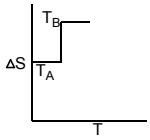
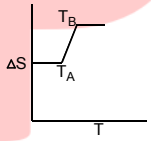
DPP
DAILY PRACTICE PROBLEMS

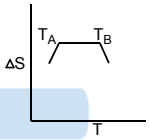
CLASS : XIth **SUBJECT : CHEMISTRY**
DATE : **DPP No. : 8**

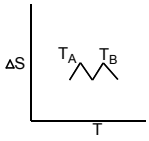
Topic :- THERMODYNAMICS

1. If heat of neutralisation is -13.7kcal and $H_f^0\ H_2O = -68$ kcal, then enthalpy of OH^- would be :
   a) 54.3 kcal b) -54.3 kcal c) 71.3 kcal d) -71.3 kcal
2. Work done in reversible isothermal process is given by:
   a) $2.303\ RT\log\frac{V_2}{V_1}$ b) $\frac{nR}{(\gamma-1)}(T_2-T_1)$ c) $2.303\ RT\log\frac{V_1}{V_2}$ d) None of these
3. Internal energy of an ideal gas depends on:
   a) Pressure b) Temperature c) Volume d) None of these
4. For a given substance, melting point T_B and freezing point is T_A, which of the following represents correct variation of $\Delta S\ vs\ T$?

   a) 

   b) 

   c) 

   d) 

5. Bond energies of (H—H), (O = O) and (O—H) are 105, 120 and 220 kcal/mol respectively, then ΔH in the reaction , $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$:
   a) -115 b) -130 c) -118 d) -550
6. The apparatus generally used for measuring heat changes is:
   a) Voltameter b) Voltmeter c) Calorimeter d) Coulometer
7. The enthalpy change for the process, $C(s) \longrightarrow C(g)$ is known as enthalpy of :
   a) Fusion b) Vaporisation c) Combustion d) Sublimation
8. Standard heat of formation of $CH_4(g)$, $CO_2(g)$ and water 25°C are -17.9, -94.1 and -68.3 kcal mol^{-1} respectively. Calculate the heat change (in kcal) in the following reaction at 25°C:
   $$CH_4(g) + 2O_2(g) = CO_2(g) + 2H_2O(l)$$
   a) -144.5 b) -180.3 c) -248.6 d) -212.8
9. Which is the best definition of heat of neutralization?
   a) The heat absorbed when one gram molecule of an acid is neutralized by one gram molecule of a base in dilute solution at a stated temperature b) The heat set free or absorbed when one gram atom of an acid is neutralized by one gram atom of a base at a stated temperature

c) The heat set free or absorbed when a normal solution containing one gram-equivalent of an acid neutralized by a normal solution containing one gram-equivalent of a base at a stated temperature

d) The heat set free when one gram-equivalent of an acid is neutralized by one gram-equivalent of a base in dilute solution at a stated temperature

10. Thermochemistry is the study of relationship between heat energy and :
    a) Chemical energy b) Activation energy c) Frictional energy d) None of these

11. Enthalpy change for the reaction, $4H(g) \rightarrow 2H_2(g)$ is – 869.6 kJ
The dissociation energy of H—H bond is :
    a) $+217.4$ kJ b) -434.8 kJ c) -869.6 kJ d) $+434.8$ kJ

12. Which of the following is true for an adiabatic process?
    a) $\Delta H = 0$ b) $\Delta W = 0$ c) $\Delta q = 0$ d) $\Delta V = 0$

13. Which of the following is an intensive property?
    a) Volume b) Enthalpy c) Surface tension d) Free energy

14. $C_6H_{12}(l) + 9O_2(g) = 6H_2O(l) + 6CO_2(g)$; $\Delta H_{298K} = -936.9$ kcal. Thus :
    a) $-936.9 = \Delta U - (2 \times 10^{-3} \times 298 \times 3)$ kcal
    b) $+936.9 = \Delta U + (2 \times 10^{-3} \times 298 \times 3)$ kcal
    c) $-936.9 = \Delta U - (2 \times 10^{-3} \times 298 \times 2)$ kcal
    d) $-936.9 = \Delta U + (2 \times 10^{-3} \times 298 \times 2)$ kcal

15. The work done by a weightless piston in causing an expansion ΔV (at constant temperature), when the opposing pressure, P is variable, is given by:
    a) $W = -\int P\Delta V$ b) $W = 0$ c) $W = -P\Delta V$ d) None of these

16. If a gas has 2 atm and 5 atm pressure at 30°C and 27°C respectively. Then it will
    a) Cool on expansion b) Warm on expansion
    c) No change on expansion d) None of these

17. Two moles of helium gas expanded isothermally and irreversible at 27°C from volume 1 dm^3 to 1 m^3 at constant pressure of 100 k Pa. Calculate the work done.
    a) 99900 kJ b) 99900 J c) 34464.65 kJ d) 34464.65 J

18. The efficiency of heat engine is maximum when:
    a) Temperature of source $>$ temperature of sink
    b) Temperature of sink $>$ temperature of source
    c) Temperature difference of source and sink is minimum
    d) Temperature difference of source and sink is maximum

19. Which one of the following has $\Delta S°$ greater than zero?
    a) $CaO + CO_2(g) \rightleftharpoons CaCO_3(s)$ b) $NaCl(aq) \rightleftharpoons NaCl(s)$
    c) $NaNO_3(s) \rightleftharpoons Na^+(aq) + NO_3^-(aq)$ d) $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

20. A spontaneous change is one in which the system suffers
    a) A lowering of entropy b) No energy change

c) An increase in internal energy

d) A lowering of free energy