Enrollment No:	Exam Seat No:
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C.U.SHAH UNIVERSITY

Summer Examination-2022

Subject Name: Inorganic Chemistry-I

Subject Code: 5SC01ICH1 Branch: M.Sc. (Chemistry)

Semester: 1 Date: 21/04/2022 Time: 11:00 To 02:00 Marks: 70

Instructions:

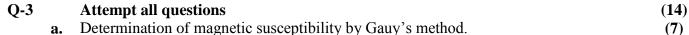
Q-3

- (1) Use of Programmable calculator and 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.

Attempt all questions

b. Derive Pascal's constant.

SECTION - I Q-1 Attempt the Following questions (1 Mark \times 7= 7) (07)Write Schrodinger equation for three dimension. **(1)** Find "b" by applying orthogonal condition to Ψ_1 & Ψ_2 . Where, **(1)** $\Psi_1 = \frac{1}{\sqrt{2}} \Psi s + \sqrt{\frac{1}{2}} \Psi p_x$ and $\Psi_2 = \frac{1}{\sqrt{2}} \Psi s + b \Psi p_x$. For the E Ψ =H Ψ . What is Ψ ? **(1)** c. What is conjugated molecule? **(1)** d. What do you mean by magnetic induction? **(1)** Write equation for volume susceptibility. f. **(1)** What is multiplet width? **(1)** g. Q-2 Attempt all questions (14)Explain secular equation for hydrogen molecule atom. **(7)** Explain bond angle in sp hybridization **(7)** OR Q-2 (14)Explain bond angle in sp^3 hybridization.



Derive magnetic moment equation when multiplet width large as compare to kT

b. Explain effect of temperature on susceptibility of paramagnetic, diamagnetic ferromagnetic and anti-ferromagnetic substance. (7)

OR



(14)

(7)

(7)

SECTION – II

Q-4		Attempt the Following questions (1 Mark \times 7 = 7)	(07)
	a.	In Mossbauer spectroscopy which kind of ray is absorb by absorber?	(1)
	b.	What is recoil energy?	(1)
	c.	Why $[Fe(CN)_6]^{2+}$ complex does not shows Quadrupole splitting?	(1)
	d.	In Mossbauer spectroscopy why sample and absorber are put in crystal lattice?	(1)
	e.	Draw the structure of cupferron complex	(1)
	f.	Define masking agent.	(1)
	g.	Give the structure of Co-DMG complex.	(1)
Q-5		Attempt all questions	(14)
	a.	Describe chemical shift with example.	(7)
	b.	Explain Quadrupole splitting and magnetic splitting.	(7)
		OR	
Q-5		Attempt all questions	(14)
	a.	Explain instrumentation of Mossbauer spectroscopy.	(7)
	b.	Discus basic principle of Mossbauer spectroscopy.	(7)
Q-6		Attempt all questions	(14)
	a.	Write note on cupferron.	(7)
	b.	Write brief note on DMG.	(7)
		OR	
Q-6		Attempt all Questions	(14)
	a.	Write note on Dithiozone.	(7)
	b.	Write note on Rubeanic acid.	(7)

