SEAT NUMBER - | | | | | | |

Dnyansagar Coaching Classes, A'nagar

Std. - XII	UNIT TEST	Time - 1 hrs
Sub- Chemistry-I	(Chemical-thermodynamics)	Max Marks - 20

Note :- *i) All questions are compulsory*
ii) Give balanced equation & Draw neat and labelled diagram whenever necessary.

Q.1. Select and write the most appropriate answer from given alternatives in each sub question. **(04)**

1) The heat of formation of an element is ..

a) infinite b) zero c) 100 kcal d) 200 kcal

2) A system, which can exchange mass as well as energy with its surroundings is called as

a) isolated system b) open system c) closed system d) inert system

3) In a cyclic process, work is always

a) zero b) maximum c) minimum d) not equal to zero

4) A process which proceeds infinitesimally slowly is called :

a) irreversible b) reversible c) isothermal d) adiabatic

Q 2. Attempt any FOUR of the following : **(08)**

i) Distinguish between isothermal and adiabatic process.

ii) Obtain relation between ΔH and ΔE in as isochoric process.

iii) Derive Mathematical expression for enthalpy change.

iv) Explain $C_p - C_v = R$.

v) Prove that internal energy is a state function.

Q.3 A) Answer any ONE of the following. **(4)**

i) Obtain an expression for the maximum work is obtained in an isothermal reversible process.

ii) Whatis first law of thermodynamics ? Deducethe mathematical expression of the first law of themodynamics for the following processes.a) isothermal process b) isochoric process

B) Attempt any TWO the following. **(04)**

i) Calculate the difference in molar heat capacities for the following reaction.
$2CO_{(g)} + O_{2(g)} = 2CO_{2(g)}$
Given that ΔH at 298 K and 2000K are -565.98 kJ and -557.17 kJ respectively.

ii) Calculate the workdone, when 2-moles of an ideal gas are compressed at 300k from $5dm^3$ to $500cm^3$ against a constant press of 3.2×10^5 NM^{-2} (1 Joule = 0.239 cal).

iii) Calculate the work done when 2.2×10^{-2} kg of CO_2 at 300k are compressed isothermally and reversibly till the pressure is doubled. ($R = 8.314$ JK^{-1} mol^{-1})

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