Yakeen NEET 2.0 2026

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Thermodynamics & Thermochemistry

DPP: 5

Q1 The heat of combustion of ethanol determined in a bomb calorimeter is -670.48 K. Cals mole^{-1} at 25°C.
What is ΔH at 25°C for the reaction:
(A) -335.24 K. Cals.
(B) -671.08 K. Cals.
(C) -670.48 K Cals.
(D) $+670.48$ K. Cals.

Q2 From the reaction $\text{P}(\text{ White }) \rightarrow \text{P}(\text{ Red })$; $\Delta\text{H} = -18.4\text{KJ}$. It follows that:-
(A) Red P is readily formed from white P
(B) White P is readily formed from red P
(C) White P can not be converted to red P
(D) White P can be converted into red P and red P is more stable

Q3 Since the enthalpy of the elements in their standard states is taken to be zero. The heat of formation $(\Delta\text{H}_\text{f})$ of compounds:
(A) Is always negative
(B) Is always positive
(C) Is zero
(D) May be positive or negative

Q4 Which of the following equations represents standard heat of formation of CH_4?
(A) $\text{C}_{(\text{diamond})} + 2\text{H}_2(\text{ g}) \rightarrow \text{CH}_4(\text{ g})$
(B) $\text{C}_{(\text{graphite})} + 2\text{H}_2(\text{ g}) \rightarrow \text{CH}_4(\text{ g})$
(C) $\text{C}_{(\text{diamond})} + 4\text{H}_2(\text{ g}) \rightarrow \text{CH}_4(\text{ g})$
(D) $\text{C}_{(\text{graphite})} + 4\text{H}_2(\text{ g}) \rightarrow \text{CH}_4(\text{ g})$

Q5 Given enthalpy of formation of $\text{CO}_2(\text{ g})$ and CaO(s) are -94.0kJ and -152kJ respectively and the enthalpy of the reaction: $\text{CaCO}_3(\text{ s}) \rightarrow \text{CaO(s)} + \text{CO}_2(\text{ g})$ is 42kJ. The enthalpy of formation of $\text{CaCO}_3(\text{ s})$ is:
(A) -42kJ
(B) -202kJ
(C) $+202\text{kJ}$
(D) -288kJ

Q6 The enthalpies of combustion of carbon and carbon monoxide are -393.5KJ and -283KJ, respectively the enthalpy of formation of carbon monoxide is
(A) -676.5KJ
(B) -110.5KJ
(C) 110.5KJ
(D) 676.5KJ

Q7 The heat of combustion of $\text{CH}_{4(\text{ g})}$, $\text{C}_{(\text{s})}$ and $\text{H}_{2(\text{ g})}$ at 25°C are -212.4 Kcal, -94.0 Kcal and -68.4 Kcal respectively, the heat of formation of CH_4 will be-
(A) $+54.4$ Kcal
(B) -18.4 Kcal
(C) -375.2 Kcal
(D) $+212.8$ Kcal

Q8 Standard enthalpy of formation is zero for
(A) $\text{C}_{\text{diamond}}$
(B) Br(g)
(C) C_{graphite}
(D) $\text{O}_{3(\text{g})}$

Q9 Heat of formation of CO_2 is -94.0 K. cal. What would be the quantity of heat liberated, when 3 g of graphite is burnt in excess of oxygen:-
(A) 23.5 K cals
(B) 2.35 K cals
(C) 94.0 K cals
(D) 31.3 K cals

Q10 The heat of neutralization of HCl by NaOH is -55.9 kJ/mol. If the heat of neutralization of

HCN by $NaOH$ is $-12.1\ kJ/mol$. The energy of dissociation of HCN is
(A) $-43.8\ kJ$
(B) $43.8\ kJ$
(C) $68\ kJ$
(D) $-68\ kJ$

Q11 Heat evolved in the reaction $H_2 + Cl_2 \rightarrow 2HCl$ is 182KJ. Bond energies of $H-H$ and $Cl-Cl$ are 430 and $242 KJ/mol$ respectively. The $H-Cl$ bond energy is:
(A) $245 KJ mol^{-1}$
(B) $427 KJ mol^{-1}$
(C) $336 KJ mol^{-1}$
(D) $154 KJ mol^{-1}$

Q12 Heat of dissociation of benzene to elements is $5535\ kJ\ mol^{-1}$. The bond enthalpies of $C-C, C=C$ and $C-H$ are 347.3, 615.0 and $416.2\ kJ\ mol^{-1}$ respectively. Resonance energy of benzene is
(A) $1.51\ kJ\ mol^{-1}$
(B) $15.1\ kJ\ mol^{-1}$
(C) $151\ kJ\ mol^{-1}$
(D) $1511\ kJ\ mol^{-1}$

Q13 If $S + O_2 \rightarrow SO_2; \Delta H = -298.2\ kJ\ mol^{-1}$

$$SO_2 + \frac{1}{2}O_2 \rightarrow SO_3; \Delta H = -98.7\ kJ\ mol^{-1}$$

$$SO_3 + H_2O \rightarrow H_2SO_4; \Delta H = -130.2\ kJ\ mol^{-1}$$

$$H_2 + \frac{1}{2}O_2 \rightarrow H_2O; \Delta H = -287.3\ kJ\ mol^{-1}$$

Then the enthalpy of formation of H_2SO_4 at $298\ K$ will be-
(A) $-814.4\ kJ\ mol - 1$
(B) $-650.3\ kJ\ mol^{-1}$
(C) $-320.5\ kJ\ mol^{-1}$
(D) $-433.5\ kJ\ mol^{-1}$

Q14 If the bond energies of $H-H$, $Br-Br$ and $H-Br$ are 433,192 and $364\ kJ\ mol^{-1}$ respectively, then ΔH° for the reaction $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$ is
(A) $-261\ kJ$
(B) $+103\ kJ$
(C) $+261\ kJ$
(D) $-103\ kJ$

Q15 The absolute enthalpy of neutralisation of the reaction, $MgO(s) + 2HCl(aq) \rightarrow MgCl_2(aq)$ will be $+ H_2O(l)$
(A) Less than $-57.33\ kJ\ mol^{-1}$
(B) $-57.33\ kJ\ mol^{-1}$
(C) Greater than $-57.33\ kJ\ mol^{-1}$
(D) $57.33\ kJ\ mol^{-1}$

Answer Key

Q1	(B)
Q2	(D)
Q3	(D)
Q4	(B)
Q5	(D)
Q6	(B)
Q7	(B)
Q8	(C)
Q9	(A)
Q10	(B)
Q11	(B)
Q12	(C)
Q13	(A)
Q14	(D)
Q15	(A)