

CONTENTS

ACKNOWLEDGEMENTS	(i)
ABSTRACT	(iii)
INTRODUCTION	(1)
CHAPTER I: KINEMATICS AND DYNAMICS	(7)
1-1 Kinematics Of Motion	(7)
1-2 Deformation Gradient Tensor	(9)
1-3 Stretch And Rotation Tensors	(11)
1-4 The Relative Deformation Gradient Tensor	(12)
1-5 The Velocity Gradient Tensor	(14)
1-6 The Constitutive Equation For Simple Material	(15)
CHAPTER II: FLOW OF A FLUID OF GRADE TWO BETWEEN TWO ECCENTRIC ROTATING SPHERES	(23)
2-1 Geometry Of The Boundary Value Problem	(23)
2-2 Dynamics Of Flow	(25)
2-3 Methods Of Perturbation	(27)
2-4 First-order Approximation	(29)
2-5 Second-order Approximation	(35)
CHAPTER III: DISTRIBUTIONS OF STRESSES, FORCES AND TORQUES AT THE BOUNDARIES	(40)

3-1 Determination Of The Relevant Rivlin-Ericksen Tensors	(40)
3-2 Evaluation Of The Surface Traction $\underline{S}(\alpha, \beta)$	(46)
3-3 Determination Of The Resultant Forces	(48)
3-4 Determination Of The Resultant Torque	(51)
3-5 Practical Rheological Parameters	(53)
CHAPTER IV: RESULTS AND DISCUSSION	(57)
APPENDIX A: BISPHERICAL COORDINATES	(73)
APPENDIX B: SEPARATION OF ORTHOGONAL CURVILINEAR COORDINATES BY USING STÄCKEL DETERMINANT	(79)
REFERENCES	(90)
ARABIC ABSTRACT	