



CHEMISTRY

BOOKS - SAI CHEMISTRY (TELUGU ENGLISH)

THERMODYNAMICS

Mcqs

1. Which of one following is applicable is applicable for an adiabatic expansion of an ideal gas?

A. $\Delta E=0$

B. $\Delta W - \Delta E$

C. $\Delta W = - \Delta E$

D. $\Delta W=0$

Answer: C



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2. Which of the one following is not a state function ?

A. Internal energy

B. Work

C. Entropy

D. Free energy

Answer: B



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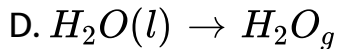
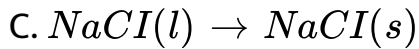
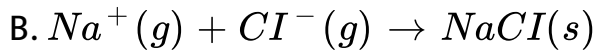
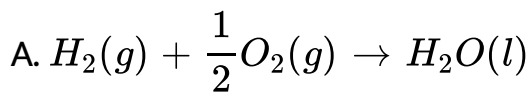
3. The temperature of K at which $\Delta G = 0$ for a given reaction with $\Delta H = -20.5 \text{ kJ mol}^{-1}$ and $\Delta S = -50.0 \text{ JK}^{-1} \text{ mol}^{-1}$

- A. -410
- B. 410
- C. 2.44
- D. -2.44

Answer: B

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4. For which one of the following reactions, the entropy changes is positive ?



Answer: D



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5. Molar heat capacity (C_p) of water of constant pressure is $75JK^{-1}mol^{-1}$. The increase in temperature (in K) of 100g of water when 1 kJ of heat is supplied to it is

A. 2.4

B. 0.24

C. 1.3

D. 0.13

Answer: A

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6. Which of the following is true for an exothermic reaction $A \rightleftharpoons B$ if E_f and E_b are the activation energies of forward and backward reactions respectively?

A. $E_f > E_b$

B. $E_f = E_b$

C. $E_f = -E_b$

D. $E_f < E_b$

Answer: D



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7. What is the entropy change in JK^{-1} during the melting of 27.3 g ice at $0^{\circ}C$? (Latent heat of fusion of ice $= 330Jg^{-1}$)

A. 330

B. 12.1

C. 3.3

D. 33

Answer: D



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8. A system is provided with 50 J of heat and the work done on the system is 10J .What is the change in internal energy of the system in joules ?

A. 60

B. 40

C. 50

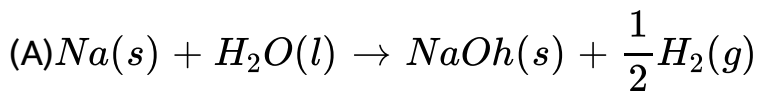
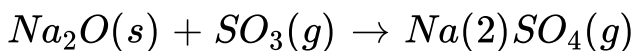
D. 10

Answer: D

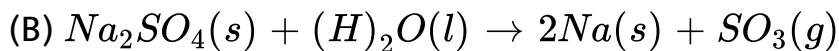


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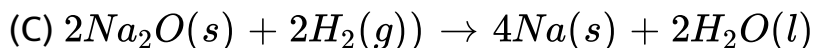
9. Calculate H° for the reaction ,



$$\Delta H^\circ = -146kJ$$



$$\Delta H^\circ = +418kJ$$



$$\Delta H^\circ = +259kJ$$

A. $+832kJ$

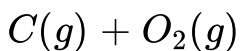
B. $-581kJ$

C. $-431kJ$

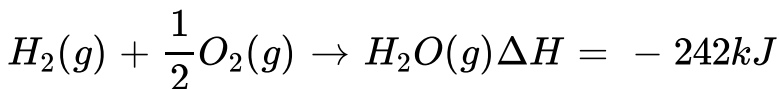
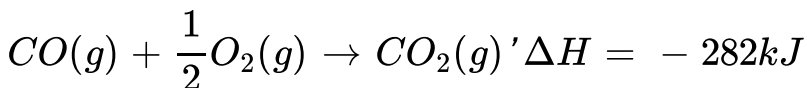
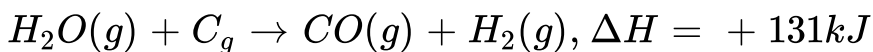
D. $+531kJ$

Answer: B

10. Calculate ΔH in kJ for the following reaction



Given that ,



A. - 393

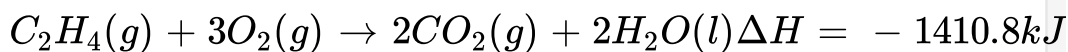
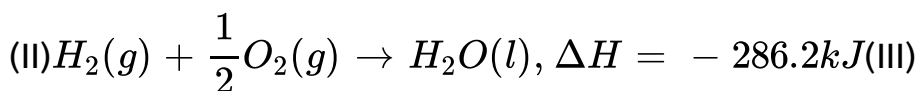
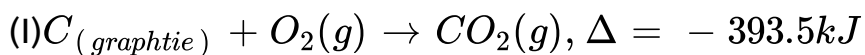
B. + 393

C. + 655

D. - 655

Answer: A

11. Calculate enthalpy for formation of ethylene from the following data



A. 54.1 kJ

B. 44.8 kJ

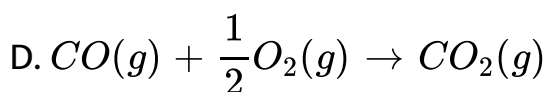
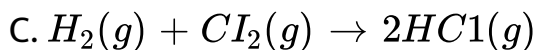
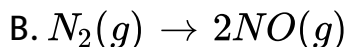
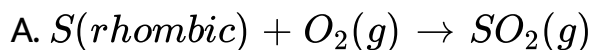
C. 51.4 kJ

D. 48.4 kJ

Answer: C



12. Identify the reaction for which $\Delta H = \Delta E$.



Answer: D

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13. Which of the following is not true is not correct?

A. Dissolution of NH_4Cl in excess of water is an endothermic process

B. Neturalisation process is always exothermic

C. The absoltute value of enthaloy (H) can be detemine experimentally

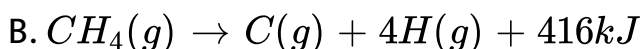
D. The heat of reaction at constant volume is denote by ΔE .

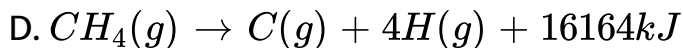
Answer: C



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14. Average C-H bond enery is 416kJmol^{-1} Which of the following is correct?

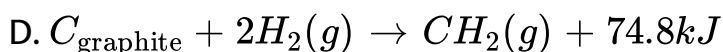
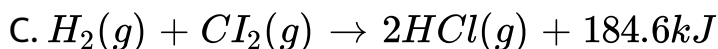
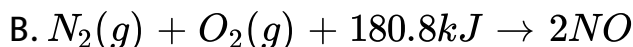
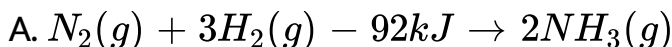




Answer: C

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15. Which of the following is an endothermic reaction?



Answer: B





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16. When 10g of methane is completely burnt in oxygen the heat evolved is 560kJ. What is the heat of combustion (in kJ mol^{-1} of methane ?

A. – 1120

B. – 968

C. – 896

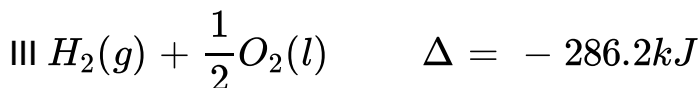
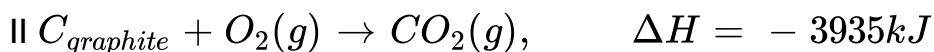
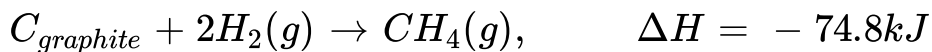
D. – 560

Answer: C



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17. Calculate the heat of combustion (in kJ) of the methane from the following data.(I)



A. - 891.1

B. 816.3

C. - 965.9

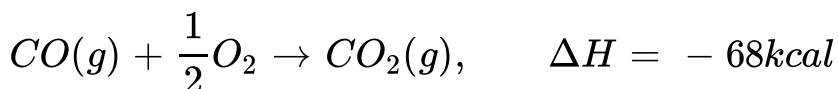
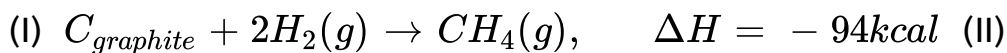
D. - 1040.7

Answer: A



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18. Calculate the heat of formation (ΔH) of CO from the following data.



A. -1.3

B. -26

C. -162

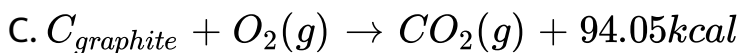
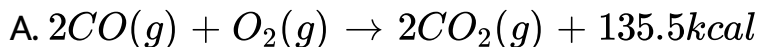
D. -82

Answer: B



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19. In which of the following reactions heat liberated is known as standard heat of formation of CO_2 ?



Answer: C

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20. The heat of combustion of CH_4 , C(graphite) and $H_2(g)$ are respectively 20 kcal and -40 kcal, -10 kcal. The heat of formation of CH_4 is

A. 40kcal

B. + kcal

C. 80 kcal

D. - 70kcal

Answer: D



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21. In the complete combustion of butanol $C_4H_9OH(l)$ if ΔH is enthalpy of combustion at constant pressure and ΔE is the heat of combustion at constant volume, then

A. $\Delta H > \Delta E$

B. $\Delta H = \Delta E$

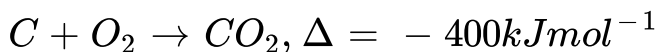
C. $\Delta H < \Delta E$

D. ΔH , ΔE relation cannot be predicted

Answer: A

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22. Consider the following reactions:



The heat of formation of methane is

A. -180 kJ mol^{-1}

B. $-1060 \text{ kJ mol}^{-1}$

C. -720kJmol^{-1}

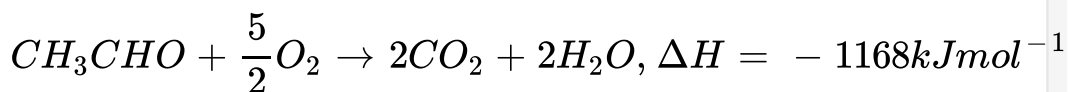
D. -80kJmol^{-1}

Answer: D

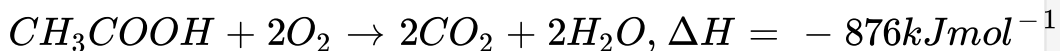
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23. Given that ,

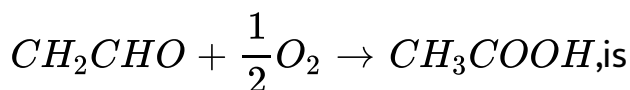
(i)



(ii)



ΔH for the reaction ,



A. 29^2kJmol^{-1}

B. 378kJmol^{-1}

C. 195kJmol^{-1}

D. 2044kJmol^{-1}

Answer: A



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24. The reaction which proceeds with evolution of heat is called

A. Endothermic reaction

B. Exothermic reaction

C. Spontaneous reaction

D. Non-spontaneous reaction

Answer: B

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25. Given that bond energies of N=N, H-H and N-H bonds are 945, 436 and 391 kJ/mol respectively, the enthalpy of the reaction $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$, is

A. -93kJ

B. 102kJ

C. 90kJ

D. 105kJ

Answer: A

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26. For an ideal gas, the relation between the enthalpy change and internal energy change at constant temperature is given by

A. $H = E + PV$

B. $\Delta H = \Delta E + \Delta nRT$

C. $\Delta H = \Delta E + P\Delta V$

D. $\Delta H = \Delta G + T\Delta S$

Answer: C



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27. At constant temperature and pressure if $\Delta G < 0$, the process is called

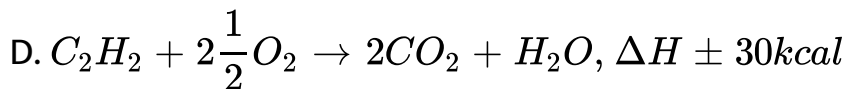
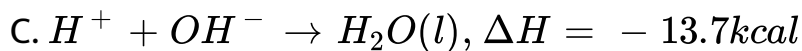
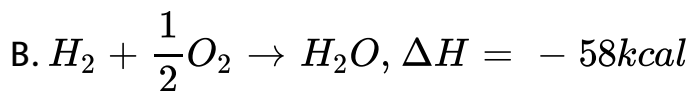
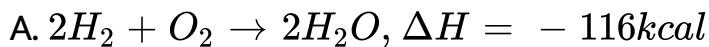
- A. Isothermal
- B. Non spontaneous
- C. Spontaneous
- D. Isobaric

Answer: C



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28. In which one of the following reactions does the heat change represent the heat of formation of water?



Answer: B



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