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Unit 7 - Week 5

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 65_3421 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

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 (ρ_{air} = 0.9 kg/m^3), Estimate Lift generated per unit span. ***1 point***

- 0.122 x 10^4 N
- 1.215 x 10^4 N
- 12.15 x 10^4 N
- 121.5 x 10^4 N

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.215 x 10^4 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 (ρ_{air} = 0.9 kg/m^3) as question 7. ***1 point***

- -0.668 x 10^4 N
- -6.682 x 10^4 N
- 6.682 x 10^3 N
- Zero

No, the answer is incorrect.
Score: 0
Accepted Answers:
6.682 x 10^3 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