

Unit 8 - WEEK 07

Course outline

How does an NPTEL online course work?

Week 01

Week 02

Week 03

Week 04

WEEK 05

WEEK 06

WEEK 07

● Revision.....

● Stability and Control: Designers Perspective

● Stability and Control: Designers Perspective Continued...

○ Longitudinal Control: Elevator

○ Contribution of Wing and Tail: Stability

○ Stability: Wing and Tail Contribution

● Tutorial

○ Quiz : Assignment 07

○ Feedback For Week 7

● Solution Assignment 07

WEEK 08

Text Transcripts

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Assignment 07

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-18, 23:59 IST.

- 1) If the center of gravity of the aircraft moves backward towards the neutral point then the aircraft will be
- Less stable
 - More stable
 - More maneuverable
 - Less maneuverable

1 point

- both i & ii
 both i & iv
 both ii & iii
 both i & iii

No, the answer is incorrect.
Score: 0

Accepted Answers:
both i & iii

- 2) To have a stable configuration and trim a conventional aircraft at positive angle of attack which of the following arrangement is done

1 point

- CG of aircraft should be ahead of neutral point
 CG of aircraft should be behind of neutral point
 It does not depend of CG location
 none of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
CG of aircraft should be ahead of neutral point

- 3) For a reflex airfoil, $C_{m_{0ac,w}}$ is

1 point

- positive
 negative
 zero
 can't say

No, the answer is incorrect.
Score: 0

Accepted Answers:
positive

- 4) If the elevator size is increased, keeping the tail area same. The static longitudinal stability will

1 point

- increase
 decrease
 remain same
 can't say

No, the answer is incorrect.
Score: 0

Accepted Answers:
remain same

- 5) In an aircraft without changing any other dimensions the distance of aerodynamic center of tail from $CG_{aircraft}$ is increased. Due to this change the longitudinal stability of aircraft will

1 point

- increase
 decrease
 remain same
 can't say

No, the answer is incorrect.
Score: 0

Accepted Answers:
increase

- 6) If the distance between aerodynamic center of tail and $CG_{aircraft}$ is reduced by 10 % what will be the new area ratio $(S_t / S)_{new}$ in order to maintain tail volume ratio (V_H) equal to 0.7.

1 point

- $(S_t / S)_{new} = 0.1 \times (S_t / S)_{old}$

 $(S_t / S)_{new} = 0.9 \times (S_t / S)_{old}$

 $(S_t / S)_{new} = 1.1 \times (S_t / S)_{old}$

 $(S_t / S)_{new} = 10 \times (S_t / S)_{old}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $(S_t / S)_{new} = 1.1 \times (S_t / S)_{old}$

- 7) During a flight if the elevator is deflected with a certain +ve angle, how this will affect the stability of aircraft.

1 point

- increase
 decrease
 unchanged
 can't say

No, the answer is incorrect.
Score: 0

Accepted Answers:
unchanged

- 8) The static longitudinal stability of an airplane is provided by

1 point

- The lift from wing and horizontal tail
 Product of the 'tail arm' and 'tail lift'
 Product of the 'tail arm' and 'wing lift'
 Product of mean aerodynamic chord and 'wing lift'

No, the answer is incorrect.
Score: 0

Accepted Answers:
Product of the 'tail arm' and 'tail lift'

- 9) To trim a flying wings at positive angle of attack which of the following arrangement is done

1 point

- CG is kept ahead of AC
 AC is kept ahead of CG
 Cambered aerofoil is used
 Reflexed aerofoil is used

No, the answer is incorrect.
Score: 0

Accepted Answers:
Reflexed aerofoil is used

- 10) If the vertical tail was inverted and put below the horizontal tail of the aircraft at same distance from CG of aircraft as earlier, then its contribution to lateral stability will

1 point

- increase
 decrease
 remain same
 none of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
remain same