

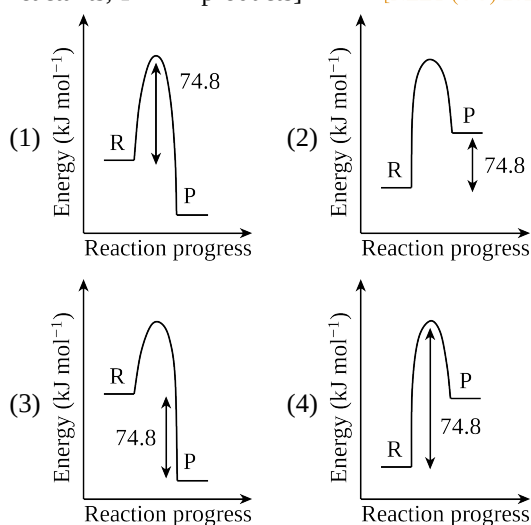
NEET THERMODYNAMICS — ENTHALPY CHANGE OF A REACTION, ENTHALPY OF FORMATION, COMBUSTION, ATOMISATION AND BOND ENTHALPY — PYQS

Max. Marks: 52

Questions: 13

Section A (MCQ) — 13 questions

- Q.1** $\text{C(s)} + 2\text{H}_2(\text{g}) \longrightarrow \text{CH}_4(\text{g}); \Delta H = -74.8 \text{ kJ mol}^{-1}$. Which of the following diagrams gives an accurate representation of the above reaction? [R $\longrightarrow$ reactants; P $\longrightarrow$ products] [NEET (UG) 2025]



Scan or tap for the full solution 

- Q.2** The bond dissociation energies of X_2 , Y_2 and XY are in the ratio of 1 : 0.5 : 1. ΔH for the formation of XY is -200 kJ mol^{-1} . The bond dissociation energy of X_2 will be [NEET 2018]
- (1) 800 kJ mol^{-1} (2) 200 kJ mol^{-1}
 (3) 400 kJ mol^{-1} (4) 100 kJ mol^{-1}

Scan or tap for the full solution 

- Q.3** The heat of combustion of carbon to CO_2 is -393.5 kJ/mol . The heat released upon formation of 35.2 g of CO_2 from carbon and oxygen gas is [AIPMT 2015]
- (1) $+315 \text{ kJ}$ (2) -630 kJ (3) -3.15 kJ (4) -315 kJ

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- Q.4** When 5 litres of a gas mixture of methane and propane is perfectly combusted at 0°C and 1 atmosphere, 16 litres of oxygen at the same temperature and pressure is consumed. The amount of heat released from this combustion in kJ ($\Delta H_{\text{comb.}}(\text{CH}_4) = 890 \text{ kJ mol}^{-1}$, $\Delta H_{\text{comb.}}(\text{C}_3\text{H}_8) = 2220 \text{ kJ mol}^{-1}$) is [NEET 2013 (Karnataka)]
- (1) 38 (2) 317 (3) 477 (4) 32

Scan or tap for the full solution 

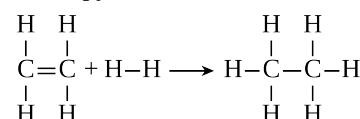
- Q.5** Enthalpy change for the reaction, $4\text{H(g)} \longrightarrow 2\text{H}_2(\text{g})$ is -869.6 kJ . The dissociation energy of H-H bond is [AIPMT 2011 (Prelims)]

- (1) -434.8 kJ (2) -869.6 kJ
 (3) $+434.8 \text{ kJ}$ (4) $+217.4 \text{ kJ}$

Scan or tap for the full solution 

- Q.6** From the following bond energies :
 H-H bond energy : $431.37 \text{ kJ mol}^{-1}$
 C=C bond energy : $606.10 \text{ kJ mol}^{-1}$
 C-C bond energy : $336.49 \text{ kJ mol}^{-1}$
 C-H bond energy : $410.50 \text{ kJ mol}^{-1}$

Enthalpy for the reaction,



will be

[AIPMT 2009]

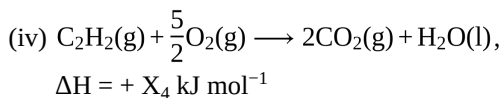
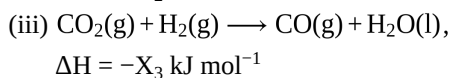
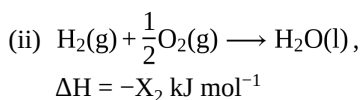
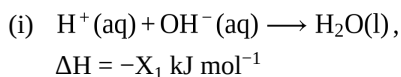
- (1) $-243.6 \text{ kJ mol}^{-1}$ (2) $-120.0 \text{ kJ mol}^{-1}$
 (3) $553.0 \text{ kJ mol}^{-1}$ (4) $1523.6 \text{ kJ mol}^{-1}$

Scan or tap for the full solution 

- Q.7** Bond dissociation enthalpies of H_2 , Cl_2 and HCl are 434, 242 and 431 kJ mol^{-1} respectively. Enthalpy of formation of HCl is [AIPMT 2008]
- (1) -93 kJ mol^{-1} (2) 245 kJ mol^{-1}
 (3) 93 kJ mol^{-1} (4) -245 kJ mol^{-1}

Scan or tap for the full solution 

- Q.8** Consider the following reactions:



Enthalpy of formation of $\text{H}_2\text{O}(\text{l})$ is [AIPMT 2007]

- (1) $+X_3 \text{ kJ mol}^{-1}$ (2) $-X_4 \text{ kJ mol}^{-1}$
 (3) $+X_1 \text{ kJ mol}^{-1}$ (4) $-X_2 \text{ kJ mol}^{-1}$

Scan or tap for the full solution



Q.9 Given that bond energies of H–H and Cl–Cl are 430 kJ mol^{-1} and 240 kJ mol^{-1} respectively and ΔH_f for HCl is -90 kJ mol^{-1} , bond enthalpy of HCl is

[AIPMT 2007]

- (1) 380 kJ mol^{-1} (2) 425 kJ mol^{-1}
 (3) 245 kJ mol^{-1} (4) 290 kJ mol^{-1}

Scan or tap for the full solution



Q.10 The enthalpy of hydrogenation of cyclohexene is $-119.5 \text{ kJ mol}^{-1}$. If resonance energy of benzene is $-150.4 \text{ kJ mol}^{-1}$, its enthalpy of hydrogenation would be

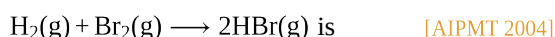
[AIPMT 2006]

- (1) $-358.5 \text{ kJ mol}^{-1}$ (2) $-508.9 \text{ kJ mol}^{-1}$
 (3) $-208.1 \text{ kJ mol}^{-1}$ (4) $-269.9 \text{ kJ mol}^{-1}$

Scan or tap for the full solution



Q.11 If the bond energies of H–H, Br–Br, and H–Br are 433, 192 and 364 kJ mol^{-1} respectively, the ΔH° for the reaction



- (1) -261 kJ (2) $+103 \text{ kJ}$ (3) $+261 \text{ kJ}$ (4) -103 kJ

Scan or tap for the full solution



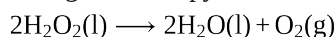
Q.12 For which one of the following equations is $\Delta H^\circ_{\text{react}}$ equal to ΔH°_f for the product? [AIPMT 2003]

- (1) $\text{Xe}(\text{g}) + 2\text{F}_2(\text{g}) \longrightarrow \text{XeF}_4(\text{g})$
 (2) $2\text{CO}(\text{g}) + \text{O}_2(\text{g}) \longrightarrow 2\text{CO}_2(\text{g})$
 (3) $\text{N}_2(\text{g}) + \text{O}_3(\text{g}) \longrightarrow \text{N}_2\text{O}_3(\text{g})$
 (4) $\text{CH}_4(\text{g}) + 2\text{Cl}_2(\text{g}) \longrightarrow \text{CH}_2\text{Cl}_2(\text{l}) + 2\text{HCl}(\text{g})$

Scan or tap for the full solution



Q.13 Change in enthalpy for reaction,



if heat of formation of $\text{H}_2\text{O}_2(\text{l})$ and $\text{H}_2\text{O}(\text{l})$ are -188 and -286 kJ/mol respectively, is [AIPMT 2001]

(1) -196 kJ/mol

(2) $+196 \text{ kJ/mol}$

(3) $+948 \text{ kJ/mol}$

(4) -948 kJ/mol

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	1	4	2	3	2	1	4	2	3	4
Ques.	12	13									
Ans.	1	1									