

CONTENTS

	Page.No
PREFACE	i
LIST OF PUBLICATIONS	vii
Chapter-I	
Introduction	
1.1	Historical perspective and development of tribology
1.2	Types of lubrication
1.2.1	Hydrodynamic lubrication
1.2.2	Aerodynamic lubrication
1.2.3	Elasto-hydrodynamic lubrication
1.2.4	Boundary lubrication or thin film lubrication
1.3	Classification of fluids
1.3.1	Newtonian fluids
1.3.2	Non-Newtonian fluids
1.4	Rabinowitsch fluid
1.6	Surface roughness
1.7	Squeeze films
Chapter-II	
On the Non-Newtonian Effects of Rabinowitsch Fluid on the Squeeze Film Characteristics Between Parallel Stepped Plates	
2.1	Introduction
2.2	Mathematical formulation of the problem
2.3	Solution of the problem
2.4	Results and discussions
2.4.1	Load carrying capacity
2.4.2	Time-height relationship
2.5	Conclusions

Chapter-III	Effect of Surface Roughness on Squeeze Film Characteristics Between Parallel Stepped Plates with Rabinowitsch Fluid	
3.1	Introduction	46
3.2	Mathematical formulation of the problem	47
3.3	Solution of the problem	50
3.4	Results an discussion	56
	3.4.1 Load carrying capacity	56
	3.4.2 Squeeze film time	57
3.5	Conclusions	58

Chapter- IV	On Non-Newtonian Rabinowitsch Fluid Squeeze Film Lubrication between Rough Circular Stepped Plates	
4.1	Introduction	66
4.2	Mathematical formulation of the problem	67
4.3	Solution of the problem	69
4.4	Stochastic Reynolds equation	70
4.5	Results and discussion	76
	4.5.1 Load carrying capacity	77
	4.5.2 Squeeze film time	78
4.6	Conclusions	80

Chapter-V	On the Study of Rayleigh Step Slider Bearings Lubricated With Non-Newtonian Rabinowitsch Fluid	
5.1	Introduction	88
5.2	Mathematical formulation of the problem	89
5.3	Solution of the problem	92
5.4	Results and discussion	97
	5.4.1 Fluid film pressure	97
	5.4.2 Load carrying capacity	97
	5.4.3 Frictional force and coefficient of friction	98
5.5	Conclusions	100
Chapter-VI	Theoretical Study of the Effect of Surface Roughness on the Static Characteristics of Inclined Plane Slider Bearing: Rabinowitsch Fluid Model	
6.1	Introduction	111
6.2	Mathematical formulation of the problem	112
6.3	Solution of the problem	115
6.4	Stochastic Reynolds equation	116
6.5	Results and discussion	121
6.6	Conclusions	123
Chapter-VII	Static Characteristics of Slider Bearings with an Exponential Film Profile: Rabinowitsch Fluid Model	
7.1	Introduction	136
7.2	Mathematical formulation of the problem	138
7.3	Solution of the problem	140
7.4	Results and discussion	144
7.5	Conclusions	146

Chapter-VIII	Effect of Surface Roughness on the Lubrication Characteristics of Slider Bearing with an Exponential Film Profile: Rabinowitsch Fluid Model	
8.1	Introduction	151
8.2	Mathematical formulation of the problem	153
8.3	Solution of the problem	155
8.4	Results and discussion	161
8.5	Conclusions	164
References		177