

LIST OF FIGURES

FIGURE		AFTER PAGE NO.
I.1	Location map of the study area	7
I.2	Geological map of Pindar, Sarju, Ramganga, Goriganga and Darmaganga Valleys in Higher Kumaun Himalaya	13
II.1	Physiographic divisions of Himalaya	21
II.2	Generalised section across Kumaun Himalaya (Heim and Gansser, 1939)	27
II.3	Geological sections through the MCT and the Crystalline Core of the Kumaun Himalayas (Gansser, 1964)	28
II.4	Structural framework envisaged by Valdiya (1980)	30
III.1	Geological map of the Pindar-Sarju Valley Higher Kumaun Himalaya	45
III.2	Geological cross-section across Pindar-Sarju Valley	45
III.3	Geological map of the Ramganga Valley Higher Kumaun Himalaya	48
III.4	Geological cross-section across Ramganga Valley	48
III.5	Geological map of the Goriganga Valley Higher Kumaun Himalaya	49
III.6	Geological cross-section across Goriganga Valley	49
III.7	Geological map of the Darmaganga Valley Higher Kumaun Himalaya	52
III.8	Geological cross-section across Darmaganga Valley	52
IV.1	Diffractogram of Sample No. M1	66

V.1	Structural trend map of the Pindar, Sarju, Ramganga, Goriganga and Darmaganga Valleys Higher Kumaun Himalaya	71
VI.A	Geological sketch map of Higher Kumaun Himalaya showing locations of samples selected for chemical analyses.	89
VI.B	Geological sketch map of Lesser Kumaun Himalayan crystalline nappes showing locations of samples selected for chemical analyses	89
VI.1	K₂O vs Na₂O diagram	90
VI.2	Ab – Or – An diagram (O' Connor, 1965)	90
VI.3	Ternary variation diagram for deformed granite compositions	90
VI.4a	mg vs si	91
VI.4b	fm+c vs si	91
VI.4c	ti vs si	91
VI.4d	p vs si	91
VI.4e	al vs si	91
VI.4f	k vs si	91
VI.4g	alk vs si	91
VI.5	alk – al – fm diagram	91
VI.6	fm – c – al diagram	91
VI.7a	Na₂O vs SiO₂	92
VI.7b	K₂O vs SiO₂	92
VI.7c	P₂O₅ vs SiO₂	92
VI.7d	CaO vs SiO₂	92
VI.7e	Al₂O₃ vs SiO₂	92
VI.7f	TiO₂ vs SiO₂	92
VI.7g	MgO vs SiO₂	92

VI.7h	MnO vs SiO ₂	92
VI.7i	Fe ₂ O ₃ (T) vs SiO ₂	92
VI.8	AFM diagram (Kuno, 1968)	93
VI.9	Alkali lime index diagram (Brown, 1982)	93
VI.10	Chemical composition and presumed origin (I-S scheme of Chappell and White, 1974)	94
VI.11	Na ₂ O/Al ₂ O ₃ vs K ₂ O/Al ₂ O ₃ variation diagram. Fields of igneous and meta- sedimentary rocks (Garrel and Mackenzie, 1971)	94
VI.12	K ₂ O vs Na ₂ O diagram showing fields of M-, S- and I- granites (White and Chappell, 1974)	94
VI.13	P ₂ O ₅ vs TiO ₂	94
VI.14	Al/3-K vs Al/3-Na diagram for reference groups (de la Roche, 1978)	95
VI.15	Shand's index and various tectonic environments (Maniar and Piccoli, 1989)	95
VI.16a	Zn vs SiO ₂	98
VI.16b	Zr vs SiO ₂	98
VI.16c	Y vs SiO ₂	98
VI.16d	Ga vs SiO ₂	98
VI.17	Rb vs MgO	98
VI.18	Sr vs CaO	98
VI.19	K vs Rb	98
VI.20	Zr vs Th	98
VI.21	Sr vs Rb	99
VI.22	Y vs SiO ₂	100
VI.23	Nb vs SiO ₂	100
VI.24	Nb vs Y	100

VI.25	Rb vs SiO ₂	100
VI.26	Rb vs Y + Nb	100
VI.27	Spider diagram representing comparison of average REE abundances to that of average continental crust concentrations	101
VI.28	REE patterns for granitoid rocks	102