Sri Chaitanya IIT Academy, India

A.P, TELANGANA, KARNATAKA, TAMILNADU, MAHARASHTRA, DELHI, RANCHI

A right Choice for the Real Aspirant

ICON CENTRAL OFFICE, MADHAPUR-HYD

Sec: Sr.IPLCO **JEE–ADVANCE** **Date: 20-09-15**
Time: 3 Hours **2011-P2-Model** **Max Marks: 240**

KEY & SOLUTIONS

CHEMISTRY

1	**D**	2	**D**	3	**A**	4	**C**	5	**C**	6	**A**
7	**C**	8	**D**	9	**ACD**	10	**ACD**	11	**ABC**	12	**AD**
13	**4**	14	**4**	15	**4**	16	**9**	17	**7**	18	**4**
19	**A-PQRS, B-PQRS, C-PQRS, D-PQRS**	20	**A-QRS, B-PRS, C-S, D-QS**								

PHYSICS

21	**C**	22	**A**	23	**B**	24	**D**	25	**A**	26	**B**
27	**A**	28	**C**	29	**ABCD**	30	**CD**	31	**BD**	32	**ABD**
33	**2**	34	**2**	35	**3**	36	**5**	37	**3**	38	4
39	**A-PRST; B-PRST; C- QST; D- PRST**	40	**A- P, B-P, C- P, D- Q**								

MATHS

41	**A**	42	**B**	43	**C**	44	**A**	45	**C**	46	**B**
47	**B**	48	**D**	49	**ABCD**	50	**ABC**	51	**BD**	52	**BC**
53	**2**	54	**2**	55	**5**	56	**3**	57	**2**	58	**9**
59	**A-R B-PQR C-PR D-Q**	60	**A-R B-Q C-P D-S**								

CHEMISTRY

1. CO_2 linear 180º, H_2O, 104.5º, OF_2, 103, O_3,116º
2. Electron gain enthalpy of Be is positive (endothermic)
3. Statement A is wrong. Though electronegativity of F is more than Cl electron gain enthalpy of F is less than Cl. Similarly O in VI group and N in Vth group . The remaining statements are correct
4. Except the nuclear mass other factors effect the chemistry of an element (eg. Isotopes have similar chemical behavior)
5. London dispersion forces are universal. The other statements are wrong
6. Maximum polarization is brought about by a cation with more number of charges and small size (F ajaun's rules)
7. **SOL:** $1N = 5.6\,vol$

   Normality of mixture $= \frac{1\times1+1\times2}{1+1} = 1.5N$

   Volume strength $= \frac{3}{2}\times 5.6 = 8.4vol$
8. Electrolysis of fused hydrolith liberates hydrogen at anode. The remaining statements are correct
9. Sol : $Li(g) \rightarrow Li^{+}(g) + e^{-}$ $\qquad IE_1 = 5.4\,eV\,atom^{-1}$

   $Cl(g) + e^{-} \rightarrow Cl^{-}(g)$ $\qquad EA_1 = -3.6\,eV\,atom^{-1}$

   Among the above equations $\Delta_r H^0 = 1.8eV\,atom^{-1}$

   $\therefore \Delta_r H^0\left(in\,kJ\,mol^{-1}\right) = 1.8\times 96.49 = 173.7\,kJ\,/\,mol$

   $\therefore \Delta_r H^0\left(in\,k.cal\,mol^{-1}\right) = 1.8\times 23.06 = 41.5\,kJ\,/\,mol$
10. Electron gain enthalpies of Cl^{-}, Br^{-}, I^{-} are negative. So statement B is wrong. The remaining statements are correct
11. If the electronegativity of a bonded atom (B) decreases bond pair move towards central atom . Bond angle increases. So statement D is wrong. The remaining statements are correct

12. SOL: 100 ppm $CaCO_3 \equiv 100mg$ in 1L

$\because$ 100g of $CaCO_3(M.W) = 106$ g of $NaCO_3(M.W)$

106 mg of $NaCO_3$ is required to soften 12 of hard water containing 100ppm $CaCO_3$

$\therefore$ 10 L require $106 \times 10 = 1060mg$ *or* $1.06g$

Similarly for 420 ppm $MgCO_3$ requires 5.3 g of Na_2CO_3

13. In PF_3 there are three equal FPF bond angles
In CF_4 all FCF bond angles are identical 109º28'
In XeF_4 all FXeF bond angles are identical 90º
In ICl_4^- all ClICl bond angles are identical 90º

The remaining molecules contain different types of bond angles

14. Every water molecule is surrounded by four water molecules teriahedrally

15. ND_3 given by Mg_3N_2 and AlN,CD_4 given by Be_2C and Al_4C_3 have molecular weight 20 equal to heavy water

16. $O_2, O_2^-, O^+, C_2^+, C_2^-, NO, B_2, B_2^+, B^-$ are paramagnetic

17. All the given species contain polar covalent bonds but the net dipolemoment of the species is zero

18. $SO_4^{2-}, C_6H_6, O_3, O_2^-$ have bond order 1.5

19. All the $SiO_3^{2-}, BF_3, CO_3^{2-}, NO_3^-$ are planar trigonal, non polar, with bond order 1.33 and have three resonance structures

20. A. H_2 and H_2O can act as oxidants in the reaction with metals like Na, H_2O_2 is also oxidant

B. CsH, H_2O, can act as reducing agent. H_2O is oxidized to oxygen in its reaction with F_2 and also during photosynthessis

C. Only H_2O_2 act as bleaching agent

D. Liquid H_2 and H_2O_2 are used as rocket fuels