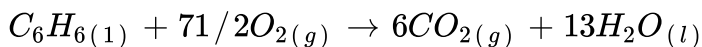# CHEMISTRY

NCERT - NCERT CHEMISTRY (GUJRATI)

THERMODYNAMICS - I

Example

1. From the following data at constant volume for combustion of benzene, calculate the heat of this reaction at constant pressure condition.

$$C_6H_{6(1)} + 71/2O_{2(g)} \rightarrow 6CO_{2(g)} + 13H_2O_{(l)}$$

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2. Calculate the enthalpy of combustion of ethylene at 300K at constant pressure if its enthalpy of combustion at constant volume is $-1406 \text{ kJ mol}^{-1}$.

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3. (a) The measured heats of neutralization of acetic acid, formic acid, hydrocyanic acid, and hydrogen sulphide are 13.20, 13.40, 2.90 and 3.80 KCal per g.equiv. respectively. Arrange these acids in a decreasing order of strength.

(b) Heat of neutralization of formic acid by NH_4OH is 11.9 KCal per g.equiv. What is the heat of ionization of NH_4OH?

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Questions A Choose The Correct Answer

1. Which of the following is not a state functions?

A. q

B. $q + w$

C. ΔH

D. $V + PV$

Answer:

2. Which of the following is an extensive property?

A. volume

B. density

C. refractive index

D. molar volume

Answer:

3. Which of the following is an exothermic reaction?

    A. melting of ice

    B. combustion reactions

    C. hydrolysis

    D. boiling of water

Answer:

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4. Which of the following is reversible process?

    A. Diffusion

    B. melting

    C. neutralization

D. combustion

Answer:

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5. In which process, work is maximum?

A. reversible

B. irreversible

C. exothermic

D. cyclic

Answer:

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Questions B Fill In The Blanks

1. Translational energy of molecules is a part of _____energy of the system.

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2. Specific heat of a liquid system is _____property.

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3. Work done in the reversible expansion is

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4. Combustion is an_____ process.

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5. Heat of neutralisation of a strong acid is ____ than that of a weak acid.

6. Name the equipment using which heat of combustion of compounds are determined?

7. Energy can be created and be destroyed. State whether this is true or false.

8. Define zeroth law of thermodynamics.

9. Give the relation between ΔU and ΔH.

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Questions Miscellaneous

1. Calculate the enthalpy of combustion of acetic (1) when burnt in excess of O_2 in a bomb calorimeter. Given that $\Delta H_f^\circ, H_2O_{(l)} = -285.84$ KJ mol^{-1} and $\Delta_f H^\circ, CO_{2(g)} = -393.52$ K .

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2. Heat of neutralisation of a weak acid HA by $NaOH$ is -12.13 kJ mol^{-1}. Calculate the enthalpy of ionization of HA. The Heat of neutralisation of a strong acid with strong base is -54.9 kJ mol^{-1}

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3. ΔH for the reaction at 298 K $CO(g) + 1/2O_2(g)$ is $282.85 KJmol^{-1}$.

Calculate ΔU of the reaction.