Q-

C.U.SHAH UNIVERSITY Summer Examination-2018

Subject Name: Inorganic Chemistry-II

Subject Code: 4SC06CHC1		Branch: B.Sc. (Chemistry)	
Semeste	r: 6 Date: 23/04/2018 Time:	02:30 To 05:30	Iarks: 70
Instructio (1) (2) (3) (4)	ons: Use of Programmable calculator & any other elect Instructions written on main answer book are stric Draw neat diagrams and figures (if necessary) at r Assume suitable data if needed.	ronic instrument is prohil tly to be obeyed. ight places.	pited.
1	Attempt the following questions:		(14)
a)	Give the shape of $Fe_2(CO)_{9}$.		(1)
D) c)	Define: Metal Carbonyls		(1) (1)
d)	NO ⁺ ligand is electron donor. A) One B) Two C) Three D)	Four	
e)	Calculate the no. of microstates for the following i) d^8 ii) p^3	g configurations.	(1)
f)	Define: Spectral Term		(1)
g)	Derive ground state spectrum term for the follow i) Mn^{3+} ii) Cu^{2+}	vings:	(1)
h)	Draw the structure of B_2H_6 .		(1)
i)	Give any one example of arachno boranes.		(1)
j)	Give the types of bond found in higher boranes.		(1)
k)	Define laplacian operator.	2	(1)
I)	Prove that $\sin(kx)$ is an eigen function of (d^2/dx)	\vec{r}) and give its eigen value	$\frac{1}{2}$
m)	Write Schrödinger wave equation for a particle in	n איס ע-box.	(1)
n)	while zero point energy for a particle in 1-D boy	.	(1)

Attempt any four questions from Q-2 to Q-8

Q-2	a)	Attempt all questions Explain metal nitrosyls.	(14) (7)
	b)	Calculate STYX number for B_4H_{10} . Give the types of bond present in it and draw the corresponding structure.	(7)
Q-3	a)	Attempt all questions Discuss Jahn Teller distortion. Give the table of strong and weak ITD in	(14) (7)

Discuss Jahn Teller distortion. Give the table of strong and weak JTD in a) (I)octahedral complex.



	b)	Explain particles in one dimensional box.	(7)
Q-4		Attempt all questions	(14)
-	a)	Draw Orgel diagrams for D and F term and write corresponding transitions.	(7)
	b)	Explain particles in three dimensional box.	(7)
O-5		Attempt all questions	(14)
·	a)	Explain pigeon hole diagram for p^2 configuration.	(7)
	b)	Discuss the structure of $Ni(CO)_{4}$.	(7)
O-6		Attempt all questions	(14)
·	a)	Explain trans effect. Prepare cis platin and trans platin from $[PtCl_4]^2$.	(7)
	b)	Write a note on addition and subtraction of the operator, multiplication of the operator and linear operator.	(7)
O-7		Attempt all questions	(14)
C	a)	Write preparation methods of metal carbonyls.	(7)
	b)	Derive the spectral terms for d^2 configuration and decide the ground spectral term.	(7)
Q-8		Attempt all questions	(14)
-	a)	Write chemical properties of metal carbonyls.	(7)
	b)	Write a note on Commutators. Prove that $[d/dx, 3x^2] \neq 0$ when $f(x) = \sin x$	(7)

