Enrollment No: E	xam Seat No:
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C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Inorganic Chemistry-I

Subject Code: 4SC05CHC1 Branch: B.Sc.(Chemistry)

Semester: 5 Date: 21/04/2016 Time: 02:30 To 05:30 Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1		Attempt the following questions:	(14)
	a)	Define: Vertical plane of symmetry (σ_v)	(1)
	b)	Define: Point group	(1)
	c)	Define: Protonic solvents	(1)
	d)	Define: Inversion center (i)	(1)
	e)	Define: Super acids	(1)
	f)	Define: Levelling effect	(1)
	g)	What is HSAB Principle?	(1)
	h)	Define: Hard acids	(1)
	 i) Tetrahedral complex always in high spin or low spin? j) Define: Glass transition temperature (T_g) k) Is d-orbital in tetrahedral complexes gerade or ungerade? l) Give the electronic configuration of [Fe(CN)₆]⁻³. 		
	m)	Give the unit of magnetic momentum.	(1)
	n)	Define: Pairing energy (P)	(1)
Attempt	any f	our questions from Q-2 to Q-8	
Q-2		Attempt all questions	(14)
	a)	Give the symmetry elements and point group with figure of following molecules.	(5)
	ŕ	a) BF_3 d) H_2O	. ,
		b) CO_2 e) H_3BO_3	
		c) $PtCl_4^{-2}$	
	b) Give the symmetry elements and point group with structure of following		
		molecules.	
		a) Cyclobutane d) Eclipse ferrocene	
		b) o-dichloro benzene e) Benzene	
		c) 1,8-Dichloro naphtalene	
	c)	Give the difference between σ_h , σ_v and σ_d .	(4)



Q-3		Attempt all questions	(14)
	a)	Explain Lewis concept.	(5)
	b)	Write brief note on steric effect, solvation effect and resonance effect.	(5)
	c)	Discuss effect of solvent on relative strength of acids and bases.	(4)
Q-4		Attempt all questions	(14)
	a)	Write a note on liquid ammonia.	(5)
	b)	Give chemical reactions in liquid hydrogen fluoride.	(5)
	c)	Discuss various types of reactions in liquid sulphur dioxide.	(4)
Q-5		Attempt all questions	(14)
	a)	Write a short note on high nuclearity carbonyl clusters.	(5)
	b)	Explain halide type clusters.	(5)
	c)	Explain zinti ions & cheveral phases.	(4)
b		Attempt all questions	(14)
	a)	Explain properties of polymer containing silicones.	(5)
	b)	Explain elastomers.	(5)
	c)	Give the general properties of inorganic polymers.	(4)
Q-7		Attempt all questions	(14)
	a)	Splitting energy (Δ_o) of d orbitals in [Cr (CN) ₆] ⁴⁻ is 26300 cm ⁻¹ and pairing energy is 23500 cm ⁻¹ . Find out C.F.S.E and magnetic momentum (83.7 cm ⁻¹ = 1 kJ · mol ⁻¹)	(5)
	b)	Discuss crystal field theory.	(5)
	c)	Explain high spin and low spin complexes.	(4)
b		Attempt all questions	
	a)	Give the symmetry elements and point group with figure of following molecules.	(5)
		a) N_2 d) CH_4	
		b) Eclips ethane e) NH ₃	
		c) CO_3^{-2}	
	b)	Discuss the factors affecting the splitting energy and C.F.S.E.	(5)
	c)	Explain the splitting of d-orbital in octahedral field.	(4)

