Additional Problems For Self Practice (APSP)

PART - I : PRACTICE TEST PAPER

JEE(Main) Pattern Practice paper (30 SCQ, 1 hr, 120 Marks).

This Section is not meant for classroom discussion. It is being given to promote self-study and self testing amongst the Resonance students.

Max. Marks : 120

Max. Time : 1 Hr.

Important Instructions

- 1. The test is of 1 hour duration.
- 2. The Test Booklet consists of **30** questions. The maximum marks are **120**.

(2) 39.5 kJ/mol

- 3. Each question is allotted 4 (four) marks for correct response.
- **4.** Candidates will be awarded marks as stated above in Instructions No. 3 for correct response of each question.

¹⁄₄ (one fourth) marks will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.

5. There is only one correct response for each question. Filling up more than one response in any question will be treated as wrong response and marks for wrong response will be deducted accordingly as per instructions 4 above.

Max.	Marks : 120			Max.	Time : 1 Hr.			
1.	Among them intensiv		[AFMC 2004]					
	(1) Mass	(2) Volume	(3*) Surface tension	(4) Enthalpy				
2.	Which of the following	g is true for an adiabatic p	process :					
	(1) ΔH = 0	(2) $\Delta W = 0$	$(3^*) \Delta Q = 0$	(4) $\Delta V = 0$				
3.	Which of the following		[DCE 2002]					
	(1) ΔS	(2) ΔG	(3) ΔH	(4*) ΔQ				
4.	The relation between	The relation between ΔU and ΔH is :						
	(1) $\Delta H = \Delta U - P \Delta V$	(2*) ΔH = ΔU + ΡΔV	(3) $\Delta U = \Delta V + \Delta H$	(4) ΔU = ΔH +	ΡΔV			
5.	The work done in erg to 20 litres at 25⁰C is	eal gas from a vo	olume of 10 litres					
	(1) 2.303 × 298 × 0.082 log 2		(2*) 298 × 10 ⁷ × 8.31 × 2.303 log 2					
	(3) 2.303 × 298 × 0.0	82 log 0.5	(4) 8.31 × 10 ⁷ × 298 –	2.303 log 0.5				
6.	A coffee cup calorimonitrate (NH4NO3), als	eter initially contains 125 o at 24.2ºC, is added to t monium nitrate in k.l/mol	s 125 g of water, at a temperature of 24.2°C. 8g of ammoniued to the water, and the final temperature is 18.2° C. what is the solution is $4.2 \cdot \frac{1}{2}$ c.					

(3) 32.2 kJ/mol

(4) 37.3 kJ/mol

(1*) 33.51 kJ/mol

7. The molar heat capacities at constant pressure (assumed constant with respect to temperature) at A,B and C are in ratio of 3 : 1.5 : 2.0 The enthalpy change for the exothermic reaction A + 2B — \rightarrow 3C at 300 K and 310 K is Δ H₃₀₀ and Δ H₃₁₀ respectively then :

(1) $\Delta H_{300} > \Delta H_{310}$	(2) $\Delta H_{300} < \Delta H_{310}$
$(3^*) \Delta H_{300} = \Delta H_{310}$	(4) if $T_2 > T_1$ then $\Delta H_{310} > \Delta H_{300}$ and if $T_2 < T_1$ then $\Delta H_{310} < \Delta H_{300}$

8. Heat of combustion of ethanol at constant pressure and at temperature T K (= 298 K) is found to be – q J mol⁻¹. Hence, heat of combustion (in J mol⁻¹) of ethanol at the same temperature at constant volume will be:

 $(1^*) RT - q$ (2) -(q + RT) (3) q - RT (4) q + RT

When 1.0 g of oxalic acid (H₂C₂O₄) is burned in a bomb calorimeter whose heat capacity is 8.75 kJ/K, the temperature increases by 0.312 K. The enthalpy of combustion of oxalic acid at 27°C is :
 (1) -245.7 kJ/mol
 (2) -244.452 kJ/mol
 (3*) -246.947 kJ/mol
 (4) None of these

10. Benzene burns according to the following equation at 300 K (R = 8.314 J mole⁻¹K⁻¹) $2C_6H_6(\ell) + 15 O_2(g) \rightarrow 12 CO_2(g) + 6H_2O(\ell) \quad \Delta H^\circ = -6542 \text{ KJ}$

What is the ΔE° for the combustion of 1.5 mol of benzene

(1) –3271 kJ (2) –9813 kJ (3) –4906.5 kJ (4*) None of these

11. Ethyl chloride(C_2H_5CI), is prepared by reaction of ethylene with hydrogen chloride :

 $C_2H_4(g) + HCI(g) \rightarrow C_2H_5CI(g)$ $\Delta H = -72.3 \text{ kJ/mol.}$

What is the value of ΔE (in kJ), if 98 g of ethylene and 109.5 g of HCl are allowed to react at 300 K.

(1) - 64.81 (2) - 190.71 $(3^*) - 209.41$ (4) - 224.38

12. Which statement regarding entropy is correct ?

(1) A completely ordered deck of cards has more entropy than a shuffled deck in which cards are arranged randomly.

(2) A perfect ordered crystal of solid nitrous oxide has more entropy than a disordered crystal in which the molecules are oriented randomly.

 (3^*) 1 mole N₂ gas at STP has more entropy than 1 mole N₂ gas at 273 K in a volume of 11.2 litre.

(4) 1 mole N_2 gas at STP has more entropy than 1 mole N_2 gas at 273 K and 0.25 atm.

13. One mole of solid Zn is placed in excess of dilute H₂SO₄ at 27^oC in a cylinder fitted with a piston. Find the work done for the process if the area of piston is 500 cm² and it moves out by 50 cm against a pressure of 1 atm during the reaction.

 $Zn(s) + 2H^{+}(aq) = Zn^{2+}(aq) + H_{2}(g)$ (1) - 1.53 KJ (2*) - 2.53 KJ (3) Zero (4) 2.53 KJ

14. The enthalpy change for the reaction of 50 mL of ethylene with 50.0 mL of H₂ at 1.5 atm pressure is $\Delta H = -0.31$ KJ. What is the ΔE ?

 $(1^*) - 0.3024$ (2) - 0.6048 (3) - 0.1.2 (4) None

CHEMISTRY FOR JEE

15. When 1 mole of ice melt at 0°C and at constant pressure of 1 atm. 1440 calories of heat are absorbed by the system. The molar volumes of ice and water are 0.0196 and 0.0180 litre respectively. Calculate ΔH and ΔE for the reaction.

(1) $\Delta H = 720$ Joule (2*) $\Delta H = 1440$ cal (3) $\Delta H = 1.4$ Kcal (4) $\Delta H = 0$

16. One mole of ideal monoatomic gas is carried through the reversible cyclic process as shown in figure. Calculate net heat absorbed by the gas in the path BC.



17. 130 g of Zn is dissolved in dilute sulphuric acid in an open beaker. Find the work done in the process assuming isothermal operation .

```
(1^*) - 1200 cal (2) - 1800 cal (3) + 1800 cal (4) + 1200 cal
```

18. The enthalpy of combustion of propane (C₃H₈) gas in terms of given data is :

Bond energy (kJ/mol)

EC--H EO=O EC=O EO--H EC--C +X₁ +X₂ +X₃ +X₄ +X₅

Resonance energy of CO₂ is - zkJ/mol and $\Delta H_{vaporization}$ [H₂O()] is ykJ/mol.

 $\begin{array}{ll} (1^{*}) \ 8x_{1} + 2x_{5} + 5x_{2} - 6x_{3} - 8x_{4} - 4y - 3z \\ (3) \ 8x_{1} + 2x_{5} + 5x_{2} - 6x_{3} - 8x_{4} - y - z \\ \end{array} \qquad \begin{array}{ll} (2) \ 6x_{1} + x_{5} + 5x_{2} - 3x_{3} - 4x_{4} - 4y - 3z \\ (4) \ 8x_{1} + x_{5} + 5x_{2} - 6x_{3} - 8x_{4} - 4y + 3z \\ \end{array}$

19. If x₁, x₂ and x₃ are enthalpies of H–H, O=O and O–H bonds respectively, and x₄ is the enthalpy of vaporisation of water, estimate the standard enthalpy of combustion of hydrogen.

(1) $x_1 + \frac{x_2}{2} - 2x_3 + x_4$ (2*) $x_1 + \frac{x_2}{2} - 2x_3 - x_4$ (3) $x_1 + \frac{x_2}{2} - x_3 + x_4$ (4) $2x_3 - x_1 - \frac{x_2}{2} - x_4$ NH₃(g) + 3Cl₂(g) \longrightarrow NCl₃(g) + 3HCl(g) ; Δ H₁

$$\begin{split} N_2(g) + 3H_2(g) &\longrightarrow 2NH_3(g) ; & \Delta H_2 \\ H_2(g) + Cl_2(g) &\longrightarrow 2HCl(g) ; & \Delta H_3 \\ \end{split}$$
The heat of formation of NCl₃(g) in the terms of ΔH_1 , ΔH_2 and ΔH_3 is

21. ΔH^{o}_{f} of water is – 285.5 kJ mol⁻¹. if enthalpy of neutralisation of monoacid strong base is – 57.3 kJ

mol⁻¹,
$$\Delta$$
H_f^o of OH⁻ ion will be
(1*) – 228.5 kJ mol⁻¹ (2) 228.5 kJ mol⁻¹ (3) 114.5 kJ mol⁻¹ (4) –114.5 kJ mol⁻¹

22. Ethanol can undergoes decomposition to form two sets of products.

20.

 $C_{2}H_{5}OH(g) \longrightarrow \begin{array}{c} 1 \\ 2 \\ 2 \\ 2 \\ 2 \\ CH_{3}CHO(g) + H_{2}O(g) \\ 2 \\ 2 \\ CH_{3}CHO(g) + H_{2}(g) \\ \Delta H^{\circ} = 68.91 \text{ kJ} \\ \text{If the molar ratio of } C_{2}H_{4} \text{ to } CH_{3}CHO \text{ is } 8:1 \text{ in a set of product gases, then the energy involved in the decomposition of 1 mole of ethanol is (1) 65.98 \text{ kJ} (2^{*}) 48.137 \text{ kJ} (3) 48.46 \text{ kJ} (4) 57.22 \text{ kJ} \\ \text{For the reaction :} \\ X_{2}O_{4}(I) \rightarrow 2XO_{2}(g) \\ \Delta U = 2.1 \text{ k cal, } \Delta s = 20 \text{ cal } \text{K}^{-1} \text{ at } 300 \text{ K} \end{array}$

Hence ΔG is

23.

(1) 2.7 k cal (2*) –2.7 k cal (3) 9.3 k cal (4) –9.3 k cal

24. Given the following equations and ΔH° values, determine the enthalpy of reaction at 298 K for the reaction :

	$C_2H_4(g) + 6F_2(g) \longrightarrow 20$	CF4 (g) + 4HF (g)	
	$H_{2}\left(g\right)+F_{2}\left(g\right)\longrightarrow2HF$	(g); $\Delta H^{o}_{1} = -537 \text{ kJ}$	
	$C (s) + 2F_2 (g) \longrightarrow CF_4$	(g); $\Delta H^{o}_{2} = -680 \text{ kJ}$	
	$2C(s) + 2H_2(g) \longrightarrow C_2$	H₄ (g); ΔH⁰ ₃ = 52 kJ	
(1) –1165	(2*) –2486	(3) +1165	(4) +2486

25. Animals operate under conditions of constant pressure and most of the process that maintain life are isothermal (in a broad sense). How much energy is available for sustaining this type of muscular and nervous activity from the combustion of 1 mol of glucose molecules under standard conditions at 37°C (blood temperature)? The entropy change is + 182. 4 JK⁻¹ for the reaction stated above.

 $\Delta H_{combustion}$ [glucose] = -2808 KJ

(1) – 2754.4 KJ (2^{*}) – 2864.5 KJ (3) – 56.5 KJ (4) – 2808 KJ

26. From the given table answer the following question :

	CO (g)	CO ₂ (g)	H ₂ O(g)	H ₂ (g)
ΔH^{o}_{298} (–Kcal/ mole)	- 26. 42	- 94.05	- 57 .8	0
ΔH ^o ₂₉₈ (–Kcal/ mole)	- 32 .79	- 94 .24	- 54 .64	0
Sº 298(– Cal/ K mol)	47.3	51.1	?	31.2

 Reaction : $H_2O(g) + CO(g)$ $H_2(g) + CO_2(g)$

 Calculate S°_{298} [$H_2O(g)$]
 (1) - 119.47 Cal/ K mole
 (2) +

 (3) - 45.13 Cal/ K mole
 (4*) ·

(2) + 119.47 Cal/ K mole (4*) + 45.13 Cal/ K mole

27. Calculate the free energy change at 298 K for the reaction ;

Br₂ (ℓ) + Cl₂ (g) → 2BrCl(g). For the reaction Δ H^o = 29.3 kJ & the entropies of Br₂(ℓ),Cl₂ (g) & BrCl(g) at the 298K are 152.3,223.0,239.7 J mol⁻¹K⁻¹ respectively. (1*) - 1721.8 J (2) - 60321.8 J (3) + 60321.8 J (4) + 1721.8 J

28. One gram sample of oxygen undergoes free expansion from 0.75 L to 3.0 L at 298 K. Calculate Δ S, q, w, Δ H and Δ E.

(1*) $\Delta S = 0.36 \text{ JK}^{-1}$ (2) W = 227.97 J (3) q = -227.97 J (4) $\Delta H = 107.28 \text{ J}$

29. Given that : $\Delta G_{f^{\circ}} (CuO) = -30.4 \text{ kcal/mole}$

 $\Delta G_{f^{\circ}} (Cu_2 O) = -34.98 \text{ kca/mole}$ T = 298 K

Now on the basis of above data which of the following predictions will be most appropriate under the standard conditions and reversible reaction.

(1) Finely divided form of CuO kept in excess O_2 would be completely converted to Cu₂O

(2*) Finely divided form of Cu₂O kept in excess O₂ would be completely converted to CuO

(3) Finely divided form of CuO kept in excess O_2 would be converted to a mixture of CuO and Cu₂O (having more of CuO)

(4) Finely divided form of CuO kept in excess O₂ would be converted to a mixture of CuO and Cu₂O (having more of Cu₂O)

30. Calculate $\Delta_f G^0$ for (NH₄CI, s) at 310 K.

Given : $\Delta_f H^0$ (NH₄Cl, s)= -314.5 kJ/mol; $\Delta_r C_p = 0$

 $S^{0^{N_2(g)}} = 192 \text{ JK}^{-1} \text{ mol}^{-1};$ $S^{0^{H_2(g)}} = 130.5 \text{ JK}^{-1} \text{ mol}^{-1};$

 $S^{o}_{Cl2}(g) = 233 \text{ JK}^{-1} \text{ mol}^{-1};$ $S^{o} {}^{NH_4Cl(s)} = 99.5 \text{ JK}^{-1} \text{ mol}^{-1}$

All given data are at 300 K.

(1*) –198.56 kJ/mol (2) –426.7 kJ/mol (3) –202.3 kJ/mol (4) None of these

Practice Test (JEE-Main Pattern)

OBJECTIVE RESPONSE SHEET (ORS)

Que.	1	2	3	4	5	6	7	8	9	10
Ans.										
Que.	11	12	13	14	15	16	17	18	19	20
Ans.										
Que.	21	22	23	24	25	26	27	28	29	30
Ans.										

PART - II : PRACTICE QUESTIONS								
1.	In an endothermic re	[AIPMT 1999]						
	(1) zero	(2*) positive	(3) negative	(4) constant				
2.	From the given react	From the given reactions						
	3							
	S(s) + 2 O ₂	(g) $- \rightarrow$ SO ₃ (g) + 2x kcal						
	1							
	and SO ₂ (g) + $\overline{2}$ ($O_2(g) \rightarrow SO_3(g) + y \text{ kcal},$						
	the heat of formation	of SO ₂ is :		[AIPMT 1999]				
	(1) (x + y)	(2) (x – y)	(3) (2x + y)	(4*) (2x – y)				
3.	If ΔE is the heat of re	If ΔE is the heat of reaction for C ₂ H ₅ OH (ℓ) + 3O ₂ (g) – \rightarrow 2CO ₂ (g) + 3H ₂ O (ℓ) at constant volume, the Δ						
	(heat of reaction at constant pressure), then the correct relation is :			[AIPMT 2000]				
	(1) $\Delta H = \Delta E + RT$	(2*) ΔH = ΔE – RT	(3) $\Delta H = \Delta E - 2RT$	(4) ΔH = ΔE + 2RT				
4.	The entropy change mol ⁻¹) is:	in the fusion of one mole	of a solid melting at 27°	°C (latent heat of fusion is 2930 J [AIPMT 2000]				
	(1*) 9.77 JK ⁻¹ mol ⁻¹	(2) 10.73 JK ⁻¹ mol ⁻¹	(3) 2930 JK ⁻¹ mol ⁻¹	(4) 108.5 JK ⁻¹ mol ⁻¹				
5.	The factor of ΔG valu	ies is important in metallur	gy. The ΔG values for th	e following reactions at 800°C are				
	given as :							
	$S_2(s) + 2O_2(s)$	$g) \rightarrow 2SO_2(g)$;	∆G = – 544 kJ					
	$2Zn(s) + S_2(s)$	s) $ \rightarrow$ 2ZnS(s) ;	∆G = – 293 kJ					
	2Zn(s) + O ₂ (
	The ΔG for the reaction							
	2ZnS(s) + 30							
	will be :			[AIPMT 2000]				
	(1) – 357 kJ	(2*) – 731 kJ	(3) – 773 kJ	(4) – 229 kJ				
6.	Change in enthalpy f	or reaction						
	2H ₂ O ₂ (ℓ) − →	$2H_2O_2(\ell) \rightarrow 2H_2O(\ell) + O_2(g)$						

if heat of formations of $H_2O_2(\ell)$ and $H_2O(\ell)$ are – 188 and – 286 kJ/mol respectively is :								
	(1*) – 196 kJ/mol	(2) + 196 kJ/m	ol (3) + 948 kJ/n	nol (4) –	948 kJ/mol			
7.	When 1 mole gas is heated at constant volume, temperature is raised from 298 to 308 K. Heat supplied to the gas is 500 J. Then, which statement is correct ? [AIPMT 01]							
	(1) $q = W = 500 J$, $\Delta E = 0$		(2*) q = ∆E = 500 J, W	/ = 0				
	(3) q = - W = 500 J, ΔΕ	Ξ = 0	(4) $\Delta E = 0$, q = W = -	500 J				
		1						
8.	Enthalpy of the reaction	$H_{4} + \frac{1}{2}O_{2} \rightarrow CH_{3}OH$	l is negative. If enthalpy	of combustion of	⁴ CH ₄ and CH ₃ OH			
	are x and y respectively	y, then which relation is a	correct ?	[AIPI	MT 01]			
	(1) x > y	(2*) x < y	(3) x = y	(4) x ≥ y				
9.	Unit of entropy is :				[AIPMT 02]			
	(1*) JK ⁻¹ mol ⁻¹	(2) J mol ⁻¹	(3) J ⁻¹ K ⁻¹ mol ⁻¹	(4) JK mol ⁻¹				
10.	In a closed insulated co following is true ?	ontainer a liquid is stirred	d with a paddle to increa	ase the temperat	ure, which of the [AIPMT 02]			
	(1 [*]) $\Delta E = W ≠ 0, q = 0$		(2) $\Delta E = W = 0, q \neq 0$					
	(3) $\Delta E = 0$, W = q ≠ 0		(4) W = 0, $\Delta E = q \neq 0$					
11.	2 moles of an ideal gas at 27°C temperature is expanded reversibly from 2 L to 20 L. Find er (R = cal/mol K).							
	(1) 92.1	(2) 0	(3) 4	(4*) 9.2				
12.	Heat of combustion ΔH° for C(s), H ₂ (g) and CH ₄ (g) are – 94, – 68 and – 213 kcal/mol. Then, ΔH° for C(s)							
	+ $2H_2(g) \rightarrow CH_4(g)$ is :			[AIPI	AT 02]			
	(1*) – 17 kcal	(2) – 111 kcal	(3) – 170 kcal	(4) – 85 kcal	-			
13.	Consider the following processes : [AIPMT 11]							
		ΔH (kJ/mol)						
	1/2 A → B	+150						
	3B → 2C + D	–125						
	E + A → 2D	+350						
	For $B + D \rightarrow E + 2C$ AH will be :							
	(1) 525 kJ/mol	(2*) –175 kJ/mol	(3) –325 kJ/mol (4)	325 kJ/mol				
14.	The molar heat capacity to 100 g of water which [AIPMT 03]	y 'C' of water at constant is free to expand, the in	pressure is 75 JK⁻¹ mol crease in temperature c	⁻¹ , when 1.0 kJ c of water is :	f heat is supplied			
	(1) 4.8 K	(2) 6.6 K	(3) 1.2 K	(4*) 2.4 K				

15. What is the entropy change (in JK⁻¹ mol⁻¹) when one mole of ice is converted into water at 0°C ? (The enthalpy change for the conversion of ice to liquid water is 6.0 kJ mol⁻¹ at 0°C.) **[AIPMT 03]**

CH	EMISTRY FOR JE	E	THERMODYNAMICS & THERMOCHEMISTRY						
	(1) 2.198	(2*) 21.98	(3) 20.13	(4) 2.013					
16.	For which one of th	e following equation Δł	$H^{o_{f}}$ equal to $\Delta H^{o_{f}}$ for the	product ?	[AIPMT 03]				
	(1*) Xe(g) + 2F ₂ (g)	−→ XeF₄(g)	(2) $2CO(g) + O_2(g)$	g) – → 2CO₂(g)					
	(3) $N_2(g) + O_3(g) - $	$\rightarrow N_2O_3(g)$	(4) CH ₄ (g) + 2Cl ₂	$(g) \rightarrow CH_2Cl_2(\ell) + 2$	HCI(g)				
17.	For the reaction, Ca	For the reaction, $C_3H_8(g)$ + $5O_2(g) - \rightarrow 3CO_2(g) + 4H_2O(\ell)$							
	at constant tempera	ature, $\Delta H - \Delta E$ is :			[AIPMT 03]				
	(1) + 3RT	(2) – RT	(3) + RT	(4*) – 3RT					
18.	If the bond energie	s of H–H, Br–Br and H	I–Br are 433, 192 and 3	64 kJ mol ⁻¹ respectiv	/ely, then ΔH⁰ fo				
	the reaction H ₂ (g) +	$-Br_2(g) - \rightarrow 2HBr(g)$ is :	:		[AIPMT 04]				
	(1) – 261 kJ	(2) + 103 kJ	(3) + 261 kJ	(4*) – 103 kJ					
19.	Standard enthalpy mol ^{–1} and – 145.6 J K is :	and standard entropy c J K ⁻¹ mol ⁻¹ , respectively	hanges for the oxidation /. Standard Gibb's energ	of ammonia at 298 I y change for the sam [AIPI]	K are – 382.64 k. ne reaction at 298 MT 04]				
	(1) – 2221.1 kJ mo	l−1 (2*) – 339.3 kJ m	ol ⁻¹ (3) – 439.3 kJ mo	pl^{-1} (4) – 523.2 k	J mol ⁻¹				
20.	Considering entropy (S) as a thermodynamic parameter, the criterion for the spontaneity of any process is : [AIPMT 04]								
	(1*) ΔS _{system} + ΔS _{sur}	rounding > 0	(2) $\Delta S_{system} - \Delta S_s$	urrounding > 0					
	(3) $\Delta S_{system} > 0$ only	/	(4) $\Delta S_{surrounding} > 0$) only					
21.	The work done duri pressure of 3 atm, i	ng the expansion of a g is :	as from a volume of 4 dn	n ³ to 6 dm ³ against a [AIPI	constant externa MT 04]				
	(1) – 6 J	(2*) – 608	3 J (3) + 304	J (4) –	- 304 J				
22.	A reaction occurs s	pontaneously if :			[AIPMT 05]				
	(1) T Δ S < Δ H and b	both ΔH and ΔS are +ve	e (2*) ΤΔS > ΔH an	(2*) T Δ S > Δ H and both Δ H and Δ S are +ve					
	(3) $T\Delta S = \Delta H$ and b	d ΔH is + ve and ΔS is	s –ve						
23.	Which of the follow	ing pairs of a chemical	reaction is certain to res	ult in a spontaneous	reaction ? [AIPMT 05]				
	(1) Exothermic and	decreasing disorder	(2) Endothermic	(2) Endothermic and increasing disorder					
	(3*) Exothermic and	d increasing disorder	(4) Endothermic	and decreasing disor	der				
24.	The absolute entha		[AIPMT 05]						
	MgO(s) + 2	2HCl(aq) – → MgCl₂(aq)) + H₂O(ℓ)						
	will be :								
	(1*) less than – 57.	33 kJ mol⁻¹	(2) – 57.33 kJ mo) ⁻¹					
	(3) greater than – 5	57.33 kJ mol⁻¹	(4) 57.33 kJ mol⁻	1					

CHEMISTRY FOR JEE

25.	Identify the correct statement for change of Gibb's energy for a system (ΔG_{system}) at constant temperature							
	(1) II $\Delta G_{system} > 0$, the process is spontaneous.							
	(2*) If $\Delta G_{\text{system}} = 0$, the s	system has attained equ	ilibrium.					
	(3) If $\Delta G_{\text{system}} = 0$, the s	ystem is still moving in a	particular direction.					
	(4) If $\Delta G_{\text{system}} < 0$, the p	rocess is not spontaneo	us.					
26.	Assume each reaction	is carried out in an open	container. For which rea	action will $\Delta H = \Delta$	E? T 061			
	$(1^*) H_2(g) + Br_2(g) - \rightarrow 2$	2HBr(g)	(2) C(s) + 2H ₂ O(g) − →	$2H_2(g) + CO_2(g)$				
	(3) $PCI_5(g) \rightarrow PCI_3(g)$	+ Cl ₂ (g)	(4) 2CO(g) + O ₂ (g) - \rightarrow	2CO ₂ (g)				
27.	The enthalpy and entro	py change for the reaction	on, $Br_2(\ell)$ + $Cl_2(g) - \rightarrow 2E$	BrCl(g)				
	are 30 kJ mol ⁻¹ and 105 Jk ⁻¹ mol ⁻¹ respectively. The temperature at which the reaction will be ir equilibrium is: [AIPMT 061]							
	(1*) 285.7 K	(2) 273 K	(3) 450 K	(4) 300 K				
28.	The enthalpy of combu – 3920 kJ per mol resp (1) – 121 kJ per mol	stion of H ₂ , cyclohexene ectively. Heat of hydroge (2*) + 121 kJ per mol	(C ₆ H ₁₀) and cyclohexan enation of cyclohexene is (3) + 242 kJ per mol	e (C ₆ H ₁₂) are – 2 s : (4) – 242 kJ pe	241, – 3800 and [AIPMT 06] er mol			
29.	Consider the following fu£u vfHkf();kvksa dk voyl	reactions : ksdu dhft, :			[AIPMT 07] [AIPMT 07]			
	(i) H⁺(aq) + OH⁻(aq) = H₂O(ℓ) − x₁ kJ mol⁻¹							
	1							
	(ii) $H_2(g) + \frac{1}{2}O_2(g) = H_2O(\ell) - x_2 \text{ kJ mol}^{-1}$							
	(iii) $CO_2(g) + H_2(g) = CO(g) + H_2O(\ell) - x_3 \text{ kJ mol}^{-1}$							
	5							
	(iv) $C_2H_2(g) + \frac{1}{2}O_2(g) =$	= 2CO₂(g) + H₂O(ℓ)	+ x ₄ kJ mol ⁻¹					
	Enthalpy of formation of $H_2O(\ell)$ is :							
	(1*) + x ₂ kJ mol ⁻¹	(2) + x ₃ kJ mol ⁻¹	(3) – x4 kJ mol ⁻¹	(4) + x₁ kJ mol⁻	1			
30.	Given that bond energi HCl is – 90 KJ mol ⁻¹ . B	es of H–H and Cl–Cl are ond enthalpy of HCl is	e 430 KJ mol⁻¹ and 240 ŀ	KJ mol⁻¹ respecti	vely and ΔH _f for [AIPMT 07]			

(1) 245 KJ mol⁻¹(2) 290 KJ mol⁻¹(3) 380 KJ mol⁻¹ (4*) 425 KJ mol⁻¹