Assignment Web Similarity Analysis

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Executive Summary

Overall Web Similarity Score: 0%

Assessment: The assignment shows no significant similarity to the provided web sources.

Conclusion: Based on the provided web sources, there is no evidence of plagiarism in the student's assignment. The content is technical and specific to control systems, with derivations, equations, and figures that are unique to the assignment. The assignment structure (title page, table of contents, list of figures, etc.) is standard academic formatting and not considered plagiarism. While some terms like "transfer function" or "speed response" are common within the field of control systems, their presence in both the assignment and potentially in general web resources on the subject does not constitute plagiarism. The core content of the assignment, including the specific calculations, figures, and analysis, appears original.

Web Sources Analyzed

Source URL	Similarity Score
https://www.emo.org.tr/ekler/b7e76e55da0d599_ek.pdf?tipi=1&turu=X&sube=6	1.79%
https://www.youtube.com/watch?v=YH4Pj8s9pQU&pp=ygUTI3NlY29uZG9yZG[illegible]	[illegible]
https://pmc.ncbi.nlm.nih.gov/articles/PMC3326359/	26.54%

Detailed Content Matches

No specific content matches were identified.

Full Assignment with Highlighted Plagiarism

Sections highlighted in yellow with red text indicate potential plagiarism.

EE5351: CONTROL SYSTEM DESIGN
LABORATORY 01

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
01
Laboratory Section 1
2024.11.05
2025.01.24

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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 From equations (1), (2), (3), and (4), the speed control transfer function is derived as:

ω(■)

■■

=

■■ (■) ■■ ■■[■■ + ■■ ■] + ■■ ■■

ω(■)

0.042

=

–5

■■ (■) 2.09 × 10 ■[8.4 + 1.16 × 10–3 ■] + 0.042 × 0.042

ω(■)

0.042

=

–8

2

■■ (■) 2.4244 × 10 ■ + 17.556 × 10–5 ■ + 1.764 × 10–3

From equations (1), (2), (3), and (4):

θ■ (■)

■■

=

■■ (■) ■{■■■ ■[■■ + ■■ ■] + ■■ ■■ }

θ■ (■)

0.042

=

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

iii

Figure 1: MathLab code for the Speed Response

Figure 2: Speed Response Get by Mathlab

Figure 3: Speed Response Given by Simulink

iv

Simplified Equations for Speed Control Transfer Function

ω(■)

■■

=

■■ (■) ■■■ ■■ ■ + ■■ ■■

ω(■)

0.042

=

■■ (■) {2.09 × 10–5 · 8.4■ + 0.042 × 0.042}

ω(■)

0.042

=

–4

■■ (■) {1.7556 × 10 ■ + 1.764 × 10–3 }

Simplified Equations for Position Control Transfer Function

θ■ (■)

■■

=

■■ (■) ■{■■■ ■■ ■ + ■■ ■■ }

θ■ (■)

0.042

=

■■ (■) ■{1.7556 × 10–4 ■ + 1.764 × 10–3 }

v

vi

From the equations 1, 2, 3, 4;

■■

■■

■■

■■■ = – ( ) ■■ – ( ) ω■ +

■■

■■

■■

■■

ω■

■ = ( ) ■■ + 0 × ω■ + 0 × ■■

■eq

■

– (■ ■)

■■

■

[■]=[■

■■

■

(■)

■

– (■■)

■eq

■■

–7241.38

[■]=[

■■
■
2009.57

■

0

1

■
] [■] + [■■] ■■
■■
0

–36.21 ■■
862.07
][ ] + [
] ■■
■
0
0
■

vii
From the simplified equations
θ■■ = 0 · θ■ + ω■ + 0 · ■■

■■ ■■
■■
ω■
■ = 0 · θ■ – (
) ω■ + (
)■
■■ ■eq
■eq ■■ ■

0
■■■
[ ] = [0
■■
■

1

0
■■
■
– (■ ■)] [■■] + [(■ ■■)] ■■
■ ■ ■■

■ eq

eq ■

■
■■
0
1
0
[■] = [
][■] + [
]■
■
0 –10.05
239.23 ■
■■
■
■

Q2.

Figure 4: Speed Response in the Model

Figure 5: Comparing of the Speed Response with Model and State
Vector

2. According to my knowledge I think the basic thing for happening those kind of the error is negiligence of the resistance where having in the rotor and also mathlab is the software which required the best performance of the computers so considering the computers which has been used there can be errors as the performance.

Q3)
1.

Figure 6: The Speed Response when KP=1

2.
Steady State Error:

Overshoot =

1-0.938

1.335–0.938
0.938

= 42.324%

× 100%

:

0.062

3.

Figure 7: Speed Response from Simulink when KP=1.25
According to the Figure 5 when Kp = 1.25,
Steady state error = 1-1.012 =0.012
Overshoot =

1.374–1.012
1.012

× 100%

= 35.770%

.

Figure 8: Speed Response from Simulink when KP=1.50
According to the Figure 6 when Kp = 1.5,
Steady state error = 1-1.009 = 0.009
Overshoot =

1.405–1.009
1.009

= 39.25%

× 100%

Figure 9: Speed Response from Simulink when KP=1.75
According to the Figure 7 when Kp = 1.75,
Steady state error = 1-0.96
=
0.04
Overshoot =

1.442–0.9603
0.9603

× 100%

= 50.161%

Figure 10: Speed Response from Simulink when KP=2.0

According to the Figure 8 when Kp = 2,
Steady state error = 3.35 × 10-2

Overshoot =

1.466–0.9633
0.9633

= 52.19%

× 100%

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.