LIST OF FIGURES

Figure	Title	Page
1.1	Continuous and characteristic X-ray spectrum showing λ_{min} is independent of target material	2
1.2	Moseley diagrams for the lines K_{α_1} , K_{α_2} and K_{β_1} for elements with atomic number z from 29 to 75	4
1.3	Energy level diagram showing the mechanism of X-ray emission and absorption	6.
2.1	Spectrograph ·	22
2.2	Crystal holder	24
2.3	Principle of focussing action of Couchoks type spectrograph	27
2.4	K_{α_1} , K_{α_2} Emission lines of copper	29
3.1	Boundary surfaces of the s, p and d atomic orbitals	42
3.2	Variation of energy levels with atomic number	44
3.3	$\mathcal E$ and π bonding	4 6
3.4	Cis and trans isomers with (a) unidentate ligands (b) bidentate ligands	49
3.5	Crystal field splitting	57
3.6	Arrangement of the six orbitals about the central atom (at the origin) in an octahedral complex	62
3.7	Molecular orbital scheme for 5 bonding in an octahedral complex ion	6 5

List of figures (contd... 2)

Figure	Title	Page
4.1	Microphotometer records of Co-K edges of pure cobalt metal and complexes	7 8
4.2	Microphotometer records of Co-K edges of complexes	79
4.3	Plot of oxidation number Vs theoretical shifts, $\triangle E(eV)$ of K-shell binding energies	81
4.4	Structures of Co(III) complex ions	86
4.5.a	EXAFS of Co-K-edge in Co(III) complexes	9 2
4.5.b	EXAFS of Co-K-edge in Co(III) complexes	93
4.5.c	EXAFS of Co-K-edge in Co(III) complexes	94
4.5.d	EXAFS of Co-K-edge in Co(III) complexes	95
4.6	MO energy level diagram of low spin Co(III) complexes illustrating electron distribution and relation between MOT, CFT and VBT	99
4.7.a	Lytle plots (E vs Q) for Co(III) complexes	104
4.7.b	Lytle plots (E vs Q) for Co(III) complexes	105
4.7.c	Lytle plots (E vs Q) for Co(III) complexes	106
4.7.d	Lytle plots (E vs Q) for Co(III) complexes	107
4.8	Variation of 'n' with 'k' for Co(III) complexes	116
