

## DPP

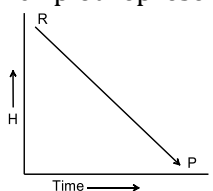
DAILY PRACTICE PROBLEMS

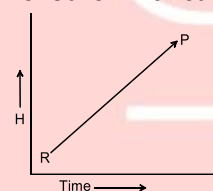
CLASS : XI<sup>th</sup>  
DATE :

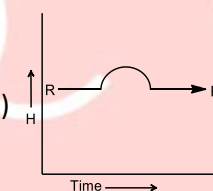
SUBJECT : CHEMISTRY  
DPP No. : 2

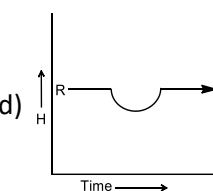
### Topic :- THERMODYNAMICS

- The enthalpy of formation of water from hydrogen and oxygen is  $-286 \text{ kJ mol}^{-1}$ . The enthalpy of decomposition of water into hydrogen and oxygen is:
  - $-286 \text{ kJ mol}^{-1}$
  - $-143 \text{ kJ mol}^{-1}$
  - $+286 \text{ kJ mol}^{-1}$
  - $+143 \text{ kJ mol}^{-1}$
- An ideal gas is allowed to expand both reversibly and irreversibly in an isolated system. If  $T_i$  is the initial temperature and  $T_f$  is the final temperature, which of the following statements is correct?
  - $(T_f)_{\text{irrev}} > (T_f)_{\text{rev}}$
  - $T_f > T_i$  for reversible process but  $T_f = T_i$  for irreversible process
  - $(T_f)_{\text{rev}} = (T_f)_{\text{irrev}}$
  - $T_f = T_i$  for both reversible and irreversible processes
- Heat of fusion of a molecular solid is :
  - Very high
  - High
  - Low
  - None of these
- Which plot represents for an exothermic reaction?
 

a) 

b) 

c) 

d) 
- For a spontaneous chemical change the Gibbs energy change is:
  - Positive
  - Negative
  - Zero
  - Depends whether the reaction is exothermic or endothermic
- An ideal gas undergoing expansion in vacuum shows:
  - $\Delta U = 0$
  - $W = 0$
  - $q = 0$
  - All of these
- Select the incorrect statement
  - $PV$  work is usually negligible for solid and liquid
  - For a closed system with  $P - V$  work only, an isobaric process that has  $q = +ve$  must have  $\Delta T = +ve$ .
  - For a cyclic process  $q = 0$
  - Black phosphorus is most stable form of  $P$  but  $H^\circ_f = 0$  for white phosphorus.
- Entropy decreases during:
  - Crystallization of sucrose from solution
  - Rusting of iron
  - Melting of ice
  - Vaporization of camphor
- At  $27^\circ\text{C}$  latent heat of fusion of a compound is  $2930 \text{ J/mol}$ . Entropy change during fusion is:
  - $9.77 \text{ J/mol K}$
  - $10.77 \text{ J/mol K}$
  - $9.07 \text{ J/mol K}$
  - $0.977 \text{ J/mol K}$



10. The values of  $\Delta H$  and  $\Delta S$  for the reaction.  
 $C_{(\text{graphite})} + \text{CO}_2(\text{g}) \rightarrow 2\text{CO}(\text{g})$   
Are 170 kJ and  $170 \text{ JK}^{-1}$  respectively. this reaction will be spontaneous at:  
a) 510 K                                      b) 710 K                                      c) 910 K                                      d) 1110 K
11. The temperature of 5 mL of a strong acid increases by  $5^\circ\text{C}$  when 5 mL of strong base is added to it. If 10 mL of each is mixed and complete neutralisation takes place then rise in temperature will be  
a)  $20^\circ\text{C}$                                       b)  $10^\circ\text{C}$                                       c)  $5^\circ\text{C}$                                       d)  $2^\circ\text{C}$
12. When an ideal gas is compressed adiabatically and reversibly, the final temperature is:  
a) Higher than the initial temperature  
b) Lower than the initial temperature  
c) The same as the initial temperature  
d) Dependent on the rate of compression
13. In a closed insulated container, a liquid is stirred with a paddle to increase its temperature. In this process, which of the following is true  
a)  $\Delta E = W \neq 0, Q = 0$                                       b)  $\Delta E \neq 0, Q = W = 0$   
c)  $\Delta E = W = Q = 0$                                       d)  $\Delta E = 0, Q \neq 0, W = 0$
14. If the bond dissociation energies of  $XY, X_2$  and  $Y_2$  (all diatomic molecules) are in the ratio of 1: 1: 05 and  $\Delta H$  for the formation of  $XY$  is  $-200 \text{ kJ mol}^{-1}$ . The bond dissociation energy of  $X_2$  will be  
a)  $100 \text{ kJ mol}^{-1}$                                       b)  $800 \text{ kJ mol}^{-1}$                                       c)  $300 \text{ kJ mol}^{-1}$                                       d)  $400 \text{ kJ mol}^{-1}$
15. The dissociation energy of  $\text{CH}_4$  and  $\text{C}_2\text{H}_6$  are respectively 360 and 620 kcal/mol. The bond energy of C – C bond is:  
a) 260 kcal/mol                                      b) 180 kcal/mol                                      c) 130 kcal/mol                                      d) 80 kcal/mol
16. In a calorimeter, the temperature of the calorimeter increases by 6.12 K, the heat capacity of the system is 1.23 kJ/g deg. What is the molar heat of decomposition for  $\text{NH}_4\text{NO}_3$ ?  
a)  $-7.53 \text{ kJ/mol}$                                       b)  $-398.1 \text{ kJ/mol}$                                       c)  $-16.1 \text{ kJ/mol}$                                       d)  $-602 \text{ kJ/mol}$
17. The bond energies of  $\text{F}_2, \text{Cl}_2, \text{Br}_2$  and  $\text{I}_2$  are 155.4, 243.6, 193.2 and  $151.2 \text{ kJ mol}^{-1}$  respectively. The strongest bond is :  
a) F – F                                      b) Cl – Cl                                      c) Br – Br                                      d) I – I
18. The enthalpy changes of formation of the gaseous oxides of nitrogen ( $\text{N}_2\text{O}$  and  $\text{NO}$ ) are positive because of:  
a) The high bond energy of the nitrogen molecule  
b) The high electron affinity of oxygen atoms  
c) The high electron affinity of nitrogen atoms  
d) The tendency of oxygen to form  $\text{O}^{2-}$
19. If 900 J/g of heat is exchanged at boiling point of water then increase in entropy  
a)  $43.4 \text{ J/mol}$                                       b)  $87.2 \text{ J/mol}$                                       c)  $900 \text{ J/mol}$                                       d) Zero
20. A reaction occurs spontaneously if:  
a)  $T\Delta S = \Delta H$  and both  $\Delta H$  and  $\Delta S$  are positive  
b)  $T\Delta S > \Delta H$  and both  $\Delta H$  and  $\Delta S$  are positive  
c)  $T\Delta S < \Delta H$  and both  $\Delta H$  and  $\Delta S$  are positive  
d)  $T\Delta S > \Delta H$  and  $\Delta H$  is positive and  $\Delta S$  are negative