

<b>CHAPTERS</b>	<b>CONTENTS</b>	<b>PAGE</b>
CHAPTER - I	Introduction	1
CHAPTER - II	Binary Complexes of M - D(+) Saccharic acid & M - 2 - Hydroxy - 2 -methyl propanoic acid	24
SECTION - A	Experimental details	26
SECTION - B	Calculation	39
TABLES	Formation constants of 1 : 1 M - D(+) Saccharic acid complexes	59
	Formation constants of 1 : 1 M - 2 - Hydroxy - methyl propanoic acid complexes	97
CHAPTER - III	Ternary complexes of M-EDTA - D(+) Saccharic acid & M-EDTA - 2 - Hydroxy - 2 - methyl propanoic acid	144
SECTION - A	Experimental details	144
SECTIONS - B	Calculation	159
TABLES	Formation constants of 1 : 1 : 1 M-EDTA - D(+) Saccharic acid complexes	169
	Formation constants of M-EDTA - 2 - Hydroxy - 2 - methyl propanoic acid complexes	189
CHAPTER - IV	Summary	219
REFERENCES		231

## DESCRIPTION OF GRAPHS

<u>CHAPTER - II</u>	<u>METALIONS</u>	<u>GRAPHS</u>	<u>PAGE NO.</u>
1 : 1 Binary complexes M - D(+) Saccharic acid complexes P <sup>H</sup> Vs 0.1 M NaOH	Y(III)	Fig. 1a & 1b	58
	La(III)	Fig. 2a & 2b	60
	Ce(III)	Fig. 3a & 3b	62
	Pr(III)	Fig. 4a & 4b	64
	Nd(III)	Fig. 5a & 5b	66
	Sm(III)	Fig. 6a & 6b	68
	Eu(III)	Fig. 7a & 7b	70
	Gd(III)	Fig. 8a & 8b	72
	Tb(III)	Fig. 9a & 9b	74
	Dy(III)	Fig. 10a & 10b	76
	Ho(III)	Fig. 11a & 11b	78
	Er(III)	Fig. 12a & 12b	80
	Yb(III)	Fig. 13a & 13b	82
	Lu(III)	Fig. 14a & 14b	84
	Mn(II)	Fig. 15a & 15b	86
	Co(II)	Fig. 16a & 16b	88
	Ni(II)	Fig. 17a & 17b	90
	Cu(II)	Fig. 18a & 18b	92
	Zn(II)	Fig. 19a & 19b	94
M-2-Hydroxy - 2- methyl propanoic acid complexes P <sup>H</sup> Vs 0.1 M NaOH	Y(III)	Fig. 20a & 20b	96
	La(III)	Fig. 21a & 21b	98
	Ce(III)	Fig. 22a & 22b	101
	Pr(III)	Fig. 23a & 23b	103
	Nd(III)	Fig. 24a & 24b	106
	Sm(III)	Fig. 25a & 25b	108

CHAPTER - II	METALIONS	GRAPHS	PAGE NO.
P <sup>H</sup> Vs 0.1 M NaOH	Eu(III)	Fig. 26a & 26b	111
	Gd(III)	Fig. 27a & 27b	114
	Tb(III)	Fig. 28a & 28b	116
	Dy(III)	Fig. 29a & 29b	118
	Ho(III)	Fig. 30a & 30b	121
	Er(III)	Fig. 31a & 31b	123
	Yb(III)	Fig. 32a & 32b	126
	Lu(III)	Fig. 33a & 33b	128
	Mn(II)	Fig. 34a & 34b	131
	Co(II)	Fig. 35a & 35b	133
	Ni(II)	Fig. 36a & 36b	136
	Cu(II)	Fig. 37a & 37b	138
	Zn(II)	Fig. 38a & 38b	141
	$\bar{n}$ Vs P <sup>L</sup> / $\log \frac{\bar{n}}{1 - \bar{n}}$ Vs P <sup>L</sup>	Y(III)	Fig. 20c / 20d
La(III)		Fig. 21c / 21d	100
Ce (III)		Fig. 22c / 22d	105
Pr(III)		Fig. 23c / 23d	105
Nd(III)		Fig. 24c / 24d	110
Sm(III)		Fig. 25c / 25d	110
Eu(III)		Fig. 26c / 26d	113
Gd(III)		Fig. 27c / 27d	113
Tb(III)		Fig. 28c / 28d	120
Dy(III)		Fig. 29c / 29d	120
Ho(III)		Fig. 30c / 30d	125
Er(III)		Fig. 31c / 31d	125
Yb(III)		Fig. 32c / 32d	130
Lu(III)		Fig. 33c / 33d	130
Mn(II)		Fig. 34c / 34d	135
Co(II)		Fig. 35c / 35d	135
Ni(II)		Fig. 36c / 36d	140
Cu(II)	Fig. 37c / 37d	140	
Zn(II)	Fig. 38c / 38d	143	

CHAPTER - III	METAL IONS	GRAPHS	PAGE NO.
$n_A$ Vs $P^H$	Y(III)	Fig. 20e	143
1 : 1 : 1 ternary complexes			
M-EDTA-D(+) Saccharic acid			
$P^H$ Vs 0.1 M NaOH	Y(III)	Fig. 39a	168
	La(III) & Ce(III)	Fig. 40a & 41a	170
	Pr(III) & Nd(III)	Fig. 42a & 43a	172
	Sm(III) & Eu(III)	Fig. 44a & 45a	174
	Gd(III) & Tb(III)	Fig. 46a & 47a	176
	Dy(III) & Ho(III)	Fig. 48a & 49a	178
	Er(III) & Yb(III)	Fig. 50a & 51a	180
	Lu(III) & Mn(II)	Fig. 52a & 53a	182
	Co(II) & Ni(II)	Fig. 54a & 55a	184
	Cu(II) & Zn(II)	Fig. 56a & 57a	186
M-EDTA-2-Hydroxy- 2-methyl propanoic acid			
$P^H$ Vs 0.1 M NaOH	Y(III)	Fig. 58a	188
	La(III) & Ce(III)	Fig. 59a & 60a	190
	Pr(III) & Nd(III)	Fig. 61a & 62a	192
	Sm(III) & Eu(III)	Fig. 63a & 64a	194
	Gd(III) & Tb(III)	Fig. 65a & 66a	196
	Dy(III) & Ho(III)	Fig. 67a & 68a	198
	Er(III) & Yb(III)	Fig. 69a & 70a	200
	Lu(III) & Mn(III)	Fig. 71a & 72a	202
	Co(II) & Ni(II)	Fig. 73a & 74a	204
	Cu(II) & Zn(II)	Fig. 75a & 76a	206
$\bar{n} / L$ Vs $L$		Fig. 39b - 76b	208 - 214
$\log K_1$ Vs $z^2 / r$		Fig. 77a & 78a	215
$\log K_{MAL}^{MA}$ (log K) Vs $z^2 / r$		Fig. 79a & 80a	216
$\log K_1$ Vs atomic number		Fig. 77b, 78b	215
		81a & 82a	217
$\log_{MAL}^{MA}$ (log K) Vs atomic number		Fig. 79b, 80b	216
		81b & 82b	217
$\log K_1$ Vs $E_1 + E_2$		Fig. 83a & 84a	218
$\log K_{MAL}^{Ma}$ (log K) Vs $E_1 + E_2$		Fig. 83b & 84b	218