

X


<https://swayam.gov.in>

https://swayam.gov.in/nc_details/NPTEL

reviewer4@nptel.iitm.ac.in ▾

NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » **Introduction to Aerospace Engineering/Flight (course)**

Announcements (announcements) **About the Course** (https://swayam.gov.in/nd1_noc19_ae05/preview)

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

Unit 7 - Week 5

Course outline

How to access the portal?

Preliminaries for the Course

Week 1

Week 2

Week 3

Week 4

Week 5

- Lecture 22 : Introduction to Aerofoils and Aerofoil Nomenclature (unit? unit=35&lesson=38)

- Lecture 23 : Aerofoils : A Visit to the Past (unit? unit=35&lesson=39)

Assignment 5

The due date for submitting this assignment has passed. Due on 2019-09-04, 23:59 IST. As per our records you have not submitted this assignment.

The following questions **may have more than one correct answers**. Read and analyse the question carefully before selecting the answer (s).

Marks will be awarded only if all the correct answers are selected.

No partial marks will be awarded.

1) Which of the following statements are TRUE about NACA 65₃421 aerofoil ? **1 point**

- The minimum pressure is located at 50% chord
- Camber = 3%
- $c_l = 0.4$
- Max. thickness = 21%

No, the answer is incorrect.

Score: 0

Accepted Answers:

The minimum pressure is located at 50% chord

$c_l = 0.4$

Max. thickness = 21%

2) Which of the following statements are TRUE about Kline Fogelman Aerofoils ? **1 point**

- It was originally designed for paper planes
- It has an excellent L/D ratio
- It has never been used on a manned aircraft
- It is a popular choice in foam constructed radio controlled model aircraft

No, the answer is incorrect.

Score: 0

● Lecture 24 :
Thick Aerofoils
(unit?
unit=35&lesson=40)

● Lecture 25 : Low
Reynolds
Number
Aerofoils (unit?
unit=35&lesson=41)

● Lecture 26 : Lift
Generation by
Wings : Part I
(unit?
unit=35&lesson=42)

● Lecture 27 : Lift
Generation by
Wings : Part II
(unit?
unit=35&lesson=43)

● Lecture 28 :
Coefficient of
Lift and
Coefficient of
Pressure (unit?
unit=35&lesson=44)

● Lecture 29 :
Tutorial on
Aerofoils (unit?
unit=35&lesson=45)

○ Quiz :
Assignment 5
(assessment?
name=101)

○ Weekly
Feedback (unit?
unit=35&lesson=118)

○ Assignment 5
Solutions (unit?
unit=35&lesson=132)

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Download Videos

Accepted Answers:

It was originally designed for paper planes

It is a popular choice in foam constructed radio controlled model aircraft

3) Why is Camber provided on airfoils ?

1 point

- To provide ability to generate lift
- To increase the maximum lift coefficient
- To reduce the stalling speed
- To increase the efficiency of the airfoil

No, the answer is incorrect.

Score: 0

Accepted Answers:

To increase the maximum lift coefficient

To reduce the stalling speed

To increase the efficiency of the airfoil

4) Which of the following statements is/are true w.r.t. Supercritical Aerofoils ?

1 point

- They have a large Leading edge radius
- They have a flat upper surface
- They have a reflex camber at trailing edge
- They delay the onset of wave drag

No, the answer is incorrect.

Score: 0

Accepted Answers:

They have a large Leading edge radius

They have a flat upper surface

They have a reflex camber at trailing edge

They delay the onset of wave drag

5) Which of the following statements is/are true w.r.t. Symmetrical Aerofoils ?

1 point

- Have high L/D ratio
- Mostly used on control surfaces
- Have lower C_l compared to cambered ones
- Camber Line and Chord line is identical

No, the answer is incorrect.

Score: 0

Accepted Answers:

Have high L/D ratio

Mostly used on control surfaces

Have lower C_l compared to cambered ones

Camber Line and Chord line is identical

6) Which of these theories that attempt to explain generation of Lift are incorrect?

1 point

- Equal Transit Theory
- Skipping Stone Theory
- Venturi Theory
- Longer Path Theory

No, the answer is incorrect.

Score: 0

Accepted Answers:

Equal Transit Theory

Skipping Stone Theory

Text Transcripts

*Venturi Theory**Longer Path Theory*

7) A NACA 2514 aerofoil of chord length 1.5 m is flying at a velocity of 150 m/s at an angle of attack of 6 deg., at which $c_l = 0.8$. If the altitude of flight is 2 km AMSL ($\rho_{\text{air}} = 0.9 \text{ kg/m}^3$), Estimate Lift generated per unit span. **1 point**

- 0.122 x 10⁴ N
- 1.215 x 10⁴ N
- 12.15 x 10⁴ N
- 121.5 x 10⁴ N

No, the answer is incorrect.

Score: 0

Accepted Answers:

1.215 x 10⁴ N

8) Estimate Lift generated per unit span when the same NACA 2514 aerofoil is flying INVERTED, if $c_l = -0.44$ at AoA = - 6 deg ? Assume the same chord (1.5 m), speed (150 m/s) and altitude ($\rho_{\text{air}} = 0.9 \text{ kg/m}^3$) as question 7. **1 point**

- 0.668 x 10⁴ N
- 6.682 x 10⁴ N
- 6.682 x 10³ N
- Zero

No, the answer is incorrect.

Score: 0

Accepted Answers:

6.682 x 10³ N

9) Which is the correct c_p distribution for a thin cambered airfoil with $c_l = 0.5$? **1 point**

- A
- B
- C
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

A

10) Which of the following statement(s) is/are True? **1 point**

- $c_p = 0$ indicates the local pressure is the same as the free stream pressure
- $c_p = 1$ indicates a stagnation point
- $c_p < 1$ is not possible in flow over a body
- $c_p > 1$ is not possible in flow over a body

No, the answer is incorrect.

Score: 0

Accepted Answers:

$c_p = 0$ indicates the local pressure is the same as the free stream pressure

$c_p = 1$ indicates a stagnation point

$c_p > 1$ is not possible in flow over a body

