



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY**

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE

OF

**BACHELOR OF SCIENCE IN MECHANICAL AND INDUSTRIAL
ENGINEERING**

COURSE CODE: RET 221

COURSE TITLE: SOLID MECHANICS I

DATE: 6/12/2022

TIME: 8:00 AM – 10:00 AM

INSTRUCTIONS TO CANDIDATES

1. This paper consists of **FOUR** questions
2. Answer Question **ONE (Compulsory)** and any other **TWO** Questions
3. All symbols have their usual meaning

TIME: 2 Hours

MMUST observes **ZERO** tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over

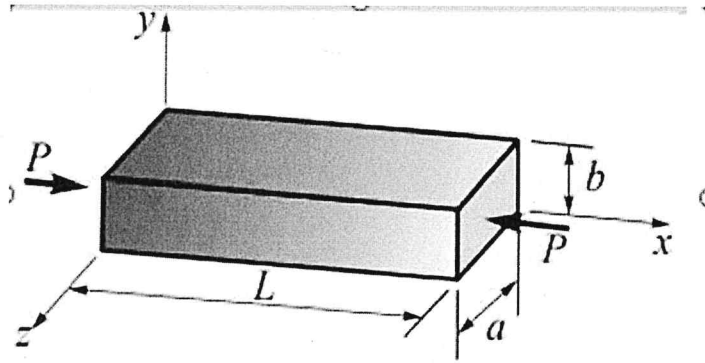


Fig Q2

(b) The cast-iron pipe shown in the fig.Q2(b) ($E = 70 \text{ GPa}$, $\nu = 0.3$), which has length $L = 0.5 \text{ m}$, outside diameter $D = 150 \text{ mm}$, and wall thicknesses $t = 15 \text{ mm}$, is under an axial compressive load $P = 200 \text{ kN}$.

Determine the change in

- (i) length ΔL ;
- (ii) diameter ΔD ; and
- (iii) thickness Δt .

[10 marks]

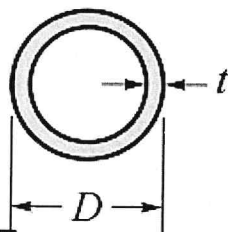
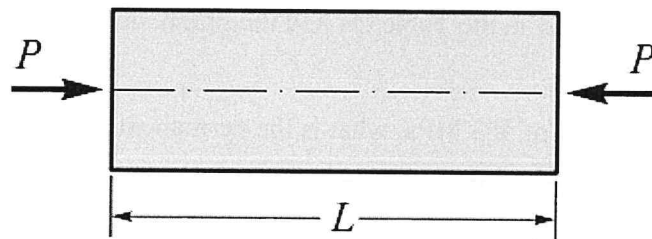


Fig Q2(b)