

C O N T E N T S

Page

Acknowledgment

Synopsis

...

(i)

CHAPTER I

INFLUENCE OF ELASTICITY OF THE TUBE ON FLUID FLOWS

Art.

1.1	Introduction	1
1.2	Certain cases of elastic flows	7
1.3	Equations of motion for elastic flows	18

CHAPTER IISTEADY LAMINAR FLOW OF CERTAIN NON-NEWTONIAN
LIQUIDS THROUGH AN ELASTIC TUBE

2.1	Equations of motion for a non-Newtonian liquid	-	24
2.2	Equation of elasticity	...	26
2.3	Solution of the equations of motion	...	27

CHAPTER III

ACOUSTIC STREAMING IN LIQUIDS CONTAINED IN ELASTIC TUBES

3.1	Streaming equations	...	37
3.2	Equations of elasticity	...	39
3.3	Boundary conditions of the problem	...	40
3.4	Derivation of the acoustic driving force	...	41
3.5	Solution of the equations of motion	...	42
3.6	Numerical examples	...	47

CHAPTER IVSTEADY LAMINAR FLOW OF A VISCOUS LIQUID THROUGH
AN ELASTIC TUBE WITH CONSTANT TEMPERATURE GRADIENT

4.1	Equations of motion	...	50
4.2	Equation of elasticity	...	51
4.3	Energy equation involving heat transfer	...	51
4.4	Solutions of equations of motion and energy - Temperature distribution	...	52
4.5	Velocity distribution due to heat transfer	...	57
4.6	Numerical examples	...	60

CHAPTER VSTEADY LAMINAR FLOW OF A VISCOUS COMPRESSIBLE
FLUID THROUGH AN ELASTIC TUBE

5.1	Equations of motion for compressible flow	...	64
5.2	Equations of elasticity	...	66
5.3	The equations of state and enthalpy of the fluid	...	66
5.4	Solution of the equations of motion	...	67
5.5	Expression for the enthalpy of the fluid	...	74
5.6	Numerical examples	...	75
	Bibliography	...	80