatomic molecules .If the bond enthalpies of A2,B2 and AB are in the ratio 1:0.5:1 , then the bond enthalpy of A2 is ___kj mol^{-1}(Nearest integer)

7   30.4 kJ of heat is required to melt 1 mol of sodium chloride. The entropy changes during melting of 28.4 J mol^{-1}K^{-1}. Calculate the melting point of sodium chloride.   **4**

8   When 600 mL of 0.2 M HNO3 is mixed with 400 mL of 0.1M NaOH solution in a flask, the rise in temperature of the flask is _____ x 10-2 0C. (Enthalpy of neutralisation = 57 kJ mo1-1 and Specific heat of water = 4.2 JK-1 g-1) (Neglect heat capacity of flask)   **4**

9   Enthalpy of neutralization of HCl by NaOH is -55.84 kJ/mol and by NH4OH is 51.34 kJ/mol. The enthalpy of ionization of NH4OH is :   **4**

10   For a diatomic ideal gas in a closed system, which of the following plots does not correctly describe the relation between various thermodynamic quantities?   **4**