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-P1-Model** **Max Marks: 240**

PAPER-I

KEY & SOLUTIONS

CHEMISTRY

1	**D**	2	**C**	3	**B**	4	**C**	5	**A**	6	**B**
7	**A**	8	**ABCD**	9	**ABC**	10	**BD**	11	**ACD**	12	**A**
13	**C**	14	**D**	15	**A**	16	**D**	17	**5**	18	**9**
19	**7**	20	**8**	21	**8**	22	**8**	23	**8**		

PHYSICS

24	**C**	25	**B**	26	**A**	27	**D**	28	**C**	29	**C**
30	**B**	31	**BD**	32	**AD**	33	**A**	34	**BC**	35	**B**
36	**C**	37	**C**	38	**C**	39	**D**	40	**1**	41	**1**
42	**5**	43	**5**	44	**2**	45	**1**	46	**2**		

MATHS

47	**B**	48	**C**	49	**B**	50	**B**	51	**2**	52	**C**
53	**A**	54	**ABC**	55	**AB**	56	**BD**	57	**A**	58	**C**
59	**B**	60	**A**	61	**B**	62	**A**	63	**6**	64	**9**
65	**2**	66	**9**	67	**3**	68	**6**	69	**8**		

CHEMISTRY

1. Fe, Co and Ni have nearly same sizes. The remaining species in each set have different sizes
2. CH_3Cl has more dipole moment than CH_3F. In the remaining sets the first member has less dipole moment than the first member
3. **Solutions:** All the elements belong to same group. Smaller the ion more the polarizing power with increase in number of charges covalent character increases

$\overset{+4}{GeCl_4} > \overset{+4}{SnCl_4} > \overset{+4}{PbCl_4}$

Size increases in +4 OS

. Polarising power decreases

covalent character decreases

$\overset{+2}{GeCl_2} > \overset{+2}{SnCl_2} > \overset{+2}{PbCl_2}$

Size increases in +2 OS

Polarizing power decreases,

covalent character decreases

4. With increase in atomic size metallic character increases. The remaining statements are wrong.
5. Fajan's rule. Cation with more number of +ve charges polarize the anion with more number of –ve charges. So, covalent character is more and is less soluble.
6. In metals the valence electrons form as a sea of electrons in which kernels are floating
7. **Solution:**

Melting point of $H_2O_2 = -0.41^oC, H_2O = 0^oC$

Boiling point of H_2O_2=150$150.2^oC, H_2O = 100^oC$

Dipolemomenet of H_2O_2=2.1D; $H_2O = 1.85D$

Dihedral angle of H_2O_2 in gas phase = 111.5º, solid phase =90.2º

Acid medium $H_2O_2 + 2H^+ + 2e^- \rightarrow 2H_2O \; E^o = +1.776V$

Alkaline medium $H_2O_2 + 2e^- \rightarrow 2OH^- \; E^o = +0.878V$

8. All the factors given incluence the electronegativity of an atom
9. A,B,C statements are according to pauling and Mullikens scale

10. Inter molecular bonding increases the enthalpy of vapourization of a liquid by increasing the attractions between molecules and also by dimenisation of certain compounds like CH_3COOH $HClO_4$ increases the effective molar mass

11. In ACD the overlaps are partially positive and partially negative leading to zero overlap and non bonding

12. Conceptual

13. In Na the second electron is to be removed from stable inert gas configuation

14. All the given statements are correct

15 , 16 Oribtals oriented along the bonds will participate in hybridization

17. Solution

$K(g) \rightarrow K^+(g) + e^-,\ IE = x\,eV\ atom^{-1}$

$F(g) + e^- \rightarrow F^-(g),\ \Delta_{eg}H^0 = -y\,eV\ atom^{-1}$

$K(g) + F(g) \rightarrow K^+(g) + F^-(g)$

$\therefore IE + \Delta_{eg}H^0 = x + (-y) = 0.85\,eV\ atom^{-1}$

Given $\frac{x}{y} = \frac{7}{6}$

From the above eqns solving for x and y

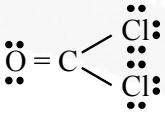
$y = 5.1\,eV\ atom^{-1}$

$\therefore \Delta_{eg}H^0 = -5.1\,eV\ atom^{-1}$

18. While H_2O_2 act as reducing agent O_2 will be liberated. All the species given can be reduced by H_2O_2.

19. $SO_3^2, SO_4^{2-}, ClO_4^{2-}, ClO_2^-, XeO_3, XeO_4$ Contain double bonds in which d-orbitals are involved in it bonding

20. SOL:



21. In XeF_8^{2-} total eight hybrid orbitals are required to accommodate 8 bond points

22. The maximum valency that can be exhibited by any element is 8 only TaF_8

23. In all the given species the central atom contain than octet