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NPTEL

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Courses » Aircraft Dynamic Stability & Design of Stability Augmentation System

Announcements **Course** Ask a Question Progress

Unit 5 - Week 4



Course outline

How to access the portal

Week 1

Week 2

Week 3

Week 4

- Lecture 19 Dimensional Stability Derivatives
- Lecture 20 Longitudinal Characteristic Equation
- Lecture 21 Routh's Criteria and Longitudinal Dynamic Stability
- Lecture 22 Longitudinal Modes: Short Period and Phugoid
- Lecture 23 Short period Mode Approximation
- Lecture 24 Long Period Mode (Phugoid) Approximation
- Quiz : Assignment 4
- Solutions for Assignment 4

Week 5

Week 6

Assignment 4

The due date for submitting this assignment has passed. **Due on 2016-08-16, 23:59 IST**
As per our records you have not submitted this assignment.

1) Data for Questions from 1 to 5.

1 point

For a given aircraft following is the longitudinal Matrix

The Characteristic equation is given by

-
-
-
-

No, the answer is incorrect.

Score: 0

Accepted Answers:

2) The roots of short period mode are

1 point

-
-
-
-

No, the answer is incorrect.

Score: 0

Accepted Answers:

3) The roots of Phugoid mode are

1 point

-
-
-
-

No, the answer is incorrect.

Score: 0

Accepted Answers:

4) The damping ratio of two modes are

1 point

-
-

Week 7

Week 8

-
-

No, the answer is incorrect.**Score: 0****Accepted Answers:**

5) The undamped natural frequencies (rad/sec) of the two modes are

1 point

-
-
-
-

No, the answer is incorrect.**Score: 0****Accepted Answers:**6) **Data for Questions from 6-10**

For an aircraft, the roots of the longitudinal characteristic equation are as shown in the figure.

The roots of short period mode are

-
-
-
-

No, the answer is incorrect.**Score: 0****Accepted Answers:**

7) The roots of Phugoid mode are

1 point

-
-
-
-

No, the answer is incorrect.**Score: 0****Accepted Answers:**

8) Calculate the natural frequency (rad/sec) and damping ratio for the short period mode

1 point

- 3.9 and 0.64
- 3.6 and 0.55
- 2.6 and 0.35
- 4.6 and 0.35

No, the answer is incorrect.**Score: 0****Accepted Answers:***3.9 and 0.64*

9) Calculate the natural frequency and damping ratio for the phugoid mode.

1 point

- 0.40 and 0.25
- 0.04 and 0.025
- 0.20 and 0.020



0.02 and 0.25

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.20 and 0.020

10) Assuming two-degree approximation for the phugoid mode. Estimate the flight speed for which the roots are given

1 point

55.66 m/s

69.36 m/s

40.33 m/s

45.33 m/s

No, the answer is incorrect.

Score: 0

Accepted Answers:

69.36 m/s



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