Assignment Web Similarity Analysis

Generated on 2025-05-08 20:32:36

Executive Summary

Overall Web Similarity Score: 2%

Assessment: The overall similarity between the student assignment and the provided web sources is extremely low. There are no substantial overlaps in content. The few minor numerical similarities are either common mathematical expressions or parameters used in a specific engineering context, not indicating plagiarism.

Conclusion: There is no evidence of plagiarism. The assignment demonstrates original work related to control system design calculations and Simulink modeling. The minimal numerical overlaps identified are either instances of common scientific notation or values relevant to the specific engineering problem addressed in the assignment. The use of scientific notation is a standard practice in scientific and engineering fields; hence such occurrences don't suggest plagiarism.

Web Sources Analyzed

Source URL	Similarity Score
https://streeteasy.com/building/756-10-avenue-new_york	5.2%
https://www.walmart.com/ip/York-S1-AA211-Compatible-Echelon-Air-Cleaner-Filter-B85-756-MERV-10-1-Each/17019	3.01%
https://www.calculator.net/scientific-notation-calculator.html	18.27%
https://www.higherprecision.com/products/bore-gages/mitutoyo-511-756-20-standard-type-dial-bore-gages-10-16-inch	5.5%
https://www.mass.gov/files/documents/2016/10/ox/756.pdf	1.02%

Detailed Content Matches

Match 1 - Common Knowledge (10%)

Assignment: 2.09×10■■

Source: https://www.calculator.net/scientific-notation-calculator.html

Source Text: It accepts numbers in the following formats 3672.2, 2.3e11, or 3.5x10^-12.

Match 2 - Common Knowledge (10%)

Assignment: 1.756 × 10■■

Source: https://www.calculator.net/scientific-notation-calculator.html

Source Text: It accepts numbers in the following formats 3672.2, 2.3e11, or 3.5x10^-12.

Full Assignment with Highlighted Plagiarism

Sections highlighted in yellow with red text indicate potential plagiarism.

EE5351: CONTROL SYSTEM DESIGN
LABORATORY 02

NAME

: BANDARA LRTD

REG No.

: EG/ 2021/ 4433

GROUP NO: CE07
DATE

: 24/01 /2025

Table 1: Summative Laboratory Form
Semester
Module Code
Module Name
Lab Number
Lab Name
Lab conduction date
Report Submission date

05
EE5351
Control System Design
02
Laboratory Section 2
2024.11.05
2025.01.24

Contents

List of Tables

List of Figures

1 OBSERVATION

Table 1: Observations

Terminal Resistance (Rm)	8.4	Ω
Rotor inductance (Lm)	1.16	mH
Equivalent(Jen)	2.09×10■■	kgm²
Torque constant (Kt)	0.042	Nm/A
Voltage constant (Km)	0.042	Nm/A

2 CALCULATION

Q1.

i. .

1. Voltage equation:

■■ = ■■ ■■ + ■■

■■■

+ ■■

■■

2. Back EMF equation:

■■ = ■■ ω■

3. Torque equation:

■ω

■■ = ■■ ■ ■■■

4. Motor torque relationship:

■■ = ■■ ■■

ii.

Transfer function

By using equations (1), (2), (3), and (4):

θ■ (■)

■■

=

■■ (■) ■{■■■ ■[■■ + ■■ ■] + ■■ ■■ }

θ■ (■)

0.042

=

■■ (■) 2.4244 × 10−8 ■ 3 + 17.556 × 10−5 ■ 2 + 1.764 × 10−3 ■

Due to the negligible rotor inductance the simplified version is:θ■ (■)

■■

=

■■ (■) ■{■■■ ■■■ + ■■ ■■ }

θ■ (■)

0.042

=

−4

■■ (■) 1.756 × 10 ■ 2 + 1.764 × 10−3 ■

iii.

H

Figure 1: Simplified Simulink

iv.

By considering the closed loop transfer function

θ■ (■)

θ■ (■)

■■ (■)

=

θ (■)

■■■■ (■)

1+ ■

■■ (■)

(■)

θ■

0.042

=

−4

2

■■■■ (■) 1.756 × 10 ■ + 1.764 × 10−3 ■ + 0.042

v.

Figure 2: Closed Loop T/f

vi.

Figure 3: O/p diagram

Overshoot given as

1.33−1

=

1

=

× 100%

33%

Q2.

i.

Characteristic equation given as :

■ 2 + 10.047■ + 239.23=0

ii.

By considering ;

2■■

■■ 2

■

■■

=

=

=

=

10.047

239.23

0.3248

15.47rad/s

Overshoot

=

■ √1−∈2 ×100%

–

■∈

Figure 4:output from closed loop transfer function

=

=

–

■×15.47

■ √1–15.472 ×100%
33.99%

iii.

33.99×70
100

■■■■

■■

–

■∈

=

■ √1–∈2 ×100%

=

0.415

<

2

■
■■(■■■) √1–■(■■■) 2

<

2

According to that to maintain ■■ <

2

The PD characteristics equation is given as
■ 2 + 2 (■■■■ +

■■ ■■(■■■)
2

) ■■(■■■) ■ + √■■ ■■(■■■)1 =0

Considering that ■■(■■■) can replace by √■■ ■■(■■■)1.
From that given as:
■
<2
√■■ ■■(■■■) 1 √1–■(■■■) 2

■■

>0.01762

From that ■■ can consider as 1.

According to that
■ ■

■■■■ =(■■■■ + ■2 ■)

■ 15.47

0.415=(0.325 + ■ 2

■■

=

)

0.011635

Q3)

I.

Figure 5:Time domain response of the closed loop function

II.

The overshoot is given by:

1.3622–0.9725

0.9725

× 100%

:40.0717%

III.

Figure 6: Design a PD Controller

Figure 7: Overshoot is reduced by 30%

3 REFERENCES

[1] M. H. Center. [Online]. Available: https://www.mathworks.com/help/slcontrol/ug/create-i-pdand-pi-d-controllers.html.

[2] MEDIUM. [Online]. Available: https://medium.com/@mmwong920/a-brief-introductino-topd-controller-bac79c4f3fef.

[3] GREEKFOGGREEK. [Online]. Available: https://www.geeksforgeeks.org/compensators/.

Analysis Methodology

Web Similarity Analysis Method: This report analyzes the similarity between a student assignment and web content using multiple approaches:

1. **Basic similarity analysis** using TF-IDF vectorization and cosine similarity metrics to calculate statistical similarity between texts.
2. **Advanced semantic analysis** using Google's Gemini AI to identify conceptual similarities, common phrases, and potential plagiarism patterns.
3. **Source verification** by analyzing multiple sources to distinguish between common knowledge and unique content.

Interpretation Guide:

- 0-15%: Very low similarity - Likely original content
- 16-30%: Low similarity - Contains common phrases but largely original
- 31-50%: Moderate similarity - May contain some paraphrased content
- 51-70%: High similarity - Contains substantial similar content
- 71-100%: Very high similarity - Significant portions may be unoriginal

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Disclaimer: This automated similarity analysis provides an approximation of content similarity against web sources. Results should be interpreted by a human reviewer for context-appropriate assessment. Common knowledge, standard phrases, and coincidental matches may be flagged and require human judgment.