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NEET THERMODYNAMICS — HESS'S LAW OF CONSTANT HEAT SUMMATION — PYQS

Max. Marks: 28 **Questions:** 7

Section A (MCQ) — 7 questions

Q.1 The standard heat of formation, in kcal/mol of Ba^{2+} is : [Given : standard heat of formation of SO_4^{2-} ion (aq) = −216 kcal/mol, standard heat of crystallisation of $BaSO_4(s)$ = −4.5 kcal/mol, standard heat of formation of $BaSO_4(s)$ = −349 kcal/mol] [NEET (UG) 2025]

(1) +133.0 (2) +220.5 (3) −128.5 (4) −133.0

Scan or tap for the full solution

Q.2 Three thermochemical equations are given below

(i) $C_{(graphite)} + O_{2(g)} \longrightarrow CO_{2(g)}$; $\Delta_r H° = x$ kJ mol^{-1}

(ii) $C_{(graphite)} + \frac{1}{2}O_{2(g)} \longrightarrow CO_{(g)}$; $\Delta_r H° = y$ kJ mol^{-1}

(iii) $CO_{(g)} + \frac{1}{2}O_{2(g)} \longrightarrow CO_{2(g)}$; $\Delta_r H° = z$ kJ mol^{-1}

Based on the above equations, find out which of the relationship given below is correct. [NEET 2013 (Karnataka)]

(1) z = x + y (2) x = y + z

(3) y = 2z − x (4) x = y − z

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Q.3 Consider the following processes :

	ΔH (kJ/mol)
$\frac{1}{2}A \longrightarrow B$	+150
$3B \longrightarrow 2C + D$	−125
$E + A \longrightarrow 2D$	+350

For $B + D \longrightarrow E + 2C$, ΔH will be [AIPMT 2011 (Mains)]

(1) 525 kJ/mol (2) −175 kJ/mol

(3) −325 kJ/mol (4) 325 kJ/mol

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Q.4 The following two reactions are known

$Fe_2O_{3(s)} + 3CO_{(g)} \longrightarrow 2Fe_{(s)} + 3CO_{2(g)}$; ΔH = −26.8 kJ

$FeO_{(s)} + CO_{(g)} \longrightarrow Fe_{(s)} + CO_{2(g)}$; ΔH = −16.5 kJ

The value of ΔH for the following reaction

$Fe_2O_{3(s)} + CO_{(g)} \longrightarrow 2FeO_{(s)} + CO_{2(g)}$ is [AIPMT 2010 (Mains)]

(1) +10.3 kJ (2) −43.3 kJ (3) −10.3 kJ (4) +6.2 kJ

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Q.5 Heat of combustion ΔH^o for $C_{(s)}$, $H_{2(g)}$ and $CH_{4(g)}$ are −94, −68 and −213 kcal/mol, then ΔH^o for $C_{(s)} + 2H_{2(g)} \longrightarrow CH_{4(g)}$ is [AIPMT 2002]

(1) −17 kcal (2) −111 kcal

(3) −170 kcal (4) −85 kcal

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Q.6 Enthalpy of $CH_4 + \frac{1}{2}O_2 \longrightarrow CH_3OH$ is negative. If enthalpy of combustion of CH_4 and CH_3OH are x and y respectively. Then which relation is correct? [AIPMT 2001]

(1) x > y (2) x < y (3) x = y (4) x ≥ y

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Q.7 $2Zn + O_2 \longrightarrow 2ZnO$; ΔG° = −616 J

$2Zn + S_2 \longrightarrow 2ZnS$; ΔG° = −293 J

$S_2 + 2O_2 \longrightarrow 2SO_2$; ΔG° = −408 J

ΔG° for the following reaction

$2ZnS + 3O_2 \longrightarrow 2ZnO + 2SO_2$ is [AIPMT 2000]

(1) −731 J (2) −1317 J (3) −501 J (4) +731 J

Scan or tap for the full solution

ANSWER KEY

Ques.	1	2	3	4	5	6	7				
Ans.	3	2	2	4	1	2	1				