DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth　　　　　　　　　　　　　　　　**SUBJECT : CHEMISTRY**
DATE :　　　　　　　　　　　　　　　　　　　**DPP No. :　6**

Topic :- THERMODYNAMICS

1. Hess's law is related to:
   a) Change in heat during a reaction
   b) Rates of reaction
   c) Equilibrium constant
   d) Influence of pressure on volume of a gas

2. Heat of dissociation of benzene of elements is 5335 kJ/mol. The bond enthalpies of

   $$-C-C-\ ;C=C \text{ and } -C-H$$

   bonds are 347.3, 615 and 416.2 kJ respectively. Resonance energy of benzene is
   a) 1.15 kJ　　　　　b) 15.1 kJ　　　　　c) 937.2 kJ　　　　　d) 1511 kJ

3. 2 mole of ideal gas at 27°C temperature is expanded reversibly from 2 litre to 20 litre. Find entropy change ($R = 2$ cal/mol K).
   a) 92.1　　　　　b) 0　　　　　c) 4　　　　　d) 9.2

4. Work done by the system on surroundings is:
   a) Positive　　　　　b) Negative　　　　　c) Zero　　　　　d) None of these

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. Which fuel provides the highest calorific value?
   a) Charcoal　　　　　b) Kerosene　　　　　c) Wood　　　　　d) Dung

7. The value of ΔE for combustion of 16 g of CH_4 is -885389 J at 298 K. The ΔH combustion for CH_4 in J mol^{-1} at this temperature will be
   (Given that, $R = 8.314$ JK^{-1} mol^{-1})
   a) -55337　　　　　b) -880430　　　　　c) -885389　　　　　d) -890348

8. Human body is an example of
   a) Open system　　　　　b) Closed system　　　　　c) Isolated system　　　　　d) None of these

9. A hypothetical reaction $A{\rightarrow}2B$, proceeds through following sequence of steps
   (i) $A{\rightarrow}C; \Delta H = q$　　　　　(ii) $C{\rightarrow}D; \Delta H = v$
   (iii) $\frac{1}{2}D{\rightarrow}B; \Delta H = x$

Then the heat of reaction i

a) $q - v + 2x$ b) $q + v - 2x$ c) $q + v + 2x$ d) $q + 2v - 2x$

10. The entropy of crystalline substances at absolute zero by the third law of thermodynamics should be taken as

a) 100   b) 50

c) Zero   d) Different for different substance

11. Identify the state quantity among the following:

a) q b) $q - W$ c) $q + W$ d) q/W

12. For the following two reactions,

(i) $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O$

$\Delta H = -890.4$ kJ

(ii) $2HgO(s) \rightarrow 2Hg(l) + O_2(g) - 181.6$ kJ

Which one of the following statements is correct?

a) Both of them are exothermic

b) Both of them are endothermic

c) (i) is exothermic and (ii) is endothermic

d) (i) is endothermic and (ii) is exothermic

13. From the following data, the heat of formation of $Ca(OH)_2(s)$ at 18°C is .....kcal:

$CaO(s) + H_2O(l) = Ca(OH)_2(s)$;

$\quad \Delta H = -15.26$ kcal....(i)

$H_2O(l) = H_2(g) + \frac{1}{2}O_2(g)$;

$\quad \Delta H = 68.37$ kcal......(ii)

$Ca(s) + \frac{1}{2}O_2(g) = CaO(s)$;

$\quad \Delta H = -151.80$ kcal......(iii)

a) -98.69

b) -235.43

c) 194.91

d) 98.69

14. If $\frac{1}{2}X_2O(s) \rightarrow X(s) + \frac{1}{4}O_2(g)$; $\Delta H = 90$ kJ, then heat change during reaction of metal 'X' with one more of O_2 to form oxide to maximum extent is :

a) 360 KJ   b) -360 KJ   c) -180 KJ   d) $+180$ KJ

15. Decrease in Gibbs energy of a reacting system indicates to:

a) Exothermic reaction   b) Equilibrium reaction   c) Spontaneous reaction   d) Slow reaction

16. $S + \frac{3}{2}O_2 \rightarrow SO_3 + 2x$ kcal;

$SO_2 + \frac{1}{2}O_2 \rightarrow SO_3 + y$ kcal;

The heat of formation of SO_2 is :

a) $y - 2x$ b) $(2x + y)$ c) $(x + y)$ d) $2x/y$

17. The standard molar heat of formation of ethane, CO_2 and water (l) are respectively $-21.1 - 94.1$ and -68.3 kcal. The standard molar heat of combustion of ethane will be
    a) -372 kcal
    b) 162 kcal
    c) -240 kcal
    d) 183.5 kcal
18. Among them intensive property is
    a) Mass
    b) Volume
    c) Surface tension
    d) Enthalpy
19. Equal volume of C_2H_2 and H_2 are combusted under identical condition. The ratio of their heat of combustion is :

    $H_2(g) + \frac{1}{2}O_2(g) \rightarrow H_2O(g);\ \ \Delta H = -241.8$ kJ

    $C_2H_2(g) + 2\frac{1}{2}O_2(g) \rightarrow 2CO_2(g) + H_2O(g);$
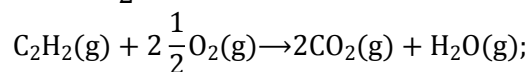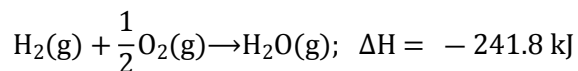
    $$\Delta H = -1300 \text{ kJ}$$

    a) 5.37/1
    b) 1/5.37
    c) 1/1
    d) None of these
20. 1 litre − atmosphere is equal to:
    a) 101.3 J
    b) 24.206 cal
    c) 101.3×10^7 erg
    d) All of these