

# A collaborative LaTeX document

Class of ID2090, Third Trimester of 2021 batch

June 14, 2022

## Contents

1	Introduction	1
2	AE21B003	2
3	AE21B028	3
4	AE21B045	4
5	AE21B056	5
6	AE21B062	6
7	AE21B107	7
8	BE21B016	8
9	BE21B040	9
10	CE19B020	10
11	CE21B021	11
12	CE21B088	12
13	CE21B097	13
14	CE21B112	14
15	CE21B115	15
16	CH21B067	16
17	CH21B079	17
18	CH21B101	18
19	ME21B050	19
20	ME21B060	20
21	ME21B065	21

22 ME21B079	22
23 ME21B088	23
24 ME21B091	24
25 ME21B186	25
26 ME21B190	26
27 ME21B196	27
27.1 Thermodynamics of a Control Volume . . . . .	27
28 ME21B204	28
29 ME21B217	29
30 MM21B012	30
31 MM21B024	31
32 MM21B032	32
33 MM21B044	33
34 MM21B046	34
35 MM21B059	35
36 MM21B063	36
37 NA21B002	37
38 NA21B005	38
39 NA21B006	39
40 NA21B007	40
41 NA21B020	41
42 NA21B048	42
43 NA21B052	43
44 Conclusions	44
45 References	44

## List of Figures

1 The diagram of a control volume. Credits: Chegg.com. . . . .	27
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# List of Tables

1	Key of symbols . . . . .	27
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## 1 Introduction

This file includes tex files from the folders of each student. The students are expected to update the file named after their roll number and place any images in the same folder. Students do not have to edit this master document. Once the student has sent a pull request which is accepted and processed successfully, his/her assignment submission is deemed to be complete.

You are also welcome to add references and cite them. Examples on how to do that are on the course repository [?].

## **2   AE21B003**

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### **3 AE21B028**

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## 27 ME21B196

### 27.1 Thermodynamics of a Control Volume

Calculations of thermodynamic variables in a "control volume" (i.e., a system that has a constant volume but might have varying mass and energy contained in it) involve the equation of energy conservation as follows:

$$\dot{Q} - \dot{W} = \frac{dE}{dt} + \dot{m}_e(h_e + gz_e + \frac{1}{2}v_e^2) - \dot{m}_i(h_i + gz_i + \frac{1}{2}v_i^2)$$

[?]. [?].

Here the  $i$  and  $e$  subscripts denote inlet and exit values, respectively.

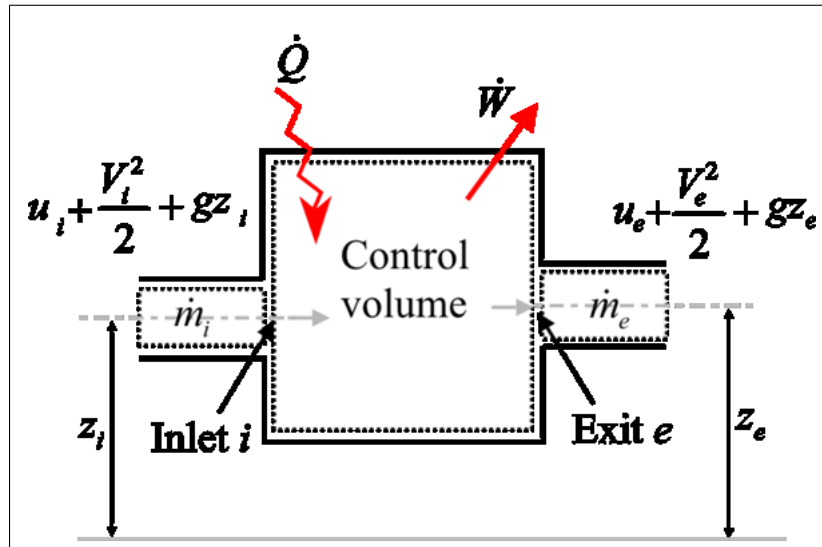


Figure 1: The diagram of a control volume. Credits: Chegg.com.

Table 1: Key of symbols

Sl No.	Symbol	Explanation
1	$Q$	Heat interaction of the system
2	$W$	Work interaction of the system
3	$E$	Total energy of the system
4	$t$	Time
5	$m$	Mass
6	$h$	Specific enthalpy
7	$g$	Acceleration due to gravity
8	$z$	Height from a reference height
9	$v$	Velocity

## **28 ME21B204**

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## **30 MM21B012**

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## 44 Conclusions

If this master tex file could be compiled successfully, it means that the class has learnt the concepts of Git as well as LaTeX properly.

## 45 References

### References

- [1] Repository for id2090 course. <https://github.com/gphanikumar/mm2090>. Accessed: 2022-06-13.
- [2] Pennsylvania State University. The energy equation for control volumes.
- [3] Simon Fraser University. The first law of thermodynamics: Control volumes.