

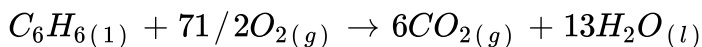
CHEMISTRY

NCERT - FULL MARKS CHEMISTRY(TAMIL)

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.



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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 statement ?

A. q

B. $q + w$

C. ΔH

D. $V + PV$

Answer:

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2. Which one of the following is not an extensive property ?

A. volume

B. density

C. refractive index

D. molar volume

Answer:

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3. Which of the following is not an endothermic reaction?

- A. melting of ice
- B. combustion reactions
- C. hydrolysis
- D. boiling of water

Answer:



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4. Which of the following process is reversible ?

- 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.

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

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

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8. State Zeroth law of thermodynamic .

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9. Give the relation between ΔU and ΔH .

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10. Define an adiabatic process.

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11. Write the differences between an exothermic and an endothermic process.

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12. What are intensive and extensive properties?

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13. Define first law of thermodynamics.

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14. Explain thermal and mechanical equilibrium processes.

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Questions D Explain Briefly On The Following

1. Describe a bomb calorimeter and explain how heat of formation of an organic compound is determined.

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2. Compare the enthalpy changes that occur between the neutralisation of a strong acid and a weak acid by sodium hydroxide. Explain the

differences seen.

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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 $\Delta H_f^\circ, H_2O(l) = -285.84 \text{ KJ mol}^{-1}$ and $\Delta_f H^\circ, CO_2(g) = -393.52 \text{ KJ mol}^{-1}$.

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2. Heat of neutralisation of a strong acid is ___ than that of a weak acid.

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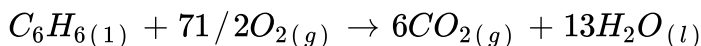
3. ΔH for the reaction at 298 K $CO(g) + 1/2O_2(g)$ is $282.85 \text{ kJ mol}^{-1}$.

Calculate ΔU of the reaction.

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Question

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Answer:



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5. Which of the following is reversible process?

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- B. melting
- C. neutralization
- D. combustion

Answer:



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6. In which process, work is maximum?

- A. reversible

B. irreversible

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Answer:



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19. Define first law of thermodynamics.

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20. Explain thermal and mechanical equilibrium processes.

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21. Describe a bomb calorimeter and explain how heat of formation of an organic compound is determined.

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22. Compare the enthalpy changes that occur between the neutralisation of a strong acid and a weak acid by sodium hydroxide. Explain the differences seen.

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

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24. Heat of neutralisation of a weak acid HA by $NaOH$ is $-12.13 \text{ kJ mol}^{-1}$. Calculate the enthalpy of ionization of HA.

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

Calculate ΔU of the reaction.



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