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**NPTEL** (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » **Design of fixed wing Unmanned Aerial Vehicles**  
(course)

Announcements (announcements)    **About the Course** ([https://swayam.gov.in/nd1\\_noc19\\_ae06/preview](https://swayam.gov.in/nd1_noc19_ae06/preview))

Ask a Question (forum)    Progress (student/home)    Mentor (student/mentor)

## Unit 4 - Week 3

### Course outline

#### How to access the portal

#### Week 1

#### Week 2

#### Week 3

- Lecture 8 - Airfoil and Finite wing, Various wing planform (unit? unit=20&lesson=21)
- Lecture 9 - Interpreting airfoil data, Cl vs Alpha and drag polar, selection of airfoil (unit? unit=20&lesson=22)
- Lecture 10 - Introduction to Airplane performance, Equation of motion (unit? unit=20&lesson=23)

## Assignment 03

The due date for submitting this assignment has passed. **Due on 2019-09-18, 23:59 IST.**  
As per our records you have not submitted this assignment.

1) The true speed of aircraft is 50 m/s at minimum thrust required condition an altitude where the **1 point** value of atmospheric density is  $0.364724 \text{ kg/m}^3$ . If the weight of the aircraft is 7500 N, lift to drag ratio of aircraft is 15, wing span of 13 m and mean aerodynamic chord of 1 m. The zero-lift drag coefficient at cruise is?

- 0.050
- 0.042
- 0.084
- 0.025

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
0.042

2) The true speed of aircraft is 50 m/s at minimum thrust required condition an altitude where the **1 point** value of atmospheric density is  $0.364724 \text{ kg/m}^3$ . If the weight of the aircraft is 7500 N, lift to drag ratio of aircraft is 15, wing span of 13 m and mean aerodynamic chord of 1 m. The span efficiency factor is?

- 1.000
- 0.785
- 0.733
- 0.933

No, the answer is incorrect.  
Score: 0

Accepted Answers:

Quiz :

**Assignment 03**  
(assessment?  
name=59)

Feedback For  
Week 3 (unit?  
unit=20&lesson=67)

Assignment 03  
Solution (unit?  
unit=20&lesson=69)

**Week 4**

**Week 5**

**Week 6**

**Week 7**

**Week 8**

**Text**  
**Transcription**

0.933

3) If the weight of the aircraft is 500 kg and lift to drag ratio of aircraft is 12, what is the Thrust required (in N) at cruise condition? **1 point**

- 5220.7  
 490.40  
 40.875  
 408.75

No, the answer is incorrect.

Score: 0

Accepted Answers:

408.75

4) If the weight of the aircraft is 500 kg and lift to drag ratio of aircraft is 10, The aircraft flying at a speed of 50 m/s. What is the power required (in kW) at cruise condition? **1 point**

- 30.00  
 2.500  
 2.452  
 24.52

No, the answer is incorrect.

Score: 0

Accepted Answers:

24.52

5) Keeping all the parameters constant, how wing span  $b$  is related to induced drag  $D_i$ ? **1 point**

- $D_i \propto \frac{1}{b^2}$   
  
  $D_i \propto b^2$   
  
  $D_i \propto b$   
  
  $D_i \propto \frac{1}{b}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$D_i \propto \frac{1}{b^2}$

6) For an aircraft at a given altitude and velocity the induced drag is  $D_i$ . If the weight of the aircraft is increased by two times keeping altitude and velocity the same, what will be the new induced drag? **1 point**

- $D_i$   
  
  $4D_i$   
  
  $2D_i$   
  
  $16D_i$

No, the answer is incorrect.

Score: 0

Accepted Answers:

 $4D_i$ 7) For a zero cambered aerofoil,  $C_{mac}$  is?

1 point

- Always positive  
 Always negative  
 zero  
 All of these are possible

No, the answer is incorrect.

Score: 0

Accepted Answers:

zero

8) The drag polar of an electric-powered unmanned aircraft is given by  $C_D = 0.038 + 0.0458C_L^2$  What is the parasite drag coefficient?

1 point

- 0.038  
 0.019  
 0.045  
 0.000

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.038

9) The drag polar of an electric-powered unmanned aircraft is given by

1 point

 $C_D = 0.038 + 0.0458C_L^2$  What is the drag coefficient at maximum Lift to Drag ratio  $\left(\frac{L}{D}\right)_{max}$ ?

- 0.038  
 0.076  
 0.019  
 0.090

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.076

10) The drag polar of an electric-powered unmanned aircraft is given by

1 point

 $C_D = 0.038 + 0.0458C_L^2$  What is the lift coefficient maximum at Lift to Drag ratio  $\left(\frac{L}{D}\right)_{max}$ ?

- 0.9108  
 1.0000  
 0.4510  
 0.6118

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.9108

