DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : CHEMISTRY**
DATE : **DPP No. : 9**

Topic :- THERMODYNAMICS

1. Which of the following are not state functions?
(I) $q + w$ (II) q
(III) w (IV) $H - TS$
a) (II),(III) and (IV) b) (I),(II) and (III) c) (II) and (III) d) (I) and (IV)
2. An isolated system is that system in which:
a) There is no exchange of energy with the surroundings
b) There is exchange of mass and energy with the surroundings
c) There is no exchange of mass and energy with the surroundings
d) There is exchange of mass with the surroundings
3. Thermodynamics is concerned with:
a) Total energy of a system
b) Energy changes in a system
c) Rate of chemical change
d) Mass changes in nuclear reactions
4. Which of the reactions defines $\Delta H^{\circ}f$?
a) $C_{(diamond)} + O_2(g) \rightarrow CO_2(g)$
b) $\frac{1}{2}H_2(g) + \frac{1}{2}F_2(g) \rightarrow HF(g)$
c) $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$
d) $CO(g) + \frac{1}{2}O_2(g) \rightarrow CO_2(g)$
5. A process is taking place at constant temperature and pressure. Then
a) $\Delta H = \Delta E$ b) $\Delta H = T\Delta S$ c) $\Delta H = 0$ d) $\Delta S = 0$
6. An isothermal process is associated with:
a) Constant entropy
b) Constant temperature
c) Constant enthalpy
d) Large change in heat content
7. $C(s) + O_2(g) \rightarrow CO_2(g)$; $\Delta H = -94$ kcal
$2CO(g) + O_2 \rightarrow 2CO_2(g)$; $\Delta H = -135.2$ kcal
The heat of formation of $CO(g)$ is
a) -26.4 kcal b) 41.2 kcal c) 26.4 kcal d) 229.2 kcal

8. $C_{\text{graphite}} + O_2(g) \rightarrow CO_2(g)$;

$\Delta H = -94.05$ kcal mol^{-1}

$C_{\text{diamond}} + O_2(g) \rightarrow CO_2(g)$;

$\Delta H = -94.05$ kcal mol^{-1} therfore :

a) $C_{\text{diamond}} \rightarrow C_{\text{graphite}}$; $\Delta H^{\circ}_{298K} = +450$ cal mol^{-1}

b) $C_{\text{graphite}} \rightarrow C_{\text{diamond}}$; $\Delta H^{\circ}_{298K} = -450$ cal mol^{-1}

c) Diamond is harder than graphite

d) Graphite is the stabler allotrope

9. Enthalpy change for a reaction does not depend upon

a) The physical states of reactants and products

b) Use of different reactants for the same products

c) The nature of intermediate reaction steps

d) The differences in initial and final temperature of involved substances

10. Which of the following is correct option for free expansion of an ideal gas under adiabatic condition?

a) $q = 0, \Delta T < 0, w \neq 0$ b) $q = 0, \Delta T \neq 0, w = 0$ c) $q \neq 0, \Delta T = 0, w = 0$ d) $q = 0, \Delta T = 0, w = 0$

11. For a reaction at 25°C enthalpy change (ΔH) and entropy change (ΔS) are -11.7×10^3 J mol^{-1} and -105 J $mol^{-1}K^{-1}$ respectively. The reaction is:

a) Spontaneous b) Non-spontaneous c) Instantaneous d) None of these

12. Which of the following is a path function?

a) Internal energy b) Enthalpy c) Work d) Entropy

13. The work done by a system is 8 J, when 40 J heat is supplied to it. The change in internal energy of the system during the process is:

a) 32 J b) 40 J c) 36 J d) 44 J

14. Heat of reaction at constant volume is equal to :

a) $\Sigma U_P - \Sigma U_R$ b) $\Sigma U_R - \Sigma U_P$ c) $\Sigma H_P - \Sigma H_R$ d) $\Sigma H_R - \Sigma H_P$

15. Boiling point of a liquid is 50 K at 1 atm and $\Delta H_{\text{vap.}} = 460.6$ cal mol^{-1}. What will be its b.p. at 10 atm?

a) 150 K b) 75 K c) 100 K d) 200 K

16. The change in the enthalpy during the reaction, $NaOH + HCl \rightarrow NaCl + H_2O$, is called :

a) Heat of reaction b) Heat of neutralization c) Heat of formation d) Heat of liquefaction

17. The heat of combustion of rhombic and monoclinic sulphur are 70.96 and 71.03 kcal. The heat of transition of $S_{R \rightarrow M}$ is:

a) 70.96 kcal b) 71.03 kcal c) -70 cal d) $+70$ cal

18. Hess law is applicable for the determination of heat of

a) Reaction b) Formation c) Transition d) All of these

19. A heat engine absorbs heat Q_1 at temperature T_1 and heat Q_2 at temperature T_2, work done by the engine is $(Q_1 + Q_2)$ this data

a) Violates 1st law of thermodynamics
b) Violates 1st law of thermodynamics if a_1 is –ve
c) Violates 1st law of thermodynamics if a_2 is $-$ ve
d) Does not violates 1st law of thermodynamics

20. In which of the following condition a chemical reaction can not occur?
a) ΔH and ΔS increase and $T\Delta S > \Delta H$
b) ΔH and ΔS decrease and $\Delta H > T\Delta S$
c) ΔH increase and ΔS decreases
d) ΔH decreases and ΔS increases