

Unit 11 - Week 9

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

● Lecture 59 : Constraint Analysis- Introductory Remarks

○ Lecture 60 : Constraint Analysis- Transport Aircraft- Part-01

○ Lecture 61 : Constraint Analysis- Transport Aircraft- Part-02

○ Lecture 62 : Tutorial on Constraint Analysis of Transport Aircraft- Part 01

● Lecture 63 : Tutorial on Constraint Analysis of Transport Aircraft- Part 02

○ Lecture 64 : Constraint Analysis- Military Aircraft

○ Lecture 65 : Tutorial on Constraint Analysis of Military Aircraft- Part 01

○ Lecture 66 : Tutorial on Constraint Analysis of Military Aircraft- Part 02

○ Lecture 67 : Refined Sizing

○ Lecture 68 : Tutorial on Refined Sizing of Jet Fighter Aircraft

○ Quiz : Assignment 9

○ Assignment-9 Solutions

○ Weekly feedback

○ Download Videos

Week 10

Week 11

Week 12

Live Session

Text Transcripts

Assignment 9

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

Due on 2020-11-18, 23:59 IST.

1) Which of the following Constraints is/are depend(s) only on Wing Loading, (W/S)?

1 point

- Instantaneous Turn Rate
 Landing Distance
 Climb Gradient
 Sustained Turn Rate
 Stalling Speed

No, the answer is incorrect.
Score: 0

Accepted Answers:
Instantaneous Turn Rate
Landing Distance
Stalling Speed

2) Which of the following Constraints is/are depend(s) only on T/W?

1 point

- Absolute Ceiling
 Missed Approach Gradient
 Landing Distance
 Climb Gradient

No, the answer is incorrect.
Score: 0

Accepted Answers:
Missed Approach Gradient
Climb Gradient

3) T/W for a Sustained Turn as a function of Wing Loading is:

1 point

- $\frac{T}{W} = q \left[\frac{C_{Dmin}}{(W/S)} + k \left(\frac{n}{q} \right) \left(\frac{W}{S} \right) \right]$
 $\frac{T}{W} = q \left[\frac{C_{Dmin}}{(W/S)} + k \left(\frac{n}{q} \right)^2 \left(\frac{W}{S} \right) \right]$
 $\frac{T}{W} = \left[\frac{C_{Dmin}}{(W/S)} + k \left(\frac{n}{q} \right) \left(\frac{W}{S} \right) \right]$
 $\frac{T}{W} = \left[\frac{C_{Dmin}}{(W/S)^2} + k \left(\frac{n}{q} \right) \left(\frac{W}{S} \right) \right]$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\frac{T}{W} = q \left[\frac{C_{Dmin}}{(W/S)} + k \left(\frac{n}{q} \right)^2 \left(\frac{W}{S} \right) \right]$

4) The Design Point in a Constraint Diagram is chosen as a point that corresponds to?

1 point

- Lowest T/W and Lowest W/S
 Lowest T/W but Highest W/S
 Highest T/W and Highest W/S
 Highest T/W but Lowest W/S

No, the answer is incorrect.
Score: 0

Accepted Answers:
Lowest T/W but Highest W/S

5) Calculate the Wing Loading in kg/sq.m, meeting the requirement of Stall Velocity of 30 m/s, with the maximum lift coefficient 1.5 at sea-level under ISA Conditions

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 84,85

1 point

6) Which of the following parameters is/are the Raymer's Big Six parameters?

1 point

- Taper Ratio
 Wing Sweep Angle
 Aspect Ratio
 Zero-Lift Drag Coefficient
 Thrust Loading
 Wing Loading

No, the answer is incorrect.
Score: 0

Accepted Answers:
Taper Ratio
Wing Sweep Angle
Aspect Ratio
Thrust Loading
Wing Loading

7) Calculate the minimum value of T/W, if $C_{Do} = 0.012$, Climb Gradient (G) = 0.15, Wing Aspect Ratio = 7, and Oswald efficiency factor (e) = 0.87.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.175,0.250

1 point

8) According to FAR25, what is the second stage climb gradient for the twin engine powered aircraft?

1 point

- 3.0 %
 2.7 %
 2.4 %
 2.2 %

No, the answer is incorrect.
Score: 0

Accepted Answers:
2.4 %

9) Second stage climb gradient depends upon

1 point

- Thrust-Weight Ratio
 Number of Engines
 Wing Loading
 Lift-Drag Ratio

No, the answer is incorrect.
Score: 0

Accepted Answers:
Thrust-Weight Ratio
Number of Engines
Lift-Drag Ratio