

CONTENTS

	Page
SYNOPSIS	
CHAPTER I. HYDRODYNAMIC AND HYDROMAGNETIC FLOW AND HEAT TRANSFER	
1.1 Introduction	1
1.2 Review of the relevant literature	10
1.3 Inadequacy of Newtonian fluid and development of non-Newtonian fluids	22
1.4 Basic equations	36
1.5 Outline of the thesis	41
	..
CHAPTER II. BOUNDARY LAYER FLOW AND HEAT TRANSFER IN CONVERGENT CHANNELS	
2.1 Introduction	44
Case I. Hydromagnetic Flow and Heat Transfer in a Convergent Channel	
2.2 Basic equations and boundary conditions	46
2.3 Method of solution	51
2.4 Discussion of the results	57
Case II. Heat Transfer in Boundary Layer Flow between Converging Walls with Temperature Depen- dent Heat Sources	
2.5 Formulation of the problem	60
2.6 Solution of the energy equation	61
2.7 Conclusions	64
Tables	65

Contd.

	Page
CHAPTER III. COMBINED NATURAL AND FORCED CONVECTION HYDROMAGNETIC FLOW IN VERTICAL CHANNELS	
3.1 Introduction	69
3.2 Basic equations and description of the problem	70
3.3 Method of solution	78
3.4 Flow and heat transfer parameters	87
3.5 Discussion of the results	89
Tables	95
CHAPTER IV. UNSTEADY HYDROMAGNETIC BOUNDARY LAYER FLOW ALONG A FLAT PLATE	
4.1 Introduction	98
4.2 Basic equations	101
4.3 Steady-state solution	108
4.4 Unsteady solution for large times	112
4.5 Solution for small times	121
4.6 Discussion of the results	133
Tables	138
CHAPTER V. UNSTEADY HYDROMAGNETIC FORCED FLOW AGAINST A ROTATING DISK	
5.1 Introduction	141
5.2 Basic equations	143
Case I.	
5.3 Method of solution	152

Contd.

	Page
5.4 Case II	154
5.5 Flow characteristics	157
5.6 Conclusions	158
Tables	161
CHAPTER VI. FLOW AND HEAT TRANSFER OF AN ELASTICO- VISCOUS LIQUID IN A POROUS CHANNEL	
6.1 Introduction	163
6.2 Basic equations	164
6.3 Formulation of the problem	167
6.4 Solution of equations	172
6.5 Discussion of the results	182
Tables	185
BIBLIOGRAPHY	188